ASTI ENVIRONMENTAL

Investigation • Remediation
Compliance • Restoration

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September 24, 2018

Ms. Elizabeth Madson
Chesterfield Township Library
50560 Patricia Avenue
Chesterfield, MI 48051

RE: Wetland Delineation and Jurisdictional Assessment
21 Mile Road and Sugarbush Road Property
Sidwell No. 09-32-127-033
Chesterfield Township, Macomb County, Michigan
ASTI File No. 2-10826

Dear Ms. Madson:

A site investigation was completed on September 20, 2018 by ASTI Environmental (ASTI) to delineate wetland boundaries on the above-referenced parcel located in the southeast quadrant of the intersection of 21 Mile Road and Sugarbush Road in Chesterfield Township, Macomb County, Michigan (Property). One wetland not believed to be regulated by the Michigan Department of Environmental Quality (DEQ) was found on the Property (see Figure 1 – *GPS-Surveyed Wetland Boundaries*). Wetland boundaries, as depicted on Figure 1, were located using a professional grade, hand-held Global Positioning System unit (GPS).

SUPPORTING DATA

The United States Geological Survey (USGS) New Haven, Michigan 7.5' Quadrangle Map, the Soil Survey of Macomb County, the National Wetland Inventory Map (NWI), the DEQ Wetlands Map Viewer web site, and digital aerial photographs were all used to support the wetland delineation and subsequent regulatory status determination. No reviewed data indicated the presence of wetland on the Property.

The Soil Survey of Macomb County indicates the Property is comprised of the soil complexes of Brevort-Selfridge complex, Toledo silty clay loam, Oakville fine sand (0-6% slopes), and Pipestone sand (0-6% slopes). Brevort-Selfridge complex and Toledo silty clay loam are on the list *Hydric Soils of Michigan*.

FINDINGS

ASTI investigated the Property for the presence of lakes, ponds, wetlands, and watercourses. This work is based on MCL 324 Part 301, Inland Lakes and Streams and Part 303, Wetlands Protection.

The delineation protocol used by ASTI for this delineation is based on the US Army Corps of Engineers' *Wetland Delineation Manual,* 1987, the *Regional Supplement to the Corps of Engineer Wetland Delineation Manual: Northcentral/Northeast Region*, and related guidance/documents, as appropriate. Wetland vegetation, soils, and hydrology indicators were used to determine wetland boundaries.

Wetland A

Wetland A is a forested, scrub/shrub, and emergent wetland 2.48 acres in size located in the southern portion of the Property (see Figure 1). Dominant vegetation found within the forested portion of Wetland A included silver maple (*Acer saccharinum*), green ash (*Fraxinus pennsylvanica*), cottonwood (*Populus deltoides*), American elm (*Ulmus americana*), and gray dogwood (*Cornus racemosa*). Dominant vegetation found within the scrub/shrub portion of Wetland A included gray dogwood, green ash saplings, glossy buckthorn (*Frangula alnus*), and Phragmites (*Phragmites australis)*. Vegetation within the emergent portion of Wetland A was dominated by Phragmites. Soils within Wetland A were comprised of clay loams and are considered hydric because the criteria for a depleted matrix was met. Indicators of wetland hydrology observed within Wetland A included observations of sparsely vegetated concave surfaces and water-stained leaves.

Vegetation in the upland adjacent to Wetland A was dominated by teasel (*Dipsacus fullonum*), tall goldenrod (*Solidago altissma*), Phragmites, Canada thistle (*Cirsium arvense*), and annual grass (*Poa annua*). Soils in the upland adjacent to Wetland A were comprised of clay loams; no indicators of wetland hydrology were observed.

It is ASTI's opinion that Wetland A is not regulated by the DEQ under Part 303 because it is less than five acres in size and is not within 500 feet of a stream, pond, or inland lake regulated under Part 301.

Wetland Flagging

Wetland boundaries were marked in the field with day-glow and black striped flagging and numbered as follows:

Wetland A = A-1 through A-20

All wetland boundaries were located in the field by ASTI with a professional grade GPS.

SUMMARY

Based upon the data, criteria, and evidence noted above, it is ASTI's professional opinion that the Property contains one wetland (Wetland A) not regulated by the DEQ. However, the DEQ has the final authority on the extent of regulated wetlands, lakes, and streams in the State of Michigan.

Attached are Figure 1, which shows the GPS-surveyed wetland boundaries on the Property, and completed US Army Corps of Engineers (ACOE) Wetland Data Forms.

Thank you for the opportunity to assist you with this project. Please let us know if we can be of any further assistance in moving your project forward.

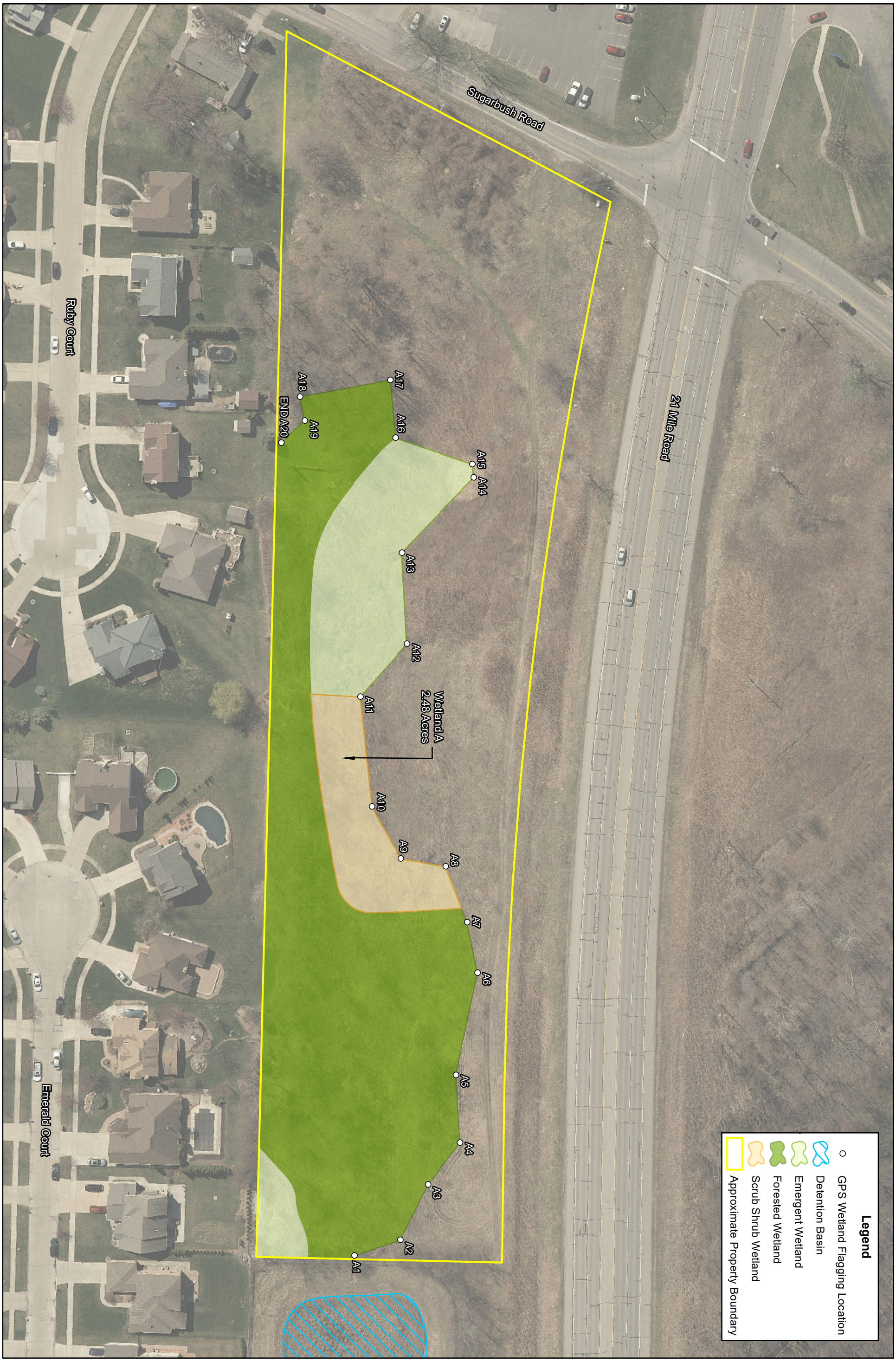
Cordially,

ASTI ENVIRONMENTAL

Kyle Hottinger
Wetland Ecologist
Professional Wetland Scientist #2927

Dianne C. Martin
Vice President
Professional Wetland Scientist #1313

Attachments: Figure 1 – GPS-Survyed Wetland Boundaries
Completed ACOE Wetland Data Forms



Sugarbush Road &
21 Mile Road Property

Chesterfield Twp., Macomb Co., MI

ASTI Environmental

Client: [Client]
Created by: BJG, September 20, 2018, ASTI Project 2-10826
Imagery: SEMCOG (April 2015)

Figure 1 - GPS-Surveyed Wetland Boundaries

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 21 Mile & Sugarbush (SE) property City/County: Chesterfield Twp-Macomb Sampling Date: 9-20-18

Applicant/Owner: Chesterfield Township Library State: MI Sampling Point: UPA5

Investigator(s): ASTI-KAH Section, Township, Range: Sec 32 T3N R14E

Landform (hillside, terrace, etc.): slight slope Local relief (concave, convex, none): slight slope Slope %: 1-4

Subregion (LRR or MLRA): LRR L Lat: Long: Datum:

Soil Map Unit Name: Toledo silty clay loam NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** ____ **No** X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Upland adjacent to Wetland A at flag A6

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No x	Depth (inches): ____
Water Table Present?	Yes ____	No x	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No x	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: UPA5

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Juglans nigra*	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Cornus racemosa*	5	Yes	FAC
2. *Elaeagnus umbellata*	5	Yes	UPL
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Dipsacus fullonum*	30	Yes	FACU
2. *Solidago gigantea*	5	No	FACW
3. *Solidago altissima*	20	Yes	FACU
4. *Lythrum salicaria*	5	No	OBL
5. *Bromus inermis*	10	Yes	UPL
6. *Poa annua*	10	Yes	FACU
7. *Cirsium arvense*	10	Yes	FACU
8. *Phragmites australis*	10	Yes	FACW
9.			
10.			
11.			
12.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 22.2% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	15	x 2 =	30
FAC species	5	x 3 =	15
FACU species	80	x 4 =	320
UPL species	15	x 5 =	75
Column Totals:	120 (A)		445 (B)

Prevalence Index = B/A = 3.71

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point UPA5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-18	10YR 5/2	70	10YR 6/8	30	C	PL/M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: none

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: 21 Mile & Sugarbush (SE) property City/County: Chesterfield Twp-Macomb Sampling Date: 9-20-18

Applicant/Owner: Chesterfield Township Library State: MI Sampling Point: WETA5

Investigator(s): ASTI-KAH Section, Township, Range: Sec 32 T3N R14E

Landform (hillside, terrace, etc.): slight depression Local relief (concave, convex, none): concave Slope %: 1-2

Subregion (LRR or MLRA): LRR L Lat: Long: Datum:

Soil Map Unit Name: Toledo silty clay loam NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No	**within a Wetland?** **Yes** X **No**
Wetland Hydrology Present?	Yes X	No	If yes, optional Wetland Site ID: Wetland A

Remarks: (Explain alternative procedures here or in a separate report.)
Wetland A at flag A6 (forested portion)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- x Sparsely Vegetated Concave Surface (B8)
- x Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15)
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Drainage Patterns (B10)
- x Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Stunted or Stressed Plants (D1)
- x Geomorphic Position (D2)
- Shallow Aquitard (D3)
- x Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	No x	Depth (inches):
Water Table Present?	Yes	No x	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No x	Depth (inches):

Wetland Hydrology Present? **Yes** X **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION – Use scientific names of plants. Sampling Point: WETA5

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharinum*	60	Yes	FACW
2. *Fraxinus pennsylvanica*	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	80	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15')			
1. *Fraxinus pennsylvanica*	5	No	FACW
2. *Ulmus americana*	20	Yes	FACW
3. *Cornus racemosa*	10	Yes	FAC
4.			
5.			
6.			
7.			
	35	=Total Cover	
Herb Stratum (Plot size: 5')			
1. *Carex stricta*	5	No	OBL
2. *Phragmites australis*	30	Yes	FACW
3. *Agrimonia parviflora*	10	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45	=Total Cover	
Woody Vine Stratum (Plot size: 15')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	135	x 2 =	270
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	160 (A)		335 (B)

Prevalence Index = B/A = 2.09

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

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Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point WETA5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-18	10YR 5/1	75	10YR 6/8	20	C	PL/M	Loamy/Clayey	Prominent redox concentrations
			10YR 6/1	5	C	M		Faint redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ? Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: none

Depth (inches): ___

Hydric Soil Present? **Yes** X **No** ___

Remarks: