



AGENDA
CHARTER TOWNSHIP OF MERIDIAN
TOWNSHIP BOARD – REGULAR MEETING
September 1, 2020 6:00 pm

1. CALL MEETING TO ORDER
2. PLEDGE OF ALLEGIANCE/INTRODUCTIONS
3. ROLL CALL
4. PRESENTATION
 - A. Eagle Scout Project-Zachary Sieloff
 - B. Introduction of Neighborhood and Economic Development Director
5. CITIZENS ADDRESS AGENDA ITEMS AND NON-AGENDA ITEMS*
6. TOWNSHIP MANAGER REPORT
7. BOARD MEMBER REPORTS OF ACTIVITIES AND ANNOUNCEMENTS
8. APPROVAL OF AGENDA
9. CONSENT AGENDA
 - A. Communications
 - B. Minutes-August 18, 2020 Virtual Regular Meeting
 - C. Bills
 - D. Treasurer’s Report-Treasurer Phil Deschaine
 - E. Disposal of Surplus Equipment
10. QUESTIONS FOR THE ATTORNEY
11. HEARINGS (CANARY)
12. ACTION ITEMS (PINK)
 - A. Rezoning #20030 (Planning Commission) 5937 Potter Street C-1 (Commercial) to RN (Mixed Residential)-**Final Adoption**
 - B. Rezoning #20040 Michigan Baptist Convention) 4606 Hagadorn Road RR (Rural Residential) to PO (Professional Office) –**Final Adoption**
 - C. Coal Tar Sealant Ordinance-**Introduction**
 - D. Special Use Permit #20021 (Andev Group) Construct a Building Greater than 25,000 Square Feet
13. BOARD DISCUSSION ITEMS (ORCHID)
 - A. Contract Amendment-Township Manager Employment Agreement
14. COMMENTS FROM THE PUBLIC
15. OTHER MATTERS AND BOARD MEMBER COMMENTS
16. ADJOURNMENT

All comments limited to 3 minutes, unless prior approval for additional time for good cause is obtained from the Supervisor.
Appointment of Supervisor Pro Tem and/ or Temporary Clerk if necessary.

Individuals with disabilities requiring auxiliary aids or services should contact the Meridian Township Board by contacting:
Township Manager Frank L. Walsh, 5151 Marsh Road, Okemos, MI 48864 or 517.853.4258 - Ten Day Notice is Required.
Meeting Location: 5151 Marsh Road, Okemos, MI 48864 Township Hall



**CLERK'S OFFICE
BOARD COMMUNICATIONS
September 1, 2020**

**BOARD INFORMATION
(BI)**

Election Summary Results
Primary Election
August 4, 2020
Meridian Charter Township

Supervisor (DEM)

Ronald J. Styka 8,816

Clerk (DEM)

Brett Dreyfus 2,517

Deborah Guthrie 6,716

Treasurer (DEM)

Phil Deschaine 8,593

Trustees (4) (DEM)

James D. Salehi 1,431

Mike Kieliszewski 2,301

John Esser 2,697

Kathy Ann Sundland 5,143

Dan Opsommer 5,685

Patricia Herring Jackson 6,259

Courtney Wisinski 6,696

Park Commissioners (5) (DEM)

Michael McDonald 6,639

Mark Stephens 6,702

Mary Nardo Farris 7,034

Ami Van Antwerp 7,174

Amanda A. Lick 7,178

Robin Faust

From: Brett Dreyfus
Sent: Thursday, August 27, 2020 9:46 PM
To: Robin Faust
Subject: Tihart Road

From: Thomas Potter <potter1949@gmail.com>
Sent: Sunday, August 16, 2020 7:51 PM
To: Township Board <Townshipboard@meridian.mi.us>
Subject: Tihart Road

The pot holes are horrendous. If a motorcyclist rode here at night it could easily result in an accident. Germany Road was in better shape and was improved this year and does not seem to get any more traffic than Tihart road.

I am going to keep this as a record. If there are bicycles, motorcycles or small cars damaged or people injured, this will be a record of complaint.

Please improve Tihart road.

Thank you
Tom Potter

Robin Faust

From: Brett Dreyfus
Sent: Thursday, August 27, 2020 9:53 PM
To: Robin Faust
Subject: FW: Andev senior living project setback from Mohican Lane

From: Greg Humbert <gregagrumpbert@gmail.com>
Sent: Tuesday, August 25, 2020 10:55 AM
To: Township Board <Townshipboard@meridian.mi.us>
Subject: Andev senior living project setback from Mohican Lane

from: Greg Humbert
4835 Mohican Ln, Okemos, MI 48864

re: Andev senior living center

I feel that it might be appropriate to point out that there is an open grassy area behind the houses on Mohican Lane which will be closest to the proposed parking area which extends to the east.

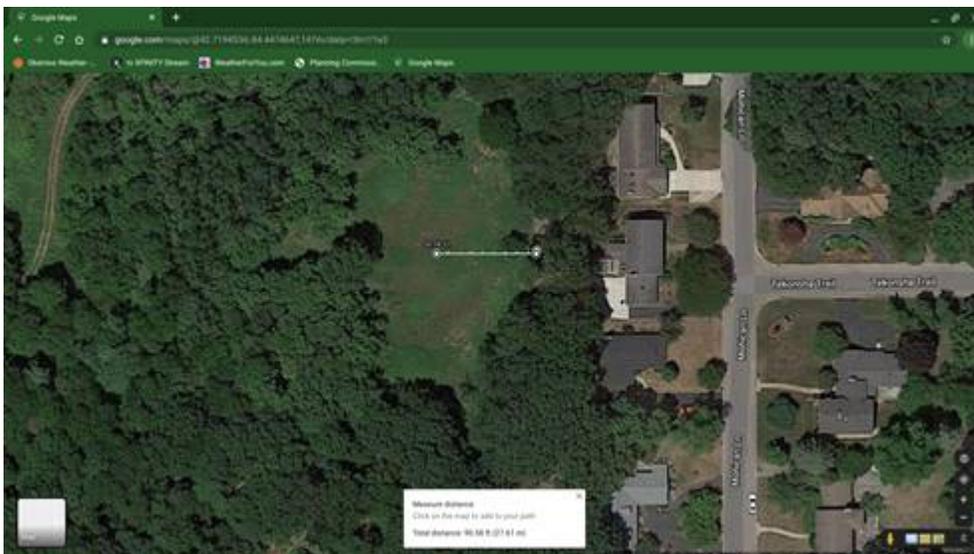
If the parking area setback is 90' from the lot line, the parking area would begin in the middle of this grassy area.

There would not be a buffer of trees or even shrubs between the Andev buildings and backyards on Mohican Lane unless they are new plantings.

The white line on the map below measures the 90' setback from the property line.

The proposed parking area is planned to exist behind the home where the white line is located and the next home to the south.

There are trees in the residence yards but they are a canopy that does not provide privacy or a noise buffer.



PROPOSED BOARD MINUTES

PROPOSED MOTION:

- (1) Move to approve and ratify the minutes of the Virtual Regular Meeting of August 18, 2020 as submitted.**

ALTERNATE MOTION:

- (1) Move to approve and ratify the minutes of the August 18, 2020 Virtual Regular Meeting with the following amendment(s):
[insert amendments]**

CHARTER TOWNSHIP OF MERIDIAN
TOWNSHIP BOARD REGULAR MEETING **-DRAFT-**
5151 Marsh Road, Okemos MI 48864-1198
853-4000, Township Hall Room
TUESDAY, August 18, 2020 **6:00 pm.**

PRESENT: Supervisor Styka, Clerk Dreyfus, Treasurer Deschaine, Trustees Jackson, Opsommer, Sundland, Wisinski

ABSENT: None

STAFF: Township Manager Walsh, Deputy Township Manager/Director of Public Works Perry, Fire Chief Hamel, Police Chief Plaga, Community Planning Director Kieselbach, Information Technology Director Gebes, Principal Planner Menser, Parks and Recreation Director Maisner, Finance Director Mattison, Human Resources Director Tithof, Communications Manager Yates

1. CALL MEETING TO ORDER

Supervisor Styka called the meeting to order at 6:00 pm.

2. PLEDGE OF ALLEGIANCE/INTRODUCTIONS

Supervisor Styka led the Pledge of Allegiance.

3. ROLL CALL

The Clerk called the roll of the Board.

4. PRESENTATIONS - NONE

5. CITIZENS ADDRESS AGENDA ITEMS AND NON-AGENDA ITEMS

Supervisor Styka opened public remarks at 6:01 pm.

Supervisor Styka closed public remarks at 6:02 pm.

6. TOWNSHIP MANAGER REPORT

Manager Walsh reported:

- Marketplace on Green is nearing the completion; working with Director Maisner and Park Commission on the Grand Opening Ceremony; but need to verify the number of attendees allowed at the event
- About 70% of the local roads project list is completing; have had few complaints and the weather has been cooperating
- Fencing is being installed for the Large Dog Park across from the Marketplace on Central Park Drive
- Construction is underway for the new pavilion and restroom building projects at the Harris Nature Center
- Currently drafting the 2021 Township Budget; the document is required to be delivered to the Board 120 day before the end of fiscal year and will be delivered by August 31; the budget hearing has been scheduled for September 15 and budget deliberation by the

Township Board on September 22 starting at 6 pm; items affecting the budget: 1) state revenue sharing will be \$300,000 less for this year; 2) drain projects are up \$275,000 and 3) pension costs are up \$600,000 if the Township follows the 5.35 rate of return model provided by MERS or if use 7.35 model, it could be less; items to be identified in the budget for funding: commitment to road; to solar; and to diversity, equity and inclusion; purchase of the ladder truck (commitment from the millage); expanding the emergency siren program; meeting the actual required contribution to retiree health care and pension; Celebrate Meridian; IT upgrades and redevelopment fund; received call from the President's Office at MSU and they will not be welcoming students this fall which effects the students and local economy

- Staff has discussed the open position of the Director of Economic Development and are suggesting updating the position to Director of Neighborhoods and Economic Development and splitting the job between attracting business to the Township and increasing the connectivity with the 90 neighborhoods in the Township

7. BOARD MEMBER REPORTS AND ANNOUNCEMENTS

Treasurer Deschaine

- Attended the Land Preservation Advisory Board meeting addressing the investment of the funds of the program
- As election commissioner and to keep good records, would like to include the election results with the minutes

Clerk Dreyfus

- Gearing up for the November elections five weeks from the start on September 24
- Discussions on delivery dates of ballots and educational information will be provided to HOMTV
- Obtaining enough Election inspectors, Precinct Chairs and Co-Chairs
- Already pre-stuffing envelopes and other materials in anticipation of ballots because the current AV list is over 13,000
- Absent voter applications are received and input daily
- Since this past election was 83% AV ballots and with the prediction of at least 80% for the upcoming election, staff is working to increase inspectors for the AV Board, will have three teams instead of two and relocating the Board to the Town Hall Room. This will relocate Precinct 6 (Municipal Building) to the Haslett High School Gym along with returning Precinct 3 to that location.
- There have been issues at Precinct 10 (Service Center) and this precinct will also be relocated to the Haslett High School

Trustee Opsommer

- Attended the Land Preservation Advisory Board, recommended acquisition of the 7.9 acres next to the Nemoke Preserve (agenda item 12F) and reviewed projects for elevated viewing decks in the preserves, conservation and stewardship activities including invasive species mitigation and tree planting projects
- CATA Board of Directors will meet on Wednesday, August 19, 2020, via zoom at CATA.org

8. APPROVAL OF AGENDA

Trustee Opsommer moved to approve the Agenda. Seconded by Trustee Jackson.

ROLL CALL VOTE: YEAS: Treasurer Deschaine, Trustees Jackson, Opsommer, Sundland, Wisinski, Supervisor Styka, Clerk Dreyfus

NAYS: None

Motion carried: 7-0

9. CONSENT AGENDA

Supervisor Styka reviewed the consent agenda.

Treasurer Deschaine moved to adopt the Consent Agenda as presented. Seconded by Trustee Opsommer.

ROLL CALL VOTE: YEAS: Trustees Jackson, Opsommer, Sundland, Wisinski, Treasurer Deschaine, Clerk Dreyfus, Supervisor Styka

NAYS: None

Motion carried: 7-0

A. Communications

Treasurer Deschaine moved that the communications be received and placed on file and any communications not already assigned for disposition be referred to the Township Manager or Supervisor for follow-up. Seconded by Trustee Opsommer.

ROLL CALL VOTE: YEAS: Trustees Jackson, Opsommer, Sundland, Wisinski, Treasurer Deschaine, Clerk Dreyfus, Supervisor Styka

NAYS: None

Motion carried: 7-0

B. Approval of Minutes – August 6, 2020 Regular Meeting

Treasurer Deschaine moved to approve and ratify the minutes of the Virtual Regular Meeting of August 6, 2020 as submitted. Seconded by Trustee Opsommer.

ROLL CALL VOTE: YEAS: Trustees Jackson, Opsommer, Sundland, Wisinski, Treasurer Deschaine, Clerk Dreyfus, Supervisor Styka

NAYS: None

Motion carried: 7-0

C. Bills

Treasurer Deschaine moved to approve that the Township Board approve the Manager’s Bills as follows, seconded by Trustee Opsommer:

Common Cash		\$	1,151,259.62
Public Works		\$	564,994.85
Trust & Agency		\$	3,115.17
	Total Checks	\$	1,719,369.64
Credit Card Transactions		\$	6,634.11
7/30/2020-8/12/2020			
	Total Purchases	\$	<u>1,726,003.75</u>
ACH Payments		\$	<u>550,780.68</u>

ROLL CALL VOTE: YEAS: Trustees Jackson, Opsommer, Sundland, Wisinski, Treasurer Deschaine, Clerk Dreyfus, Supervisor Styka

NAYS: None

Motion carried: 7-0

D. 2021 Budget Public Hearing Date

Treasurer Deschaine moved that a Virtual Public Hearing be held, via Zoom, at 6:00 pm on September 15, 2020, for the purpose of taking comments regarding the 2021 Charter Township of Meridian Recommended Budget. Seconded by Trustee Opsommer.

ROLL CALL VOTE: YEAS: Trustees Jackson, Opsommer, Sundland, Wisinski, Treasurer Deschaine, Clerk Dreyfus, Supervisor Styka

NAYS: None

Motion carried: 7-0

10. QUESTIONS FOR THE ATTORNEY - NONE

11. HEARINGS - NONE

12. ACTION ITEMS

A. Rezoning #20010 (Ho Cho) 5654 Okemos Road

Trustee Opsommer moved to adopt the resolution to deny Rezoning #20010 to rezone 4.67 acres located at 5654 Okemos Road from RR (Rural Residential) to RAA (Single Family-Low Density). Seconded by Treasurer Deschaine.

Board discussion:

- Site has wetlands along the frontage, request did not fit rural residential; request did not follow the Land Use Map
- following the recommendation of the Planning Commission

ROLL CALL VOTE: YEAS: Trustees Opsommer, Sundland, Wisinski, Supervisor Styka, Clerk Dreyfus, Treasurer Deschaine, Trustee Jackson

NAYS: None

Motion carried: 7-0

B. Rezoning #2030 (Planning Commission) 5937 Potter Street – Introduction

Trustee Jackson moved to adopt the resolution to approve for introduction Rezoning #20030 to rezone 0.10 acre located at 5937 Potter Street from C-1 (Commercial) to RN (Mixed Residential). Seconded by Clerk Dreyfus.

Board discussion:

- This parcel is adjacent to properties of RN zoning and this parcel was not rezoned when several other parcels were rezoned in this area. The current owner indicated a desire to have this parcel rezoned to RN. This rezoning was initiated and recommended by the Planning Commission

ROLL CALL VOTE: YEAS: Trustees Sundland, Wisinski, Supervisor Styka, Clerk Dreyfus, Treasurer Deschaine, Trustees Jackson, Opsommer

NAYS: None

Motion carried: 7-0

C. Special Use Permit #19191 (Green Peak Innovations LLC)

Trustee Opsommer moved to adopt the resolution approving Special Use Permit #19191 to construct a commercial medical marijuana provisioning center on an undeveloped parcel (Parcel I.D. 20-127-003) located on the east side of Northwind Drive, south of Grand River Avenue. Seconded by Trustee Wisinski.

Board discussion:

- The parcel is part of the overlay district for Northwind Drive and Dawn Avenue; the parcel fronts on Dawn Avenue and is adjacent to the old industrial district in the area; the parcel has sat vacant, without an address until recently and this development will not displace a current business. Four of the partners live in the Township.
- The applicants have promised a new, state-of-the art facility that will be secure; well lit; and odor proof. This project is in the right location on Dawn Avenue and near the campus.

ROLL CALL VOTE: YEAS: Trustee Wisinski, Supervisor Styka, Clerk Dreyfus, Treasurer Deschaine, Trustees Jackson, Opsommer, Sundland

NAYS: None

Motion carried: 7-0

D. Rezoning #20040 (Michigan Baptist Convention) 4606 Hagadorn Road - Introduction

Treasurer Deschaine moved to adopt the resolution to approve for introduction Rezoning #20040 to rezone 4.999 acres located at 4606 Hagadorn Road from RR (Rural Residential) to PO (Professional Office). Seconded by Trustee Wisinski

Board discussion:

- This request was submitted last year as part of a new development which included student housing; the project idea was not well received but this rezoning request to PO is. It is a better fit for this parcel.

ROLL CALL VOTE: YEAS: Supervisor Styka, Clerk Dreyfus, Treasurer Deschaine, Trustees Jackson, Opsommer, Sundland, Wisinski

NAYS: None

Motion carried: 7-0

E. Firefighter Candidate Sponsorship

Trustee Jackson moved to support the Fire Department’s sponsorship of paramedics to attend the Fire Academy providing wages and tuition to qualified candidates. Seconded by Trustee Sundland.

Board discussion:

- Fire Chief summarized the sponsorship is a recruitment tools. He currently has a candidate from the Ingham County Fire Academy. She will give a one-year commitment to the Township for this sponsorship and she will fill a spot on December 1. Currently 28 of the 32 member crew are paramedics/firefighters and hopes to have a future discussion on hiring EMT/firefighters and sending them to paramedic school. Fire Academy full tuition is approximately \$5,000 but for this case, she is getting 17-18 credits for free, the Township will be paying lab fees of approximately \$1,060; uniform costs of approximately \$200 and part-time hourly wage of \$13.75 for a total \$7,000-\$10,000.
- Board members support this recruitment tool; requiring a commitment for the sponsorship and encouraging young professionals for the Township; and for both public safety departments being proactive in recruitment for the Township.

ROLL CALL VOTE: YEAS: Clerk Dreyfus, Treasurer Deschaine, Trustees Jackson, Opsommer, Sundland, Wisinski, Supervisor Styka.

NAYS: None

Motion carried: 7-0

F. Land Preservation – Tax Reversion Property Acquisition Recommendation

Clerk Dreyfus moved to support the recommendation from the Land Preservation Advisory Board to acquire Parcel Number 33-02-02-15-100-010, a 7.97-acre property that is adjacent to the Nemoke Land Preserve. Seconded by Trustee Jackson.

Board discussion:

- Director Maisner reported this is an opportunity for the Land Preservation Advisory Board (LPAB) to obtain acreage adjacent to Nemoke Land Preserve and Nancy Moore Park. This acquisition assists with connectivity. LPAB reviewed this parcel previously when it was up for tax sale and LPAB feel there are valuable assets to the parcel and strongly recommend its purchase.
- The purchase price is \$2,000 and the parcel is adjacent to the railroad track.
- The Forfeiture Coordinator has been informed the decision on the parcel would be made this evening by the Township Board but the LPAB recommended its purchase and it will not be added to the auction list at this time
- There are two other two parcels up for tax sale. The parcel on Meridian Road near Sherbrook is several hundred feet long, 60 feet wide is undevelopable, and the second one is on Hatch Road and is an island type parcel that backs up to five homes.
- During the Land Preservation Millage discussion, re-focusing to maintenance of the preserves was mentioned as important but this opportunity is a prime example of why having reserve funds for acquisition is also important. Even though the Program has exceed its goals, there is a need to have funds available to acquire additional acreage to expand the current inventory and expand out to protect ecologically sensitive areas of the Township.
- Director Maisner reported there is approximately \$4 million in reserves and the Township is in a position to acquire future parcels.

ROLL CALL VOTE: YEAS: Treasurer Deschaine, Trustees Jackson, Opsommer, Sundland, Wisinski, Supervisor Styka, Clerk Dreyfus,

NAYS: None

Motion carried: 7-0

G. Planning Commission Appointment

Treasurer Deschaine moved to approve the appointment made by Supervisor Styka of Mark Blumer to the Planning Commission for a term ending 12/31/2021. Seconded by Trustee Jackson

Board discussion:

- Mr. Blumer has been employed in the Assistant Attorney General’s Office and tried some of the Township’s civil manners. His legal background and abilities of analysis and following the law will be a great benefit to the Planning Commission.
- Mr. Blumer stated thanked the Township for their consideration, worked with Supervisor Styka at the Attorney General’s Office. He had recently retired but was called back to assist with the management of the newly reorganized criminal prosecution division but with the COVID breakout and he and wife being in a vulnerable category, he was had to leave the position. He is looking forward to the appointment

ROLL CALL VOTE: YEAS: Trustees Opsommer, Sundland, Wisinski, Supervisor Styka, Clerk Dreyfus, Treasurer Deschaine, Trustee Jackson

NAYS: None

Motion carried: 7-0

13. BOARD DISCUSSION ITEMS

14. COMMENTS FROM THE PUBLIC

Supervisor Styka Opened Public Remarks at 6:47 pm.

Supervisor Styka Closed Public Remarks at 6:48 pm.

15. OTHER MATTERS AND BOARD MEMBER COMMENTS

Treasurer Deschaine spoke on the news that there will not be students on the MSU campus this fall, how it will affect the economy of East Lansing and Meridian Township. This decision will also effect the budget for this fall and the need to be cautious when making budget decisions for next year. He asked the Township Manager to keep the Board informed and to check with area organizations and neighborhoods for their input.

Supervisor Styka reported that normally 6-7,000 of the 40,000 students enrolled usually live in the Township but also a majority of them spend at area businesses. This will be a significant loss to the economy for this area. A majority of the staff from MSU also live in the Township.

Manager Walsh confirmed the reports from MSU and stated when he attended the civil hearing held by Magistrate Blumer; he was well prepared and looks forward to his participation on the Planning Commission

16. CLOSED SESSION - NONE

17. ADJOURNMENT

Trustee Opsommer moved to adjourn. Seconded by Trustee Wisinski

VOICE VOTE: Motion carried 7-0.

Supervisor Styka adjourned the meeting at 6:52 pm.

RONALD J. STYKA,
TOWNSHIP SUPERVISOR

BRETT DREYFUS,
TOWNSHIP CLERK



To: Board Members
From: Miriam Mattison, Finance Director
Date: September 1, 2020
Re: Board Bills

**Charter Township of Meridian
Board Meeting
9/1/2020**

**MOVED THAT THE TOWNSHIP BOARD APPROVE THE MANAGER'S
BILLS AS FOLLOWS:**

COMMON CASH	\$	1,389,581.81
PUBLIC WORKS	\$	637,879.79
TRUST & AGENCY	\$	1,824,560.42
TOTAL CHECKS:	\$	3,852,022.02
CREDIT CARD TRANSACTIONS		
08/13/2020-8/26/2020	\$	7,267.20
TOTAL PURCHASES:	\$	<u>3,859,289.22</u>
ACH PAYMENTS	\$	<u>932,005.96</u>

INVOICE APPROVAL BY INVOICE REPORT FOR CHARTER TOWNSHIP OF MERIDIAN
 EXP CHECK RUN DATES 09/01/2020 - 09/01/2020
 BOTH JOURNALIZED AND UNJOURNALIZED OPEN AND PAID
 BANK CODE: GF

Vendor Name	Description	Amount	Check #
1. 4ALLPROMOTIONS	400 CARABINER KEY RINGS	399.12	
2. 56-A DISTRICT COURT	CASH BOND - SIEFFERT J.	500.00	103304
	BOND RECEIPT - MORRIS P.	200.00	103303
	BOND - SALANDER N.	100.00	103302
	TOTAL	800.00	
3. 56TH DISTRICT COURT	CASH BOND - HERNANDEX R.	100.00	103306
	CASH BOND - MCCOMBS N.	10.00	103305
	TOTAL	110.00	
4. AFFORDABLE TIRE	POLICE VEHICLE TIRES - STATE CONTRACT FLEET TIRES	740.35	
5. AIRGAS GREAT LAKES	810141999 - MEDICAL OXYGEN DELIVERY	87.68	
	MEDICAL OXYGEN	531.11	
	MEDICAL OXYGEN	117.74	
	TOTAL	736.53	
6. ALLGRAPHICS CORP	POLO SHIRTS FOR DPW LEAD WORKERS	91.96	
7. AT & T	ACCOUNT #831-000-8214-218 - FIBER TO CENTRAL #91	1,067.42	
8. AT & T MOBILITY	ACCOUNT # 287252740666 JULY INVOICE DISPATCH NON-E	76.55	
9. AUTO VALUE OF EAST LANSING	UNIT 110 - FLEET REPAIR PARTS 2020	5.37	
	STOCK FOR FLEET REPAIR PARTS 2020	9.58	
	UNIT 90 AND 91 FLEET REPAIR PARTS 2020	19.78	
	STOCK FLEET REPAIR PARTS 2020	61.57	
	STOCK FLEET REPAIR PARTS 2020	14.78	
	UNIT 116 - FLEET REPAIR PARTS 2020	32.95	
	UNIT 132 - FLEET REPAIR PARTS 2020	120.98	
	STOCK FLEET REPAIR PARTS 2020	7.92	
	TOTAL	272.93	
10. BARYAMES CLEANERS	AUGUST STANDARD POLICE UNIFORM CLEANING	546.25	
11. BILL PRIESE	ADJUSTMENT TO PAYROLL - BILL PRIESE	50.00	
12. BLACK & VEATCH	PB20-0292 REFUND FOR ENGINEER/ARCHITECT FEES	100.00	
13. BLUE CROSS BLUE SHIELD OF MICHIGAN	BCBS PPO HEALTH INSURANCE - SEPT 2020	3,596.40	103299
14. BOBCAT OF LANSING	UNIT #55 BELT AND IDLER	310.38	
15. BRANDON BROOKS	PP20-0253 PLUMBING PERMIT	80.00	
16. CAROLYN NOWLIN	REFUND FOR PHOTOGRAPHY CLASS AT HNC CANCELLED DUE	60.00	
17. CINDY GOZALKA	REFUND FOR PHOTOGRAPHY CLASS AT HNC CANCELLED DUE	60.00	
18. COCM	2020 COCM FALL CONF & MEMBERSHIP DUES FOR JOHN HEC	330.00	103300
19. COMCAST	AUG 29 2020 TO SEPT 28 2020 - 3998 VAN ATTA ROAD	200.90	
	XFINITY 5151 MARSH ROAD - AUG 29 2020 TO SEPT 28	22.44	
	SERVICES FROM AUG 19 2020 TO SEPT 18 2020	138.35	
	TOTAL	361.69	
20. CONSUMERS ENERGY	FARMERS MARKET AUGUST ENERGY INVOICE	22.50	
21. COURTNEY KRAUSE	REFUND FOR BASEBALL CANCELLED DUE TO COVID 19 - CA	70.00	
22. CUSTOM BUILT BASEMENTS & DECKS	PB20-0534 REFUND FOR OVERPAYMENT (PAID \$235 ONLY O	50.00	

08/27/2020 11:32 AM
 User: GRAHAM
 DB: Meridian

INVOICE APPROVAL BY INVOICE REPORT FOR CHARTER TOWNSHIP OF MERIDIAN
 EXP CHECK RUN DATES 09/01/2020 - 09/01/2020
 BOTH JOURNALIZED AND UNJOURNALIZED OPEN AND PAID
 BANK CODE: GF

Vendor Name	Description	Amount	Check #
23. DBI	OFFICE SUPPLIES LORI HAGAN - POLICE RECORDS	11.97	
24. DRF INSTALLATIONS INC	MECHANICAL PERMIT PM20-0498	15.00	
25. ELIZABETH SULLIVAN	REFUND FOR SPORTIES FOR SHORTIES CANCELLED DUE TO	45.00	
26. ERIN ECKENRODE	REFUND FOR PHOTOGRAPHY CLASS CANCELLED DUE TO COVI	60.00	
27. ERIN KURIAKOSE	REFUND FOR GIRLS SOFTBALL CANCELLED DUE TO COVID 1	70.00	
28. FEDEX	ACCOUNT #1482-7203-4 - AUGUST 2020	8.50	
29. FIRST AMERICAN ADMINISTRATORS	AUGUST 2020 - EYEMED VISION INSURANCE	1,930.30	
30. FORESIGHT GROUP	2020 CYCLE 2 WATER BILLS	1,176.98	
31. GOODYEAR COMMERCIAL TIRE	#38-GOODYEAR STATE CONTRACT TIRES 2020	475.56	
32. GORDON CONSTRUCTION SERVICES	2020 SOLAR PROJECT - 1.25' CONDUIT CHASE LABOR & GATEWAY BRIDGE AND RESTROOM IN VILLAGE	1,900.00 88,391.00	
	TOTAL	90,291.00	
33. GOYETTE MECHANICAL	PM20-0009 MECHANICAL PERMIT	1,280.00	
34. GRANGER CONTAINER SERVICE, INC	TICKET #23111433 - CY C & D WASTE - 2150 KENT STRE	245.00	
35. H.C. BERGER COMPANY	ACCOUNT #ABD-MT02 - CONTRACT #CON3541-ABD-01 COPIE	871.98	
36. HALT FIRE INC	UNIT #137 CABLE, PUMP SHIFT, MANUAL W/TEE HANDLE	177.73	
37. INGHAM COUNTY	2020-024035/2020-024056 RECORDING FEES 2020 - 911 LEGACY COSTS PER AGREEMENT WITH CITY OF	90.00 9,000.00	
	TOTAL	9,090.00	
38. INGRID DAVIS	REFUND FOR PHOTOGRAPHY CLASS AT HNC CANCELLED DUE	60.00	
39. INTERNATIONAL CONTROLS & EQUIP	ACCESS CONTROL SYSTEM FOR SMALL AND LARGE DOG PARK	1,670.00	
40. JEFFORY BROUGHTON	RADIO MAINTENANCE FOR POLICE	579.75	
41. JENNIFER THOMPSON	REFUND FOR GARDENING WITH NATIVE PLANTS CLASS CANC	15.00	
42. JIMMERSON ROOFING	PB20-0414 BUILDING PERMIT	37.50	
43. JOHNSON SIGN CO	REFUND OF SIGN APPLICATION PERMITS	250.00	
44. JULIE DWYER	REFUND FOR PHOTOGRAPHY CLASS AT HNC CANCELLED DUE	60.00	
45. JYOTSNA CATTAMANCHI	REFUND FOR 2 SPORTIES CLASSES CANCELLED DUE TO COV	90.00	
46. K & H CONCRETE CUTTING INC	6' GSS W/O CLEANUP - 3 NEIGHBORHOOD CRUSH & SHAPE	1,195.20	
47. KEBS INC	CONSTRUCTION OVERSIGHT FOR MARKETPLACE ON GREEN PR	1,200.00	
48. LANSING COMMUNITY COLLEGE	PAYMENT FOR SIERRA M. ALVARADO POLICE ACADEMY	7,950.00	103301
49. LANSING SANITARY SUPPLY INC	CENTRAL FIRE UPPLIES - LINERS AND TOWELS	307.63	
50. LANSING UNIFORM COMPANY	POLICY ACADEMY UNIFORM FOR ALVARADO S.	310.65	
51. LISA RUSSELL	REFUND FOR GARDENING WITH NATIVE PLANTS CLASS CANC	15.00	
52. LOPEZ CONCRETE CONSTRUCTION	LOPEZ CONCRETE CONSTRUCTION - CONCRETE REPAIR CONT	74,692.50	
53. MADISON NATIONAL LIFE INS CO	LIFE INSURANCE PREMIUM FOR SEPTEMBER 2020	2,966.77	

08/27/2020 11:32 AM
 User: GRAHAM
 DB: Meridian

INVOICE APPROVAL BY INVOICE REPORT FOR CHARTER TOWNSHIP OF MERIDIAN
 EXP CHECK RUN DATES 09/01/2020 - 09/01/2020
 BOTH JOURNALIZED AND UNJOURNALIZED OPEN AND PAID
 BANK CODE: GF

Vendor Name	Description	Amount	Check #
54. MANNIK AND SMITH	PROJECT #M4150001 - 2021 ROAD CURB AND ADA ESTIMAT	1,148.00	
	PROJECT #M3150011 2020 LOCAL ROAD PROGRAM ENGINEER	27,600.17	
	TOTAL	28,748.17	
55. MCKESSON MEDICAL-SURGICAL	GOC SOL		
	CREDIT - STANDING PO FOR MEDICAL SUPPLIES/EQUIPMEN	(294.03)	103252
	ITEM #1107053 CERVICAL COLLARS 20 EA	126.39	
	#189983 CLEAR CUFF INFUSER ONE CASE	175.45	
	ACCOUNT #58729368 SALES ORDER #74453896 MEDICAL SU	576.88	
	ACCOUNT #58729368 SALES ORDER #74474279 - MEDICAL	553.59	
	TOTAL	1,138.28	
56. MERIDIAN CHARTER TOWNSHIP	RETAINAGE MICHIGAN PAVING & MATERIALS CO - 2020 LO	46,200.91	
57. MERIDIAN TOWNSHIP	TRANSFER FOR FLEX CHECKING FOR 8/28/2020 PAYROLL	550.69	
58. MERIDIAN TOWNSHIP	PAYEST #6 RETAINAGE MICHIGAN PAVING & MATERIALS CO	408.56	
59. MERIDIAN TOWNSHIP	RETAINAGE GORDON CONSTRUCTION - GATEWAY BRIDGE AND RESTROOM	9,821.00	
60. METTER CONSTRUCTION LLC	PO 53665 FENCING FOR THE SMALL AND LARGE DOG AREAS	10,620.00	
61. MICHELLE BELOSKUR	REFUND FOR PHOTOGRAPHY CLASS CANCELLED DUE TO COVI	60.00	
62. MICHELLE SMILEY	REFUND FOR SPORTIES FOR SHORTIES CANCELLED DUE TO	90.00	
63. MICHIGAN PAVING	MICHIGAN PAVING & MATERIALS CO - 2020 LOCAL ROAD P	877,817.38	
	MICHIGAN PAVING & MATERIALS COMPANY - 2020 LOCAL R	7,762.71	
	TOTAL	885,580.09	
64. MICHIGAN PLUMBING	PERMIT REFUND PP20-0279	125.00	
65. MID MICHIGAN EMERGENCY EQUIPMENT	FLASHING LIGHTS FOR JOHN DEERE GATORS UNIT 90 & 91	832.00	
66. MIDSTATES RECREATION LLC	PARTIAL PAYMENT AUGUST 2020 - MARKETPLACE ON THE G	152,496.65	
67. NABIL KANAZEK	REFUND FOR BUILDING PERMIT CANCELLED PROJECT PB20-	57.50	
68. NICOLE VENABLE	REFUND FOR SPORTS PROGRAM CANCELLED DUE TO COVID 1	55.00	
69. OFFICE DEPOT	FS B&W TABS SET OF 5	32.60	
70. OLIVER / HATCHER CONSTRUCTION	REFUND FOR PERFORMANCE.GUARANTEEE PG #2017-16	2,012.00	
71. OVERHEAD DOOR OF LANSING	ORDER # 29554 REPAIRS LINKS, TIGHTENED CLUTCH & RE	434.20	
	CENTRAL FIRE OVERHEAD DOOR REPAIRS	418.96	
	TOTAL	853.16	
72. POWER HOMES SOLAR LLC	REFUND FOR ELECTRICAL PERMIT P20-0377	5.50	
73. PRINT MAKERS SERVICE INC	JUNE INV 2020-0351 JULY INV 2020-0417 AUGUST INV 2	458.05	
74. PROGRESSIVE AE	PROJECT #53260102.0 - JULY 2020 - LAKE LANSING SAD	806.11	
75. PRO-TECH MECHANICAL SERVICES	ICE MACHINE CLEANING AND LABOR	290.00	
	CENTRAL FIRE ICE MACHINE REPAIRS	275.00	
	TOTAL	565.00	
76. QUALITY TIRE INC	STATE CONTRACT FLEET TIRES 2020 - UNIT #116	505.20	

08/27/2020 11:32 AM
 User: GRAHAM
 DB: Meridian

INVOICE APPROVAL BY INVOICE REPORT FOR CHARTER TOWNSHIP OF MERIDIAN
 EXP CHECK RUN DATES 09/01/2020 - 09/01/2020
 BOTH JOURNALIZED AND UNJOURNALIZED OPEN AND PAID
 BANK CODE: GF

Vendor Name	Description	Amount	Check #
77. RECLAIMED BY DESIGN	JULY 2020 MONTHLY OPERATION OF RECYCLING CENTER	2,000.00	
	AUGUST 2020 MONTHLY OPERATION OF RECYCLING CENTER	2,000.00	
	2020 MONTHLY OPERATION OF RECYCLING CENTER - SEPT	2,000.00	
	TOTAL	6,000.00	
78. ROBERT SHELTON	REIMBURSEMENT FOR PARK RENTAL CANCELLED DUE TO COV	120.00	
79. ROMANOW BUILDING SERVICES	JANITORIAL SERVICES FOR AUGUST 2020 TOWNSHIP BUILD	7,463.72	
	FIRE STATION CARPET CLEANING SERVICES	237.60	
	TOTAL	7,701.32	
80. ROWERDINK AUTOMOTIVE PARTS	UNIT 31 - FLEET REPAIR PARTS 2020	111.50	
	VARIOUS INVOICES FOR FLEET REPAIR PARTS 2020 CUSTO	775.25	
	TOTAL	886.75	
81. SHARON BRUCE	REFUND FOR SHORTIES, BASEBALL, SOCCER CANCELLED DUE	165.00	
82. SHAUN SCHAFFER	REFUND FOR PHOTOGRAPHY CLASS AT HNC CANCELLED DUE	60.00	
83. SOLDAN'S FEED & PET SUPPLIES	INVOICES 2018444154 & 2021358739	91.97	
84. SPARROW OCCUPATIONAL	ALLISON G. DIAZ AND WILLIAM RICHARDSON - AUDIOMETR	30.00	
85. SPARTAN DISTRIBUTORS	UNIT 79- TORO MOWER REPAIR PARTS 2020	299.28	
	UNIT 664-TORO MOWER REPAIR PARTS 2020	274.30	
	TOTAL	573.58	
86. ST MARTHA CONFERENCE OF	REIMBURSEMENT FOR PAYMENT TO AVOID EVICTION - FLOO	250.00	103307
87. ST THOMAS AQUINAS PARISH	REIMBURSEMENT FOR PAYMETN OF FIRST MONTHS RENT FOR	100.00	103308
88. STRYKER MEDICIAL	PROCARE MAINT. CONTRACT FOR LUKAS CPR DEVICES	4,651.20	
89. SUPREME SANITATION	AUGUST 2020 - PORTABLE TOILET RENTAL	598.60	
	INVOICES 67250, 67252, 57253 AUGUST 2020 - PORTABL	555.00	
	AUGUST 2020 HNC - PORTABLE TOILET RENTAL	360.00	
	TOTAL	1,513.60	
90. TASC	10/1/20 TO 12/31.29 COBRA ADMIN FEE	324.12	
91. TEAM FINANCIAL GROUP	AUGUST 2020 - CONTRACT ID 521678-A COPIER LEASE	1,471.50	
92. THE HARKNESS LAW FIRM PLLC	AUGUST 2020 PROSECUTION SERVICES & DIVERSION PROGR	6,666.67	
93. TRUGREEN	ATHLETIC FIELDS AND TOWNSHIP BUILDINGS FIELD WEED	1,348.13	
94. TYLER HEATING AND COOLING INC	PM20-0448 REFUND FOR PERMIT APPLICATION OVERPAYMEN	15.00	
95. USA TODAY NETWORK	VEGETATION #20-80201 #20051 7/5 ADD	540.00	
96. VENUGOPAL KRISHNA	REFUND FOR PHOTOGRAPHY CLASS AT HNC CANCELLED DUE	60.00	
97. VIC MANKOWSKI	REFUND FOR PHOTOGRAPHY CLASS AT HNC CANCELLED DUE	60.00	
98. WEST SHORE FIRE INC	FUNCTIONAL TEST AIR PACK SERVICE CALL	1,565.00	
99. WOLVERINE ENGINEERS & SURVEYORS	18-0065 AUGUST 2020 PARTIAL PAYMENTCENTRAL PARK GAT	4,142.52	
	18-0066 PARTIAL PAYMENT - CENTRAL PARK REGIONAL TR	2,127.60	
	TOTAL	6,270.12	
100 XFINITY	AUG 20 TO SEPT 19 2020 FOR 5000 OKEMOS ROAD	14.98	

08/27/2020 11:32 AM
User: GRAHAM
DB: Meridian

INVOICE APPROVAL BY INVOICE REPORT FOR CHARTER TOWNSHIP OF MERIDIAN
EXP CHECK RUN DATES 09/01/2020 - 09/01/2020
BOTH JOURNALIZED AND UNJOURNALIZED OPEN AND PAID
BANK CODE: GF

Vendor Name	Description	Amount	Check #
TOTAL - ALL VENDORS		1,389,581.51	

08/27/2020 11:31 AM
User: GRAHAM
DB: Meridian

INVOICE APPROVAL BY INVOICE REPORT FOR CHARTER TOWNSHIP OF MERIDIAN
EXP CHECK RUN DATES 09/01/2020 - 09/01/2020
BOTH JOURNALIZED AND UNJOURNALIZED OPEN AND PAID
BANK CODE: PWHZR

Vendor Name	Description	Amount	Check #
1. ALLGRAPHICS CORP	POLO SHIRTS FOR DPW LEAD WORKERS	87.96	
2. BARNHART & SON	SEWER MAIN REPAIRS AT 5936 POTTER STREET	7,973.61	
3. BLACKBURN MFG CO	INVOICES 0622339-IN, 0622324-IN, 0623082-IN	1,236.36	
4. BLUE CROSS BLUE SHIELD OF MICHIGAN	BCBS PPO HEALTH INSURANCE - SEPT 2020	526.43	28322
5. CITY OF EAST LANSING	SEWER 5545-02 AND 5632-01 SRF DEBT PAYMENTS	585,851.00	
6. DONALD BUCKLEY	5998 MARTINUS FOR SOIL EROSION AND SEDIMENTATION C	2,000.00	
7. EASTBROOK HOMES INC	6045 SOUTHRIDGE FOR SOIL EROSION AND SEDIMENTATION	2,000.00	
	6051 SOUTHRIDGE FOR SOIL EROSION AND SEDIMENTATION	2,000.00	
	6080 SOUTHRIDGE SOIL EROSION AND SEDIMENTATION CON	2,000.00	
	TOTAL	6,000.00	
8. FERGUSON WATERWORKS #3386	CUSTOMER #1304 REPAIR PARTS 12 EACH - FCF3177NL	912.48	
9. FIRST AMERICAN ADMINISTRATORS	AUGUST 2020 - EYEMED VISION INSURANCE	255.44	
10. FRED MOTZ BUILDERS, INC.	4340 GLEN EYRIE FOR SOIL EROSION AND SEDIMENTATION	2,500.00	
11. INGHAM COUNTY	2020-021432/2020-021433/2020-021434 RECORDING FEES	90.00	
12. JACK DOHENY COMPANIES INC	REF. 20286 - SL-PS-1 ROUND CATCH BASIN SP/3 PRONGE	254.44	
	REF 20285 - SL-STD-6 SINGLE MALE X FEMALE/FED EX S	208.44	
	TOTAL	462.88	
13. JAWAD HASAN	4362 RIVER GLEN DRIVE FOR SOIL EROSION & SEDIMENTA	2,000.00	
14. KENNEDY INDUSTRIES INC	MAIN LIFT STATION- PUMP REHAB ON 2ND PUMP OUT OF 3	27,640.00	
15. MADISON NATIONAL LIFE INS CO	LIFE INSURANCE PREMIUM SEPTEMBER 2020	343.63	
TOTAL - ALL VENDORS		637,879.79	

08/27/2020 11:30 AM
 User: GRAHAM
 DB: Meridian

INVOICE APPROVAL BY INVOICE REPORT FOR CHARTER TOWNSHIP OF MERIDIAN
 EXP CHECK RUN DATES 09/01/2020 - 09/01/2020
 BOTH JOURNALIZED AND UNJOURNALIZED OPEN AND PAID
 BANK CODE: TA

Vendor Name	Description	Amount	Check #
1. CATHERINE LEIN	33-02-02-28-254-007 OVER PMT OF SUMMER PROPERTY TA	180.00	12964
2. EAST LANSING PUBLIC SCHOOLS	SUMMER TAX COLLECTION	133,740.29	12965
	2020 SUMMER TAXES EAST LANSING PUBLIC SCHOOLS	141,664.08	12973
	TOTAL	275,404.37	
3. HASLETT PUBLIC SCHOOLS	SUMMER TAX COLLECTION	268,908.96	12966
	2020 SUMMER TAX COLLECTION	140,617.39	12974
	TOTAL	409,526.35	
4. INGHAM CO TREASURER-LAND BANK BRA	33-02-02-25-276-003/GRAND RIVER SUMMER 2020 LAND B	17.41	12967
5. MERIDIAN TOWNSHIP DDA	2019 WINTER DPP TAX COLLECTION	4.02	12968
6. MSU FEDERAL CREDIT UNION	33-02-02-05-453-015 OVER PMT OF SUMMER PROPERTY TA	3,367.60	12969
	33-02-02-10-128-011 OVER PMT OF SUMMER PROPERTY TA	1,530.96	12969
	33-02-02-12-383-011 OVER PMT OF SUMMER PROPERTY TA	2,679.08	12969
	33-02-02-16-251-005 OVER PMT OF SUMMER PROPERTY TA	2,178.08	12969
	33-02-02-27-426-015 OVER PMT OF SUMMER PROPERTY TA	2,710.94	12969
	TOTAL	12,466.66	
7. OKEMOS PUBLIC SCHOOLS	SUMMER TAX COLLECTION & DELINQ PERSONAL PROPERTY	594,146.07	12970
	2020 SUMMER TAX COLLECTION - OKEMOS PUBLIC SCHOOLS	509,770.85	12975
	TOTAL	1,103,916.92	
8. SUSANA DE-LOURDES CHAPA-VARGAS	SUMMER PROPERTY TAXES OVERPAYMENT @ 2826 COLONY	20.00	12976
9. UNISOURCE NATIONAL LENDER SERVICES	OVERPAYMENT OF SUMMER PROPERTY TAXES @ 540 JUNEBER	296.68	12977
10. WILLIAMSTON SCHOOLS	SUMMER TAX COLLECTION	16,171.12	12971
	2020 SUMMER TAX COLLECTION - WILLIAMSTON SCHOOLS	6,556.89	12978
	TOTAL	22,728.01	
TOTAL - ALL VENDORS		1,824,560.42	

Credit Card Report 8/13/2020-8/26/2020

Posting Date	Merchant Name	Amount	Name
2020/08/13	THE HOME DEPOT 2723	\$226.45	LAWRENCE BOBB
2020/08/13	THE HOME DEPOT 2723	\$245.43	ROBERT STACY
2020/08/13	ID CARDS INSTANTCARD	\$50.00	KRISTI SCHAEDING
2020/08/13	AMZN MKTP US*MM5H97LA1	\$249.00	STEPHEN GEBES
2020/08/13	WAL-MART #2866	\$36.94	DAN PALACIOS
2020/08/13	TOP HAT CRICKET FARM INC	\$30.78	CATHERINE ADAMS
2020/08/14	THE HOME DEPOT 2723	\$229.44	LAWRENCE BOBB
2020/08/14	THE HOME DEPOT #2723	\$139.29	ROBERT STACY
2020/08/14	THE HOME DEPOT #2723	\$101.27	ROBERT STACY
2020/08/14	THE HOME DEPOT #2723	\$43.85	RYAN CAMPBELL
2020/08/14	FORESIGHT GROUP INC	\$58.82	KRISTI SCHAEDING
2020/08/14	4IMPRINT	\$407.58	KRISTI SCHAEDING
2020/08/14	CYGNET ENTERPRISES INC	\$128.99	JANE GREENWAY
2020/08/14	THE HOME DEPOT #2723	(\$107.58)	DAN PALACIOS
2020/08/14	THE HOME DEPOT #2723	\$107.58	DAN PALACIOS
2020/08/14	THE HOME DEPOT #2723	\$101.49	DAN PALACIOS
2020/08/14	COURTYARD OKEMOS	\$106.00	KEN PLAGA
2020/08/14	AMZN MKTP US*MM44Q2NC1	\$13.98	MICHELLE PRINZ
2020/08/14	AMAZON.COM*MF6QL27Y2	\$510.30	MICHELLE PRINZ
2020/08/14	ZORO TOOLS INC	\$68.75	WILLIAM PRIESE
2020/08/17	THE HOME DEPOT #2723	\$8.70	LAWRENCE BOBB
2020/08/17	SIGNATURE FORD	\$195.11	JIM HANSEN
2020/08/17	D & G EQUIPMENT INC	\$15.00	JIM HANSEN
2020/08/17	THE HOME DEPOT #2723	\$12.97	NYAL NUNN
2020/08/17	ULINE *SHIP SUPPLIES	\$154.07	KYLE ROYSTON
2020/08/17	COVERT SCOUTING	\$32.99	BART CRANE
2020/08/17	MIDWEST POWER EQUIPMENT	\$103.94	KEITH HEWITT
2020/08/17	COSTCO WHSE#1277	\$2.99	MICHAEL DEVLIN
2020/08/17	FIRE HOSE DIRECT	\$190.32	WILLIAM PRIESE
2020/08/17	MEIJER # 025	\$21.84	CATHERINE ADAMS
2020/08/18	FACTORY EXPRESS	\$244.97	ROBIN FAUST
2020/08/18	MIDWEST POWER EQUIPMENT	(\$53.94)	KEITH HEWITT
2020/08/18	SP * PESTICIDE TRAININ	\$82.92	CATHERINE ADAMS
2020/08/19	MIDWEST POWER EQUIPMENT	\$67.35	LAWRENCE BOBB
2020/08/19	THE HOME DEPOT #2723	\$171.03	LAWRENCE BOBB
2020/08/19	HASLETT TRUE VALUE HARDW	\$5.97	TYLER KENNEL
2020/08/19	GARY AUSTIN ADVERTISING	\$694.00	KRISTI SCHAEDING
2020/08/19	OFFICEMAX/OFFICEDEPT#3379	\$74.98	TODD FRANK
2020/08/19	FIRE HOSE DIRECT	(\$10.77)	WILLIAM PRIESE
2020/08/19	SOLDANS FEEDS & PET S	\$10.74	CATHERINE ADAMS
2020/08/20	THE HOME DEPOT #2723	\$11.44	LAWRENCE BOBB
2020/08/20	ZOOM.US	\$309.90	STEPHEN GEBES
2020/08/20	TREETOPS LODGING	\$136.89	JOHN HECKAMAN
2020/08/20	PAYPAL *FORENSICCON	(\$200.00)	ANDREW MCCREADY
2020/08/20	MIDWEST POWER EQUIPMENT	\$101.94	KEITH HEWITT
2020/08/20	COMPLETE BATTERY SOURCE	\$52.12	MATT FOREMAN
2020/08/20	ULINE *SHIP SUPPLIES	\$103.59	WILLIAM PRIESE
2020/08/21	OFFICEMAX/OFFICEDEPT#3379	(\$23.99)	TODD FRANK
2020/08/21	MICHIGAN CAT LANSING	\$139.01	TODD FRANK
2020/08/21	IDU*INSIGHT DIRECT	\$111.34	STEPHEN GEBES
2020/08/21	THE HOME DEPOT #2723	(\$6.44)	ANDREW MCCREADY
2020/08/21	THE HOME DEPOT #2723	(\$5.94)	ANDREW MCCREADY

2020/08/21	THE HOME DEPOT #2723	\$5.94	ANDREW MCCREADY
2020/08/21	THE HOME DEPOT #2723	\$19.33	ANDREW MCCREADY
2020/08/21	THE HOME DEPOT #2723	\$6.44	ANDREW MCCREADY
2020/08/21	COURTYARD OKEMOS	\$50.00	KEN PLAGA
2020/08/21	WWW.KENNYPRODUCTS.COM	\$180.00	MICHAEL DEVLIN
2020/08/21	AMAZON.COM*MM5L74132 AMZN	\$108.38	CATHERINE ADAMS
2020/08/21	THE HOME DEPOT #2723	\$156.12	CATHERINE ADAMS
2020/08/21	AMZN MKTP US*MM7EP4NZ0	\$21.99	CATHERINE ADAMS
2020/08/24	THE HOME DEPOT #2723	\$110.08	LAWRENCE BOBB
2020/08/24	KIMBALL MIDWEST PAYEEZY	\$175.90	TODD FRANK
2020/08/24	MEIJER # 025	\$8.58	MICHAEL DEVLIN
2020/08/24	LANSINGSTATE JOURNAL	\$7.99	MICHELLE PRINZ
2020/08/24	AMZN MKTP US*MM9H69T30	\$142.66	CATHERINE ADAMS
2020/08/25	ADOBE ACROPRO SUBS	\$15.89	DENISE GREEN
2020/08/26	MIDWEST POWER EQUIPMENT	\$14.80	LAWRENCE BOBB
2020/08/26	THE HOME DEPOT #2723	\$45.99	ROBERT STACY
2020/08/26	FACTORY EXPRESS	\$173.81	ROBIN FAUST
2020/08/26	SE EQUIPMENT HOLT	\$241.33	TODD FRANK
2020/08/26	AMZN MKTP US*MM8N92DZ2	\$59.98	STEPHEN GEBES
2020/08/26	ADOBE ACROPRO SUBS	\$15.89	DEREK PERRY
2020/08/26	MICHIGAN ASSOC OF CHIEFS	\$115.00	KEN PLAGA
2020/08/26	SOLDANS FEEDS & PET S	\$43.72	CATHERINE ADAMS
2020/08/26	THE HOME DEPOT #2723	\$43.98	CATHERINE ADAMS

Total	\$7,267.20
-------	------------

ACH Transactions

Date	Payee	Amount	Purpose
8/14/2020	ICMA	\$ 34,599.16	Payroll Deductions 08/14/2020
8/14/2020	Nationwide	\$ 4,310.89	Payroll Deductions 08/14/2020
8/14/2020	Consumers	\$ 51,480.46	Utilities
8/14/2020	IRS	\$ 93,187.83	Payroll Taxex 08/14/2020
8/14/2020	Various Financial Institutions	\$ 260,519.04	Direct Deposit 08/14/2020
8/17/2020	MERS Purchase	\$ 289,909.80	Employee Retirement
8/17/2020	ELAN	\$ 16,431.70	Credit Card Payments
8/17/2020	MERS Purchase	\$ 142,656.34	Employee Retirement
8/19/2020	Blue Care Network	\$ 26,212.99	Employee Health Insurance
8/26/2020	Blue Care Network	\$ 12,697.75	Employee Health Insurance
Total ACH Payments		<u><u>\$ 932,005.96</u></u>	



9.D

TOWNSHIP BOARD MEETING

August 27, 2020

TREASURER'S REPORT

Collections

Distributions

Investments

**DELINQUENT PERSONAL PROPERTY TAX COLLECTION TOTALS FOR 2015,
2016, 2017, 2018 & 2019 TAX YEARS**

COLLECTED IN 2019	\$	33,431.86
COLLECTED IN 2020	\$	24,128.03
TOTAL REMAINING COLLECTIBLE (TO 08-26-2020)	\$	66,923.33

TOTAL 2020 TAX YEAR COLLECTIONS (TO 08-26-2020) \$ 11,732,858.05

2020 TAX YEAR DISTRIBUTION TOTALS (AS OF 08-13-2020)

STATE EDUCATION TAX	\$	2,128,575.41
HASLETT SCHOOLS	\$	511,590.20
OKEMOS SCHOOLS	\$	1,293,033.74
WILLIAMSTON SCHOOLS	\$	32,734.19
EAST LANSING SCHOOLS	\$	411,791.22
INGHAM INTERMEDIATE SCHOOL DISTRICT	\$	2,213,146.41
INGHAM COUNTY	\$	2,410,395.14
MERIDIAN TOWNSHIP ADMIN	\$	90,385.37
INGHAM CO LANDBANK-BROWNFIELD ELEVATION DDA	\$	17.41
TOTAL DISTRIBUTION:	\$	9,091,669.09

7/31/2020

CURRENT FIXED MATURITY INVESTMENTS

Maturity	Fund	Investment	Principal	Purc Date	Int. Rate
09/30/20	general fund	Horizon	1,000,000.00	09/30/19	1.94%
04/30/21	general fund	First Nat'l Bank of Amer	1,061,084.97	03/30/18	2.82%
09/23/21	general fund	Independent	1,022,413.86	09/23/19	1.95%
10/01/23	general fund	FNMA (MBS)	405,803.94	07/30/19	2.03%
04/01/25	general fund	FNMA (MBS)	2,090,872.60	08/12/19	2.85%
10/01/27	general fund	DDA Loan	124,500.00	08/05/10	3.00%
07/31/30	general fund	JP Morgan Chase (MBS)	90,000.00	07/31/20	1.20%
			<u>5,794,675.37</u>		
04/01/25	land preserve	FNMA (MBS)	149,348.04	08/12/19	2.85%
			<u>149,348.04</u>		
10/01/24	land pres res	FNMA (MBS)	892,000.00	07/30/19	2.47%
07/01/25	land pres res	FNMA (MBS)	486,814.48	09/09/19	2.60%
06/05/30	land pres res	JP Morgan Chase (MBS)	329,000.00	06/05/20	1.60%
09/01/31	land pres res	Federal Natl Mtg (MBS)	1,000,000.00	10/28/19	2.305%
			<u>2,707,814.48</u>		
07/02/21	twp imp rev	Commercial Bank	408,274.66	7/2/2019	2.05%
			<u>408,274.66</u>		
07/27/21	water	Horizon	2,000,000.00	07/27/19	2.15%
			<u>2,000,000.00</u>		
08/10/20	road imp	Independent	1,000,000.00	03/10/20	0.51%
10/10/20	road imp	Commercial Bank	1,000,851.09	03/13/20	0.35%
05/28/21	road imp	Citizens	1,000,327.78	05/29/20	0.20%
06/10/21	road imp	Independent	1,000,000.00	03/10/20	0.62%
09/11/21	road imp	PNC	1,001,011.34	03/11/20	0.30%
10/09/21	road imp	First Nat'l Bank of Amer	1,004,385.75	03/09/20	1.74%
07/06/22	road imp	MSUFCU	1,008,727.82	03/06/20	2.17%
08/06/22	road imp	MSUFCU	1,008,727.82	03/06/20	2.17%
09/06/22	road imp	MSUFCU	1,008,727.82	03/06/20	2.17%
10/06/22	road imp	MSUFCU	791,001.38	03/06/20	2.17%
			<u>9,823,760.80</u>		
Total Fixed Investments \$			20,883,873.35		

CURRENT NON-FIXED INVESTMENTS

7/31/2020

PURCH. DATE	FUND	INVESTMENT	PRINCIPAL	CURRENT RATE	INVESTMENT TYPE
08/01/02	GF	MBS	\$ -	0.00%	money market
05/12/08	GF	MI Class	\$ 6,846,177.18	0.31%	pooled funds
05/20/09	GF	MSU Fed. CU	\$ 5.00	0.00%	savings
05/28/09	GF	MSU Fed. CU	\$ 756,317.90	0.25%	money market
		Total	\$ 7,602,500.08		
08/01/02	LP	MBS	\$ -	0.00%	money market
04/16/03	LP	Flagstar	\$ 261,849.01	0.25%	savings
05/12/08	LP	MI Class	\$ 1,705,495.13	0.31%	pooled funds
		Total	\$ 1,967,344.14		
08/01/02	LP-R	MBS	\$ -	0.00%	money market
01/16/09	LP-R	Horizon	\$ 208,905.90	0.22%	money market
05/12/08	LP-R	MI Class	\$ -	0.00%	pooled funds
		Total	\$ 208,905.90		
08/01/02	PM	MBS	\$ -	0.00%	money market
09/30/08	PM	MI Class	\$ 605,178.82	0.31%	pooled funds
		Total	\$ 605,178.82		
08/01/02	SF	MBS	\$ -	0.00%	money market
		Total	\$ -		
12/01/09	PA	MBS	\$ -	0.00%	money market
		Total	\$ -		
02/08/13	TA	MI Class	\$ -	0.00%	pooled funds
		Total	\$ -		
08/01/02	WF	MBS	\$ -	0.00%	money market
05/22/09	WF	MI Class	\$ 513,359.98	0.31%	pooled funds
		Total	\$ 513,359.98		
03/09/17	BP	MI Class	\$ 424,143.56	0.31%	pooled funds
		Total	\$ 424,143.56		
03/09/17	RDS	MI Class	\$ 215,415.37	0.31%	pooled funds
		Total	\$ 215,415.37		
12/6/2019	RDIMP	MBS	\$ -	0.00%	money market
		Total	\$ -		
Total Non-Fixed Investment:			\$ 11,536,847.85		
Total Fixed and Non-Fixed Investments			\$ 32,420,721.20		

FIXED MATURITY INVESTMENT TRANSACTIONS FOR JULY 2020

7/2/2020	TIRF		
	Quarterly interest earned on Commercial Bank CD	\$	2,070.42
7/11/2020	ROAD DEBT IMPROVEMENT		
	Monthly interest earned on PNC CD	\$	246.77
7/27/2020	LAND PRESERVATION		
	Principal payment received on MBS agency fund	\$	223.34
7/27/2020	LAND PRESERVATION RESERVE		
	Principal payment received on MBS agency fund	\$	821.20
7/27/2020	GENERAL FUND		
	Principal payment received on MBS agency fund	\$	711.89
7/27/2020	GENERAL FUND		
	Principal payment received on MBS agency fund	\$	3,126.73
7/30/2020	ROAD DEBT IMPROVEMENT		
	Monthly interest received on 4 MSU CD's	\$	6,941.43
7/31/2020	ROAD DEBT IMPROVEMENT		
	Monthly interest received on Citizens CD	\$	172.22
7/31/2020	GENERAL FUND		
	Purchased CD with MBS	\$	90,000.00

NON-FIXED INVESTMENT TRANSACTIONS FOR JULY 2020

7/2/2020	GENERAL FUND		
	Ach'd funds from MBS money market to Horizon Checking	\$	9,575.62
7/2/2020	LAND PRESERVATION RESERVE		
	Ach'd funds from MBS money market to Horizon Checking	\$	6,639.68

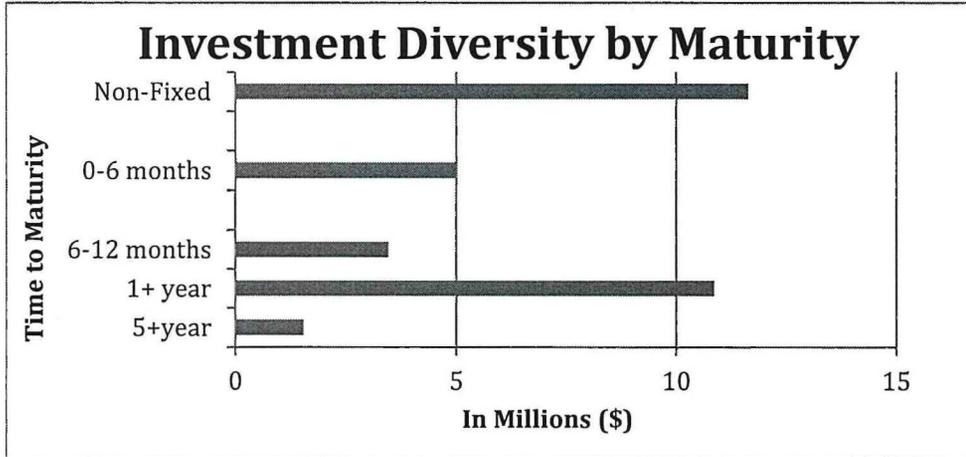
7/2/2020	LAND PRESERVATION		
	Ach'd funds from MBS money market to Horizon Checking	\$	574.24
7/31/2020	LAND PRESERVATION RESERVE		
	Ach'd funds from MBS money market to Horizon Checking	\$	5,604.25
7/31/2020	GENERAL FUND		
	Ach'd funds from MBS money market to Horizon Checking	\$	9,499.56
7/31/2020	LAND PRESERVATION		
	Ach'd funds from MBS money market to Horizon Checking	\$	578.57

Bank	Amount Fixed	Amount Non-Fixed	Total Investment
Horizon	\$ 3,000,000.00	\$ 208,905.90	\$ 3,208,905.90
Flagstar	\$ -	\$ 261,849.01	\$ 261,849.01
MBS	\$ 5,443,839.06	\$ -	\$ 5,443,839.06
MI Class	\$ -	\$ 10,309,770.04	\$ 10,309,770.04
Commercial Bank	\$ 1,409,125.75	\$ -	\$ 1,409,125.75
MSU Federal CU	\$ 3,817,184.84	\$ 756,322.90	\$ 4,573,507.74
DDA Loan	\$ 124,500.00	\$ -	\$ 124,500.00
First Nat'l Bank of Amer	\$ 2,065,470.72		\$ 2,065,470.72
Independent	\$ 3,022,413.86		\$ 3,022,413.86
PNC	\$ 1,001,011.34		\$ 1,001,011.34
Citizens	\$ 1,000,327.78		\$ 1,000,327.78
Totals	\$ 20,883,873.35	\$ 11,536,847.85	\$ 32,420,721.20
% of total investment	64.41520292	35.58479708	100

Each investment institution has received and signed the Meridian Charter Township Investment Policy and Agreement to Comply.

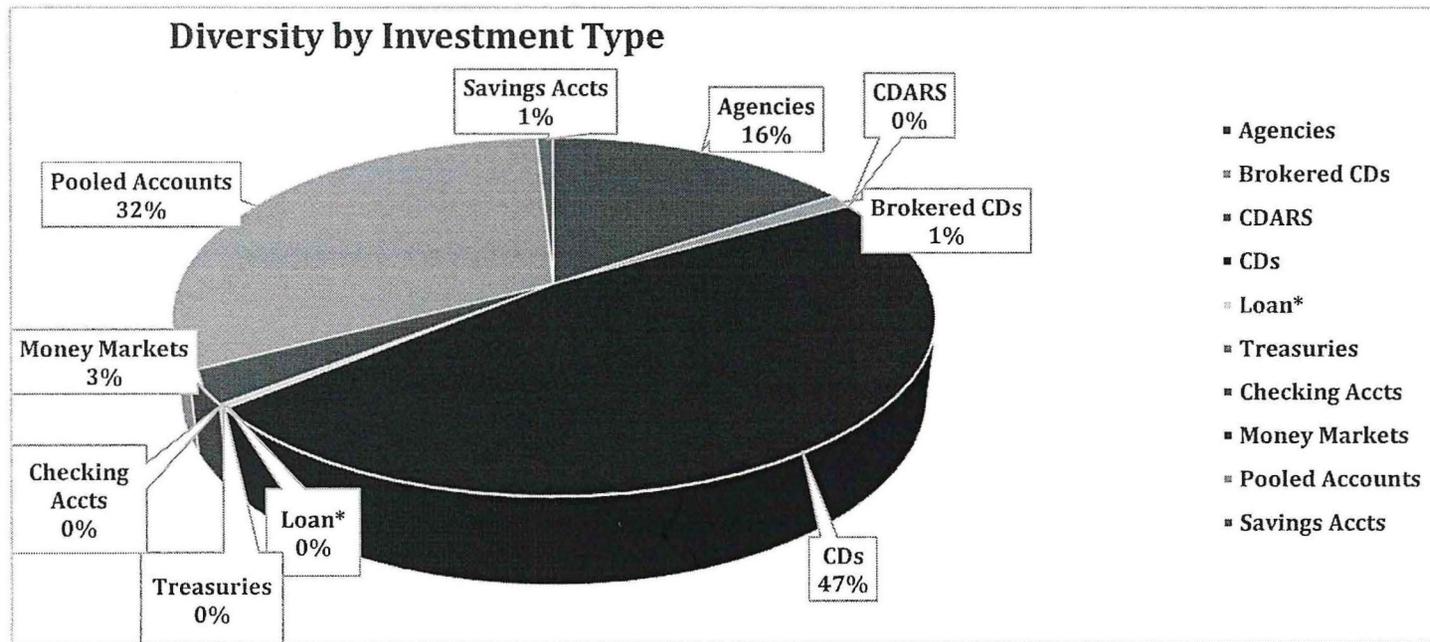
The signed agreement specifies that they are adhering to Public Act 20.

Investment Report Charter Township of Meridian



Current Investment Portfolio Size

Certificate of Deposits	\$ 15,315,534.29
CDARS	\$ -
Brokered CD's	\$ 419,000.00
Agencies	\$ 5,024,839.06
Loan*	\$ 124,500.00
Treasuries	\$ -
Money Markets	\$ 965,223.80
Checking Accts	\$ -
Savings Accts	\$ 261,854.01
Pooled Funds	\$ 10,309,770.04
	\$ 32,420,721.20



* Not an official investment but reflected for tracking purposes.



9. E.

To: Township Board Members

**From: Derek N. Perry, Deputy Township Manager
Director of Public Works & Engineering**

Robert MacKenzie, Public Works Superintendent

Date: August 25, 2020

Re: Disposal of Surplus Vehicles

The following Motor Pool vehicles have been declared surplus by the Department of Public Works. We are requesting authorization to sell the vehicles at public auction, internet auction, direct sale to another municipality or by sealed bid.

- Unit #103
2009 Ford Focus.
VIN# 1FAHP34N19W241295
91,345 miles
- Unit #100
2010 Ford Fusion
VIN# 3FAHPOHA4AR108429
163,085 miles

In addition, the Department of Information Technology has determined that 227 Cisco 7912, 7940, & 7960 model IP telephone handsets are obsolete and request authorization to sell them at public auction, internet auction, direct sale to another municipality or by sealed bid.

Proposed motion:

“Move to authorize the disposal of vehicle #103 (2009 Ford Focus), vehicle #100 (Ford Fusion), and 227 Cisco 7912, 7940, and 7960 model IP telephone handsets by public auction, internet auction, direct sale to another municipality or by sealed bid.”



12.A

To: Township Board

From: Mark Kieselbach, Director of Community Planning and Development
Peter Menser, Principal Planner

Date: August 27, 2020

Re: Rezoning #20030 (Planning Commission) 5937 Potter Street – Final Adoption

The Township Board at its meeting on August 18, 2020 voted to approve Rezoning #20030 for introduction. As directed by the Board the proposed ordinance was published in the form in which it was introduced.

Township Board Options

The Township Board may approve or deny the proposed rezoning from C-1 (Commercial) to RN (Mixed Residential). If the Board amends the proposal, the request may be referred back to the Planning Commission for a recommendation. A resolution to approve the requested rezoning for final adoption is provided.

- **Move to adopt the resolution approving Rezoning #20030 to rezone 0.10 acre located at 5937 Potter Street from C-1 (Commercial) to RN (Mixed Residential) for final adoption.**

Attachment

1. Resolution to approve.

G:\Community Planning & Development\Planning\REZONINGS (REZ)\2020\REZ 20030 (Planning Commission)\REZ 20030.tb3 final adoption.docx

RESOLUTION TO APPROVE

**Rezoning #20030 (Planning Commission)
5937 Potter Street
FINAL ADOPTION**

RESOLUTION

At a regular meeting of the Township Board of the Charter Township of Meridian, Ingham County, Michigan, held virtually via the Zoom web conferencing application, in said Township on the 1st day of September, 2020, at 6:00 p.m., Local Time.

PRESENT: _____

ABSENT: _____

The following resolution was offered by _____ and supported by _____.

WHEREAS, the Planning Commission initiated the rezoning of one 0.10 acre parcel addressed as 5937 Potter Street from C-1 (Commercial) to RN (Mixed Residential); and

WHEREAS, the Planning Commission held a public hearing at its regular meeting on June 8, 2020 and discussed the staff material forwarded under cover a memorandum dated March 13, 2020; and

WHEREAS, the Township Board discussed the rezoning at its meeting on August 6, 2020 and has reviewed the staff and Planning Commission material forwarded under a cover memorandum dated July 31, 2020; and

WHEREAS, the proposed rezoning to RN (Mixed Residential) is consistent with the 2017 Future Land Use Map designation of R3 Residential 1.25 – 3.5 dwelling units per acre; and

WHEREAS, the property proposed for rezoning is developed with a single family residence, which is a use allowed by right in the proposed RN zoning district; and

WHEREAS, the property proposed for rezoning is located adjacent to properties used for single family purposes to the east and south; and

WHEREAS, the current zoning of C-1 imposes nonconforming status on the existing single family house, requiring variances from the Zoning Board of Appeals to make improvements to the properties beyond general upkeep and limits the property owner from rebuilding if the structure is removed or destroyed; and

WHEREAS, the proposed rezoning to RN will allow the property owner to maintain the existing use of the property in conformance with the ordinance; and

WHEREAS, the Township Board introduced Rezoning #20030 for publication and subsequent adoption at its meeting on August 18, 2020.

Resolution to Approve - Final Adoption
Rezoning #20030 (Planning Commission)
Page 2

NOW THEREFORE, BE IT RESOLVED THE TOWNSHIP BOARD OF THE CHARTER TOWNSHIP OF MERIDIAN hereby **FINALLY ADOPTS** Ordinance No. 2020-09, entitled "Ordinance Amending the Zoning District Map of Meridian Township pursuant to Rezoning Petition #20030" from C-1 (Commercial) to RN (Mixed Residential).

BE IT FURTHER RESOLVED that the Clerk of the Charter Township of Meridian is directed to publish the Ordinance in the form in which it was adopted.

ADOPTED: YEAS: _____

NAYS: _____

STATE OF MICHIGAN)

) ss

COUNTY OF INGHAM)

I, the undersigned, the duly qualified and acting Clerk of the Charter Township of Meridian, Ingham County, Michigan, DO HEREBY CERTIFY that the foregoing is a true and a complete copy of a resolution adopted at a regular meeting of the Township Board on the 1st day of September, 2020.

Brett Dreyfus
Township Clerk

ORDINANCE NO. 2020-09
ORDINANCE AMENDING THE ZONING DISTRICT MAP
OF MERIDIAN TOWNSHIP
PURSUANT TO REZONING #20030

The Charter Township of Meridian ordains:

Section 1. Amending the Zoning District Map.

A. The Zoning District Map of Meridian Township, as adopted in Section 86-312 of the Code of the Charter Township of Meridian, Michigan, as previously amended, is hereby amended by changing the C-1 (Commercial) District symbol and indication as shown on the Zoning District Map, for 5937 Potter Street, the property legally described as:

S ½ OF LOT 5, BLOCK 3 VILLAGE OF NEMOKA

to that of RN (Mixed Residential).

Section 2. Validity and Severability. The provisions of this Ordinance are severable and the invalidity of any phrase, clause or part of this Ordinance shall not affect the validity or effectiveness of the remainder of the Ordinance.

Section 3. Repealer Clause. All ordinances or parts of ordinances in conflict therewith are hereby repealed only to the extent necessary to give this Ordinance full force and effect.

Section 4. Savings Clause. This Ordinance does not affect rights and duties matured, penalties that were incurred, and proceedings that were begun, before its effective date.

Section 5. Effective Date. This Ordinance shall be effective seven (7) days after its publication or upon such later date as may be required under Section 402 of the Michigan Zoning Enabling Act (MCL 125.3402) after filing of a notice of intent to file a petition for a referendum.

Ronald J. Styka, Township Supervisor

Brett Dreyfus, Township Clerk



12.B

To: Township Board

From: Mark Kieselbach, Director of Community Planning and Development
Peter Menser, Principal Planner

Date: August 27, 2020

Re: Rezoning #20040 (Michigan Baptist Convention) 4606 Hagadorn Road – Final Adoption

The Township Board at its meeting on August 18, 2020 voted to approve Rezoning #20040 for introduction. As directed by the Board the proposed ordinance was published in the form in which it was introduced.

Township Board Options

The Township Board may approve or deny the proposed rezoning from RR (Rural Residential) to PO (Professional and Office). If the Board amends the proposal, the request may be referred back to the Planning Commission for a recommendation. A resolution to approve the requested rezoning for final adoption is provided.

- **Move to adopt the resolution approving Rezoning #20040 to rezone 4.999 acres located at 4606 Hagadorn Road from RR (Rural Residential) to PO (Professional and Office) for final adoption.**

Attachment

1. Resolution to approve.

G:\Community Planning & Development\Planning\REZONINGS (REZ)\2020\REZ 20040 (Michigan Baptist Convention)\REZ 20040.tb3 final adoption.docx

RESOLUTION TO APPROVE

**Rezoning #20040 (Michigan Baptist Convention)
4606 Hagadorn Road
FINAL ADOPTION**

RESOLUTION

At a regular meeting of the Township Board of the Charter Township of Meridian, Ingham County, Michigan, held held virtually via the Zoom web conferencing application, in said Township on the 1st day of September, 2020, at 6:00 p.m., Local Time.

PRESENT: _____

ABSENT: _____

The following resolution was offered by _____ and supported by _____.

WHEREAS, Michigan Baptist Convention requested the rezoning of approximately 4.999 acres located at 4606 Hagadorn Road from RR (Rural Residential) to PO (Professional and Office); and

WHEREAS, the Planning Commission held a public hearing at its regular meeting on June 22, 2020 and discussed the staff material forwarded under cover a memorandum dated June 19, 2020; and

WHEREAS, the Township Board discussed the rezoning at its meeting on August 6, 2020 and has reviewed the staff and Planning Commission material forwarded under a cover memorandum dated July 31, 2020; and

WHEREAS, the proposed rezoning to PO (Professional and Office) is consistent with the 2017 Future Land Use Map designation of Business/Technology for the property; and

WHEREAS, the subject site meets or exceeds the minimum standards for lot area and lot width of the proposed PO (Professional and Office) zoning district; and

WHEREAS, the subject site is located adjacent to property zoned PO (Professional and Office) to the south; and

WHEREAS, public water and sanitary sewer serve the subject site;

WHEREAS, the Township Board introduced Rezoning #20040 for publication and subsequent adoption at its meeting on August 18, 2020.

Resolution to Approve - Final Adoption
Rezoning #20040 (Michigan Baptist Convention)
Page 2

NOW THEREFORE, BE IT RESOLVED THE TOWNSHIP BOARD OF THE CHARTER TOWNSHIP OF MERIDIAN hereby **FINALLY ADOPTS** Ordinance No. 2020-10, entitled "Ordinance Amending the Zoning District Map of Meridian Township pursuant to Rezoning Petition #20040" from RR (Rural Residential) to PO (Professional and Office)

BE IT FURTHER RESOLVED that the Clerk of the Charter Township of Meridian is directed to publish the Ordinance in the form in which it was adopted.

ADOPTED: YEAS: _____

NAYS: _____

STATE OF MICHIGAN)

) ss

COUNTY OF INGHAM)

I, the undersigned, the duly qualified and acting Clerk of the Charter Township of Meridian, Ingham County, Michigan, DO HEREBY CERTIFY that the foregoing is a true and a complete copy of a resolution adopted at a regular meeting of the Township Board on the 1st day of September, 2020.

Brett Dreyfus
Township Clerk

ORDINANCE NO. 2020-10
ORDINANCE AMENDING THE ZONING DISTRICT MAP
OF MERIDIAN TOWNSHIP
PURSUANT TO REZONING #20040

The Charter Township of Meridian ordains:

Section 1. Amending the Zoning District Map.

A. The Zoning District Map of Meridian Township, as adopted in Section 86-312 of the Code of the Charter Township of Meridian, Michigan, as previously amended, is hereby amended by changing the RR (Rural Residential) District symbol and indication as shown on the Zoning District Map, for 4606 Hagadorn Road, the property legally described as:

BEG 1020.2 FT N OF SW COR OF SEC - N 232.4 FT - E 937 FT - S 232.4 FT - W 937 FT TO BEG ON SW 1/4 OF SEC. 20, T4N R1W

to that of PO (Professional and Office).

Section 2. Validity and Severability. The provisions of this Ordinance are severable and the invalidity of any phrase, clause or part of this Ordinance shall not affect the validity or effectiveness of the remainder of the Ordinance.

Section 3. Repealer Clause. All ordinances or parts of ordinances in conflict therewith are hereby repealed only to the extent necessary to give this Ordinance full force and effect.

Section 4. Savings Clause. This Ordinance does not affect rights and duties matured, penalties that were incurred, and proceedings that were begun, before its effective date.

Section 5. Effective Date. This Ordinance shall be effective seven (7) days after its publication or upon such later date as may be required under Section 402 of the Michigan Zoning Enabling Act (MCL 125.3402) after filing of a notice of intent to file a petition for a referendum.

Ronald J. Styka, Township Supervisor

Brett Dreyfus, Township Clerk



12. C.

To: Township Board Members

**From: Derek N. Perry, Deputy Township Manager
Director of Public Works & Engineering**

LeRoy Harvey, Environmental Programs Coordinator

Date: August 25, 2020

Re: Pavement Sealant Ordinance- INTRODUCTION

The Meridian Environmental Commission has prepared a Pavement Sealant Ordinance for your review and approval. You may recall that this was one of the items discussed at the Township Board meeting held on June 16, 2020.

The ordinance presented for your approval is based upon similar documents from over a dozen other communities who have passed similar bans on coal tar and other sealants containing high levels of polycyclic aromatic hydrocarbons (PAHs).

The Community Development Department, in conjunction with our Township Attorney, have reviewed and organized the proposed ordinance so it is integrated into the Township Code of Ordinances within Chapter 38. This chapter pertains to licenses, permits and miscellaneous regulations.

In addition to the ordinance, we have developed an application form (attached) that will be used by commercial applicators to register with the Township. We are recommending that the registration fee be set at \$25.00, which is the current fee for our existing sewer contractor registration program.

Upon approval of the ordinance, we will work with our Communication Department to notify area contractors and the public of the new ordinance, its purpose and the program requirements.

Proposed motion:

“Move to approve resolution 2020-08 for the introduction of the amendment to Chapter 38 of the Code of Ordinances to add Article VIII, Pavement Sealant and to amend the Township Fee Schedule to include an Annual Registration Fee of \$25.”

RESOLUTION TO APPROVE

**Amendment to Chapter 38
Pavement Sealant
(Township Board)
INTRODUCTION**

RESOLUTION

At a regular meeting of the Township Board of the Charter Township of Meridian, Ingham County, Michigan, held at the Meridian Municipal Building, in said Township on the 1st day of September 2020.

PRESENT: _____

ABSENT: _____

The following resolution was offered by _____ and supported by _____.

WHEREAS, the Environmental Commission has recommended an amendment to the Code of Ordinances to regulate the use and application of coal tar sealant products and to require the registration of commercial and institutional applicators of coal tar sealant products within the Township; and

WHEREAS, it has been demonstrated a relationship between the use of coal tar-based sealers and certain health and environmental concerns including cancer risk to humans, acute and long term toxicity to wildlife and impaired water quality in streams; and

WHEREAS, the proposed amendment will help protect the health, safety and welfare of the citizens by preventing the use and sale of pavement sealant products containing > 0.1% Polycyclic Aromatic Hydrocarbons (PAHs) by weight including coal tar-based sealer within the Township; and

WHEREAS, the Township Board amends the Township Fee Schedule to include an Annual Registration Fee of \$25.00; and

WHEREAS, the Township Board deems it to be in the best interest of the citizens to regulate the use and application of coal tar sealant products and the registration of applicants.

NOW THEREFORE BE IT RESOLVED THE TOWNSHIP BOARD OF THE CHARTER TOWNSHIP OF MERIDIAN hereby **INTRODUCES FOR PUBLICATION AND SUBSEQUENT ADOPTION** Ordinance No. 2020-08, entitled “Ordinance Amending the Code

of the Charter Township of Meridian, Ingham County, Michigan, Chapter 38 by adding Article VIII, Pavement Sealant, Section 38-401 through Section 38-409.

ADOPTED: YEAS: _____

NAYS: _____

STATE OF MICHIGAN)
) ss
COUNTY OF INGHAM)

I, the undersigned, the duly qualified and acting Clerk of the Charter Township of Meridian, Ingham County, DO HEREBY CERTIFY that the foregoing is a true and complete copy of a resolution adopted at a regular meeting of the Township Board on the 1st day of September, 2020.

Brett Dryfus,
Township Clerk

ORDINANCE NO. 2020-08

**ORDINANCE AMENDING THE CODE OF THE CHARTER TOWNSHIP OF
MERIDIAN, INGHAM COUNTY, MICHIGAN BY ADDING ARTICLE VIII TO
CHAPTER 38 LICENSES, PERMITS, AND MISCELLANEOUS REGULATIONS**

THE CHARTER TOWNSHIP OF MERIDIAN ORDAINS:

Section 1. Amendment to the Code of Ordinances by adding Article VIII to Chapter 38.
The code of the Charter Township of Meridian, Ingham County, Michigan, is hereby amended to add Article VIII to Chapter 38 entitled Pavement Sealant to read as follows:

Article VIII – Pavement Sealant

Section 38-401 Title

This article shall be known as the “Pavement Sealant Ordinance” of the Charter Township of Meridian.

Section 38-402 Definitions

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section:

- (a) *Applicator*. Any person who applies pavement sealant product in the Township. An applicator includes but is not limited to homeowners, occupants of a rental property, property managers, and commercial applicators, or anyone who permits application of pavement sealant product to be applied upon property that is under that person’s ownership or control.
- (b) *Asphalt-Based Sealant*. A surface applied, petroleum-based pavement sealing product that typically contains less than 0.1% PAHs, by weight.
- (c) *Coal Tar*. A byproduct of the coking, liquefaction or gasification of coal.
- (d) *Coal Tar Sealant*. A surface applied pavement sealing product containing coal tar, coal tar pitch, coal tar pitch volatiles, RT-12, Refined Tar or any variation of those substances, including those assigned the Chemical Abstracts Service (CAS) numbers 65996-92-1, 65996-93-2, 65996-89-6, or 8007-45-2 or related substances containing more than 0.1% PAHs, by weight.

- (e) *Commercial Applicator*. Any applicator or other person who applies pavement sealant product in the Township in exchange for money, goods, services, or other valuable consideration.
- (f) *Commercial Seller*. Any person who sells or displays for sale any pavement sealant product in the Township.
- (g) *High PAH Content Sealant*. A surface-applied pavement sealing product containing steam cracked petroleum residues, steam-cracked asphalt, pyrolysis fuel oil, heavy fuel oil, ethylene tar, or any variation of those substances assigned the chemical abstracts service number 64742-90-1, 69013-21-4 or related substances containing more than 0.1% PAHs, by weight.
- (h) *Pavement Sealant*. Any surface-applied sealing product used to maintain pavement surfaces. This includes but is not limited to asphalt-based sealant products and coal tar sealant products.
- (i) *Person*. A natural person, agent, association, incorporated or unincorporated organization, company, partnership, corporation, limited liability company, any joint venture for a common purpose, or any other legal or commercial entity.
- (j) *Polycyclic Aromatic Hydrocarbons*. A group of organic chemicals formed during the incomplete burning of coal, oil, gas, or other organic substances. Present in coal tar and known to be harmful to humans, fish, and other aquatic life, commonly referred to in this article as “PAHs”.

Section 38-403 Authority

The Director of Public Works and Engineering or their designee, shall be responsible for the supervision and enforcement of this article and is authorized to issue appearance tickets or civil infractions to enforce this article.

Section 38-404 Findings

- (a) The Township Board of the Charter Township of Meridian finds that lakes, rivers, streams and other bodies of water are natural assets which enhance the environmental, recreational, cultural and economic resources and contribute to the general health and welfare of the community.

- (b) The Township Board of the Charter Township of Meridian finds that the use of sealers on driveways and parking lots is a common practice. Scientific studies on the use of driveway sealers have demonstrated a relationship between the use of coal tar based sealants and certain health and environmental concerns, including increased cancer risk to humans, acute and long-term toxicity to wildlife, and impaired water quality in streams.

Section 38-405 Purpose

- (a) The purpose of this ordinance is to prohibit the use and sale of pavement sealant products containing >0.1% Polycyclic Aromatic Hydrocarbons (PAHs) by weight, including coal tar-based sealant in the Charter Township of Meridian in order to protect, restore, and preserve the quality of its waters and protect the health of its residents.
- (b) It is the further purpose and intent of this Article to regulate the sale, use, and application of coal tar sealant products, to require the registration of commercial and institutional applicators of pavement sealant products within the Township, and to require the distribution of informational literature to consumers about the use and effect of coal tar sealant products.

Section 38-406 Coal Tar sealants prohibited; other prohibited activity

- (a) Coal tar, coal tar sealant product, or other high PAH content pavement sealant product shall not be used or applied by any person on any asphalt pavement, other pavement, or any other real property within the Township.
- (b) A person shall not sell coal tar sealant or other high PAH content sealant product that is formulated or marketed for application on any pavement or other surface.
- (c) A person shall not contract for, authorize, or allow coal tar sealant or other high PAH content sealant product to be applied on any pavement or other surface that is under their ownership or control.
- (d) A commercial applicator, residential or commercial developer, or other person shall not direct any employee, independent contractor, volunteer, or any other person to apply any coal tar sealant, or other high PAH content sealant product to any driveway, parking lot.

Section 38-407 Annual Registration and Reporting Requirements and Procedures for Commercial Applicators

- (a) Commercial applicators shall register annually with the Township Department of Public Works prior to applying pavement sealant within the Township in any calendar year.
- (b) Commercial applicators shall submit a complete registration application to the Director of Public Works and Engineering on a form furnished by the Township, along with the registration fee according to the schedule established by resolution of the Township Board. The fee shall be calculated to include the cost of registration application review and periodic field inspection.
- (c) The following information shall be included in a complete application for registration:
 - i. The legal name of the commercial applicator, any other names used, the business address, telephone number, email, and contact person for the applicant.
 - ii. The product name, type of use, and PAH content (including CAS numbers) of any pavement sealant the commercial applicator may sell or use.
 - iii. A statement signed by an owner or duly authorized representative of a commercial applicator indicating that the applicator will comply with the requirements of this article.
 - iv. All other information requested on the application or by the Director of Public Works and Engineering.
- (d) The Director of Public Works and Engineering may approve a registration if the application is complete, the applicator has complied with the previous year's reporting requirement, and the use of pavement sealant complies with this article.
- (e) Registration under this article shall be valid until expiration. Registration shall begin on January 1 and shall expire on December 31 of each calendar year.
- (f) The application for registration shall be approved or denied within 21 days by the Director of Public Works and Engineering.
- (g) A registered applicator shall notify the Director of Public Works and Engineering in writing of any change in the information in the application for registration within 7 days of any such change.

Section 38-408 Asphalt-Based Sealant Products

The provisions of this article shall only apply to coal tar, coal tar sealant products, or other high PAH content sealant products in the Township and shall not affect the use of asphalt-based sealant products which contain less than 0.1% PAHs, by weight.

Section 38-409 Penalty

A person who violates any provision of this article shall be responsible for a municipal civil infraction which upon a finding of responsibility thereof shall be punishable by a fine not exceeding \$500.00, in addition to any court fines or costs. Each day during which a violation continues shall be deemed a separate violation. The imposition of any civil fine shall not exempt a violator from compliance with the provisions of this article. The foregoing civil fines shall not prohibit the township from seeking injunctive relief against a violator or such other appropriate relief as may be provided by law.

Section 2. Validity and Severability. The provisions of this Ordinance are severable and the invalidity of any phrase, clause or part of this Ordinance shall not affect the validity or effectiveness of the remainder of the Ordinance.

Section 3. Repealer Clause. All ordinances or parts of ordinances in conflict therewith are hereby repealed only to the extent necessary to give this Ordinance full force and effect.

Section 4. Savings Clause. This Ordinance does not affect rights and duties matured, penalties that were incurred, and proceedings that were begun, before its effective date.

Section 5. Effective Date. This Ordinance shall become effective immediately upon its publication.

Ronald J. Styka, Township Supervisor

Brett Dreyfus, Township Clerk



PAVEMENT SEALANT COMMERCIAL APPLICATOR REGISTRATION APPLICATION

Company or Organization Name: _____

Address: _____

Phone: _____ E-Mail: _____

Applicant Name: _____

Address: _____

Phone: _____ E-Mail: _____

Type of sealant being provided by your company (include PAH content and CAS numbers):

By signing below, I hereby affirm that I will not, nor will any person acting under my license, apply products that contain coal tar, coal tar derivatives, or coal tar mixtures ("Coal Tar Products"), nor will I apply any sealant mixture with a PAH content of greater than .1% by weight to any public or private property within Meridian Township (The use of Coal Tar Products is strictly prohibited in the Charter Township of Meridian Ordinance Chapter 38, Article VIII, and doing so can result in a civil infraction).

Applicant's Signature

Date

Staff Review: Date Received: _____ Receipt # _____

Annual Fee: \$25.00 (through December 31 of the current year).

Approved Denied Reviewed by: _____

Expiration Date: December 31, _____

Reasons for Denial (if applicable): _____

Received identification? _____ (Y/N)

Credit to account #590-000.000-636.000
Original to Department of Public Works Administration

Initials _____ Date _____ Receipt _____ \$ _____



Photo by E. Riggs.

Runoff from freshly applied coal tar sealcoat caused death of fish and aquatic invertebrates weeks to months after application.

What to Avoid

Look at product label or request the Material Safety Data Sheet and avoid products labeled with any of these terms*:

CAS#65996-92-1, CAS#65996-93-2, CAS#65996-89-6, CAS#8007-45-2, Coal Tar, Coal Tar Pitch, Coal Tar Distillates, RT-12, CAS#64742-90-1, CAS#69013-21-4, Steam-cracked Petroleum Residues, Steam-cracked Asphalt, Pyrolysis oil, Heavy fuel oil (HFO)

*full list at hrwc.org/coaltar

Banning Toxic Sealcoats

Already, Minnesota, Washington, and the District of Columbia have statewide bans. Dozens of municipalities throughout the US have also banned the use of coal tar sealcoat. In 2015, Van Buren Township became the first to pass a comprehensive PAH ban in Michigan. Ask your legislators to do the same.

Hazardous levels of PAH's have been found in pond sediments in the Huron River watershed

Learn More

HRWC's coal tar webpage

hrwc.org/coaltar

United States Geological Survey

tx.usgs.gov/sealcoat.html

Coal Tar Free America

coaltarfreeamerica.blogspot.com

Select References

International Agency for Research on Cancer, 1987. Coal-tar Pitches. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Supplement 7, pp 174-175.

Mahler et al. 2015. Acute Toxicity of Runoff from Sealcoated Pavement to *Ceriodaphnia dubia* and *Pimephales promelas*. Environmental Science and Technology.

Mahler et al. 2012. Coal-Tar-Based Pavement Sealcoat and PAHs: Implications for the Environment, Human Health, and Stormwater Management. Environmental Science and Technology 46, 3039-3045

Van Metre et al, 2010. Contributions of PAHs from Coal Tar Pavement Sealcoat and Other Sources to 40 U.S. Lakes, Science of the Total Environment. Vol. 409, pg.334-344.



The Huron River Watershed Council protects and restores the river for healthy and vibrant communities.



Huron River Watershed Council

1100 N. Main Street, Suite 210 | Ann Arbor, MI 48104
Phone: 734-769-5123 | www.hrwc.org/coaltar

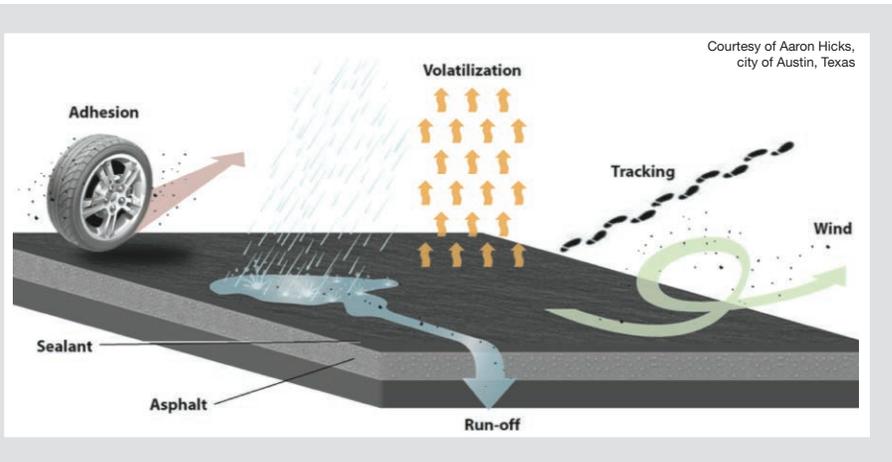


Risks of Coal Tar-Based Sealcoat

How to avoid common pavement sealants that pose threats to human health and the environment

What is Coal Tar Sealcoat?

Coal tar-based sealcoat is applied widely on driveways, parking lots, and even play-grounds as a maintenance practice. Coal tar sealcoats are hazardous. They are high in polycyclic aromatic hydrocarbons, or PAHs, many of which have been identified as toxic, mutagenic, teratogenic (cause birth defects) and/or carcinogenic (cause cancer). While there are many sources of PAHs, coal tar sealcoat contains significantly higher concentrations (~70,000 mg/kg) than other common sources such as gas emissions (370 mg/kg) and road dust (24 mg/kg).



Coal tar sealcoat can enter the environment when it is applied and as it wears down over time. Fumes and particles travel via air, water, and even on shoes and end up in our homes, rivers, and soils.

Available Alternatives

There are several alternatives that have significantly lower, or no, PAH content. Asphalt-based sealcoat has 1/1000th the PAH content of coal tar, and is readily available at similar cost. There are also safer acrylic and latex based options.

You can also choose not to seal your asphalt surfaces. University of Michigan found it more cost effective to repave occasionally than to sealcoat regularly. Be aware of alternative products that are still high in PAH content.

Human Health Risks of Coal Tar Sealcoat

For someone who spends their lifetime living adjacent to coal tar seal-coated pavement, the average excess cancer risk is estimated to be 38 times higher than those who don't. Much of the increased risk occurs during early childhood. Children play on and near these surfaces and

are, therefore, more likely to inhale or ingest PAHs associated with coal tar sealcoat. Particles also make it into homes on shoes and pets.

Effects of Coal Tar Sealcoat on Rivers and Lakes

In rivers and lakes, PAHs are found primarily in the sediments. Several recent studies have found that runoff from coal-tar-treated surfaces causes death, developmental issues,

and other adverse effects in fish and other aquatic organisms long after application.

Studies show 50-75% of all PAHs found in sediments within the Great Lakes region come from coal tar sealcoat.



An alternative sealcoat: If sealcoating cannot be avoided, asphalt-based sealcoats are an alternative with 1/1000th the PAH concentration of coal tar-based sealcoats.

What You Can Do

If You are a Homeowner or Manage Private Properties Such as Churches, Daycares, or Businesses:

- Do not seal your asphalt surfaces as often or at all.
- Hire contractors that will apply asphalt-based sealcoat rather than coal tar or other high-PAH sealcoats
- See back panel to learn how to identify coal tar and other sealcoat products with high PAH content
- Urge your neighbors to do the same

If You are a Concerned Resident or Local Official:

- Encourage local officials to stop the use of coal tar and other high PAH sealcoats on all public properties
- Advocate for a local ordinance banning coal tar and other high PAH sealcoats within your municipality



12.D

To: Township Board

From: Mark Kieselbach, Director of Community Planning and Development
Peter Menser, Principal Planner

Date: August 27, 2020

Re: Special Use Permit #20021 (Andev Group, LLC)

The Township Board last discussed Special Use Permit #20021 at its meeting on August 6, 2020. Since the last meeting the applicant has submitted an updated natural features study and a revised site plan. The revised site plan includes the removal of two parking spaces from the area south of the gazebo, located at the southeast corner of the site. The removal of the two parking spaces allowed that parking area to shift approximately 15 feet further to the west, making it approximately 105 feet from the western property lines of the nearest residences in the Indian Lakes Estates neighborhood. The zoning ordinance requires parking areas with a capacity of 50 or more vehicles that adjoins a residential zoning district to be at least 40 feet from a residential property line.

Township Board Options

The Township Board may approve or deny the proposed special use permit. If the Board amends the proposal, the request may be referred back to the Planning Commission for a recommendation. A resolution to approve the SUP with conditions is provided.

- **Move to adopt the resolution approving Special Use Permit #20021 to construct a building greater than 25,000 square feet in size on an undeveloped parcel identified as Parcel I.D. #20-401-005 located at the east end of Hannah Boulevard.**

Attachments

1. Resolution to approve.
2. Revised site plan prepared by Kebs, Inc. dated March 25, 2020 (revision date August 24, 2020).
3. Natural features study prepared by Marx Wetlands, LLC dated August 20, 2020.

G:\Community Planning & Development\Planning\SPECIAL USE PERMITS (SUP)\2020\SUP 20021 (Andev_blg. 25k)\SUP 20021.tb2.docx

RESOLUTION TO APPROVE

**Special Use Permit #20021
(Andev Group, LLC)**

RESOLUTION

At a regular meeting of the Township Board of the Charter Township of Meridian, Ingham County, Michigan, held virtually using the Zoom web conferencing application, in said Township on the 1st day of September, 2020, at 6:00 p.m., Local Time.

PRESENT: _____

ABSENT: _____

The following resolution was offered by _____ and supported by _____.

WHEREAS, Andev Group, LLC has submitted a request to construct building greater than 25,000 square feet in size on 10.73 acres of a 58 acre undeveloped parcel identified as Parcel I.D. #20-401-005 located at the east end of Hannah Boulevard; and

WHEREAS, the proposed project includes the construction of a 267,543 square foot senior living community building with 230 dwelling units and construction of a 1720 square foot garage; and

WHEREAS, a total of 268,263 square feet is proposed in the project; and

WHEREAS, a special use permit is required for constructing a building or group of buildings totaling more than 25,000 square feet in gross floor area; and

WHEREAS, the Planning Commission held a public hearing at its regular meeting on June 8, 2020 and voted to recommend approval at its meeting on June 22, 2020; and

WHEREAS, the Township Board discussed the proposal its regular meetings on August 6, 2020 and September 1, 2020, and has reviewed staff material forwarded under a cover memorandums dated July 29, 2020 and August 27, 2020; and

WHEREAS, the subject site is appropriately zoned RAA (Single Family-Low Density), which permits the construction of buildings greater than 25,000 square feet in size by special use permit; and

WHEREAS, the proposed project is consistent with the general standards for granting a special use permit found in Section 86-126 of the Code of Ordinances; and

WHEREAS, public utilities, roads, and other infrastructure systems are or will be adequate to support the proposed development; and

WHEREAS, municipal water and sanitary sewer is available to extend to serve the subject site.

**Resolution to Approve
SUP #20021 (Andev Group, LLC)
Page 2**

NOW THEREFORE, BE IT RESOLVED THE TOWNSHIP BOARD OF THE CHARTER TOWNSHIP OF MERIDIAN hereby approves Special Use Permit #20021, subject to the following conditions:

1. Approval is in accordance with the site plan prepared by Kebs, Inc. dated March 25, 2020 (revision date August 24, 2020) and received by the Township on August 24, 2020.
2. Approval of the special use permit is subject to all conditions placed on Special Use Permit #20011 by the Township.
3. Any future building additions will require an amendment to Special Use Permit #20021.

ADOPTED: YEAS: _____

NAYS: _____

STATE OF MICHIGAN)

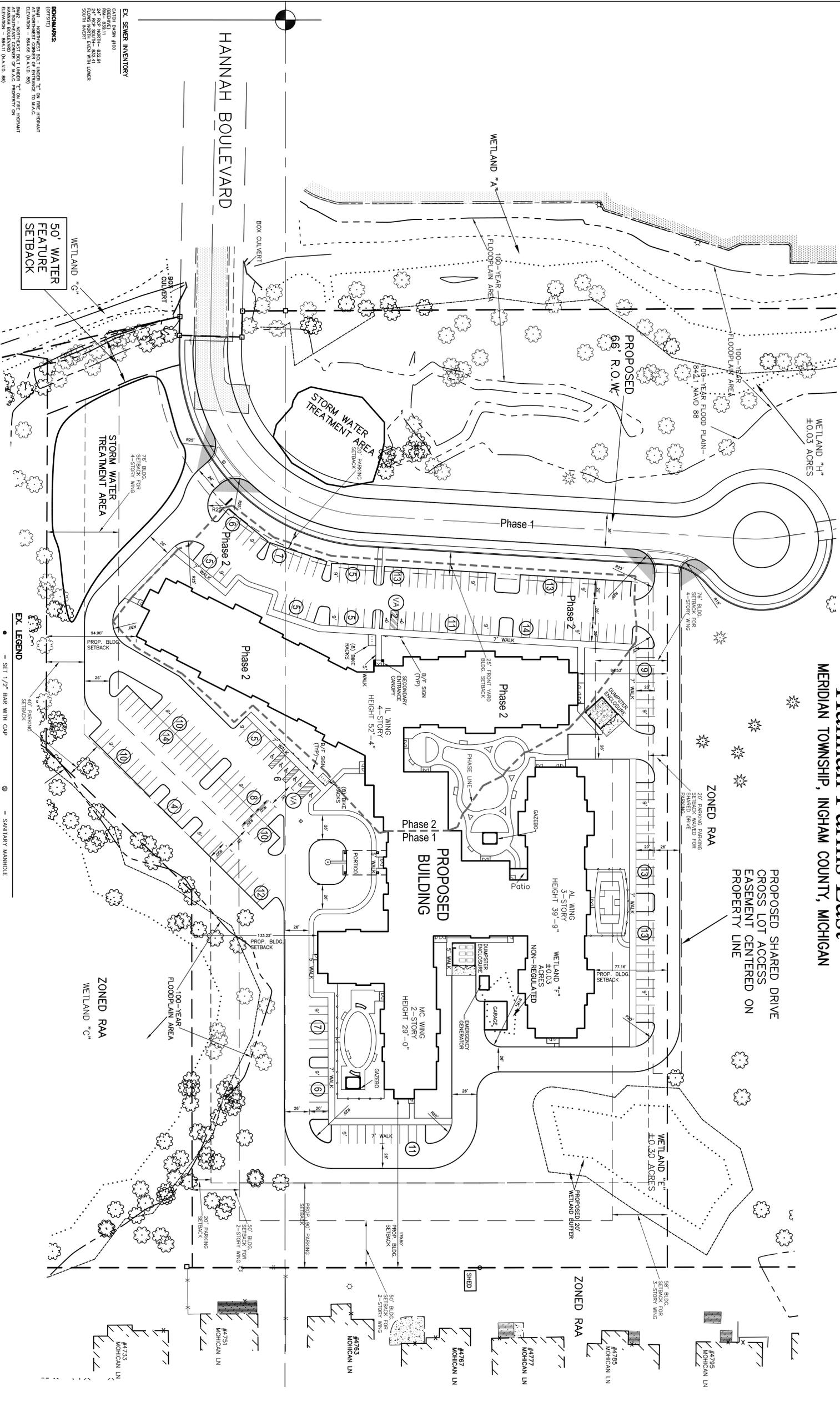
) ss

COUNTY OF INGHAM)

I, the undersigned, the duly qualified and acting Clerk of the Township Board of the Charter Township Meridian, Ingham County, Michigan, DO HEREBY CERTIFY that the foregoing is a true and a complete copy of a resolution adopted at a regular meeting of the Township Board on the 1st day of September, 2020.

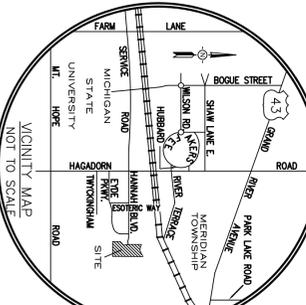
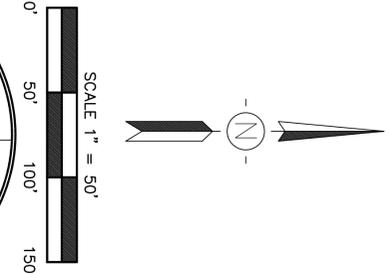
Brett Dreyfus
Township Clerk

PROP. PLAN FOR:
Hannah Farms East
 MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN



PROPOSED SHARED DRIVE
 CROSS LOT ACCESS
 EASEMENT CENTERED ON
 PROPERTY LINE

ZONED RAA
 20' PARKING SETBACK FOR
 4-STORY WING
 20' SETBACK FOR
 3-STORY WING



PROPOSED UNIT BREAKDOWN

Independent Living:
 (48) 1-bed apartments
 (39) 1-bed plus den apartments
 (6) Studio apartments
 Total 121 IL apartments

Assisted Living:
 (30) 1-bed apartments
 (24) 1-bed plus den apartments
 (4) 2-bed apartments
 (9) Studio apartments
 Total 67 AL apartments

Memory care:
 (40) Memory care studio units
 (2) 2-bed memory care units
 Total 42 units

EX. SEWER INVENTORY

CATCH BASIN #100
 REVISION #11
 24' RCP NORTH - 832.81
 24' RCP SOUTH - 832.81
 FLOORS NORTH EVEN WITH LOWERS
 SOUTH NORTH

BENCHMARKS

BM 1 - NORTHWEST CORNER OF ENTRANCE TO U.S.C.
 ELEVATION - 844.68 (N.A.S.D. 88)
 BM 2 - NORTHEAST BLDG. CORNER TO ON RISE ASPHALT
 HANNAH BOULEVARD
 ELEVATION - 844.11 (N.A.S.D. 88)

NOTE: WATER SHALL HAVE 10' HORIZONTAL
 SEPARATION & 6" VERTICAL SEPARATION FROM
 ALL SEWERS.

LEGEND

--- EXT. CONTOURS
 --- EXT. WATER MAIN
 --- EXT. SANITARY SEWER
 --- EXT. STORM SEWER
 --- EXT. ELEVATIONS
 --- PROPOSED WATER MAIN
 --- PROPOSED SANITARY SEWER
 --- PROPOSED STORM SEWER
 --- PROPOSED GAS
 --- PROPOSED UTILITY EASEMENT
 --- CENTER LINE OF ROAD
 --- ROAD RIGHT OF WAY
 --- FIRE HYDRANT
 --- WATER VALVE
 --- THRUST BLOCK
 --- PROPOSED TOP OF CURB ELEV.

EX. LEGEND

--- SET 1/2" BAR WITH CAP
 --- FOUND MONUMENT UNLESS NOTED
 --- DISTANCE NOT TO SCALE
 --- ASPHALT
 --- CONCRETE
 --- GRAVEL
 --- EXISTING SPOT ELEVATION
 --- EXISTING CONTOUR ELEVATION
 --- GAS LINE
 --- UNDERGROUND TELEPHONE
 --- UNDERGROUND ELECTRIC
 --- OVERHEAD WIRES
 --- WETLAND BOUNDARY
 --- EDGE OF WOODS
 --- DECIDUOUS TREE
 --- CONIFEROUS TREE
 --- BUSH

--- SANITARY MANHOLE
 --- DRAINAGE MANHOLE
 --- ELECTRIC MANHOLE
 --- TELEPHONE MANHOLE
 --- CATCH BASIN
 --- SANITARY CLEANOUT
 --- VALVE
 --- FIRE HYDRANT
 --- LIGHT POLE
 --- GUY POLE
 --- UTILITY POEDESTAL
 --- TRANSFORMER
 --- ELECTRIC METER
 --- GAS METER
 --- WATER METER
 --- SOIL BORING
 --- SINK
 --- POST

--- DENOTES 20' PARKING SETBACK
 --- DENOTES 65' BLDG. SETBACK
 --- DENOTES 90' BLDG. SETBACK

① DENOTES PROPOSED NUMBER OF 9'x20' PARKING SPACES
 VA DENOTES PROPOSED VAN ACCESSIBLE SPACES
 0 DENOTES PROPOSED NUMBER OF B/F SPACES

STATE OF MICHIGAN
 LICENSED PROFESSIONAL ENGINEER
 JEFFREY W. KYTES
 ENGINEER
 NO. 46796

KEBS, INC.
 216 HASLETT ROAD, HASLETT, MI 48840
 PH. 517-339-1014 FAX. 517-339-8047

Meridian Office
 PH. 269-781-9890

Hannah Farms East
 DIMENSION PLAN

DESIGNER: JMK
 CHECKED: MKR
 DATE: 3-25-19

APPROVED BY: JMK
 SHEET 2 OF 6
 JOB #: 96034

REVISIONS:
 2-11-20 SUP
 03-02-20 SUP
 08-24-20 SUP

SCALE: 1" = 50'
 DATE: 3-25-19
 AUTHORIZED BY: Andrew Group, LLC

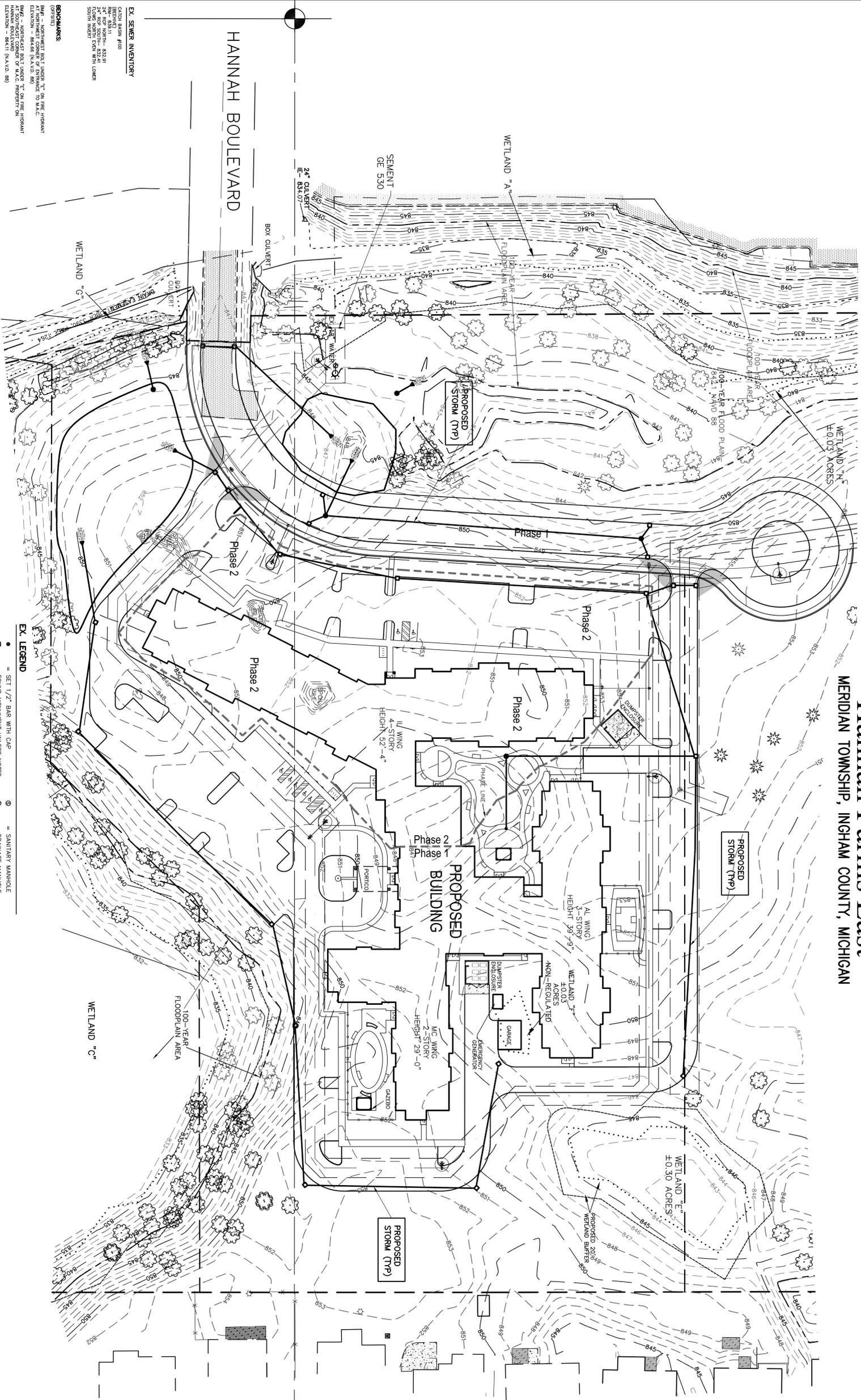


2 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
800-462-7171
(TOLL-FREE)

SUP PLAN FOR:

Hannah Farms East

MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN



EX. SEWER INVENTORY

CATCH BASIN #100
 24" DIAMETER
 24" TOP NORTH - 832.81
 24" TOP SOUTH - 832.81
 FLOWS NORTH EVEN WITH LOWERS
 SOUTH NORTH

BENCHMARKS

BM1 - NORTH- 844.68 (N.A.D. 83)
 BM2 - NORTH-EAST BLDG. CORNER TO ON R.R. ASPHALT
 HANNAH BOULEVARD
 ELEVATION - 844.11 (N.A.D. 83)

LEGEND

EXT. CONTOURS
 EXT. WATER MAIN
 EXT. SANITARY SEWER
 EXT. STORM SEWER
 EXT. ELEVATIONS
 PROPOSED WATER MAIN
 PROPOSED SANITARY SEWER
 PROPOSED STORM SEWER
 PROPOSED STORM SEWER
 MANHOLE (NEW)
 PROPOSED C/S
 UTILITY EMBLEMMENT
 CENTER LINE OF ROAD
 ROAD RIGHT OF WAY
 FIRE HYDRANT
 WATER VALVE
 THRUST BLOCK
 PROPOSED TOP OF CURB ELEV.



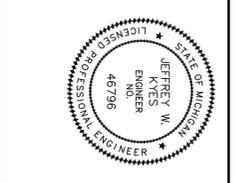
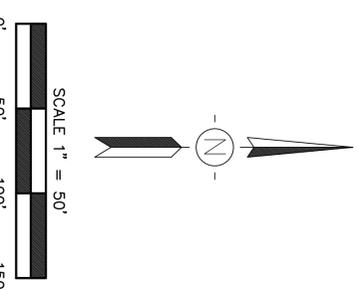
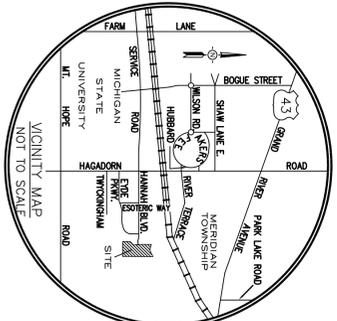
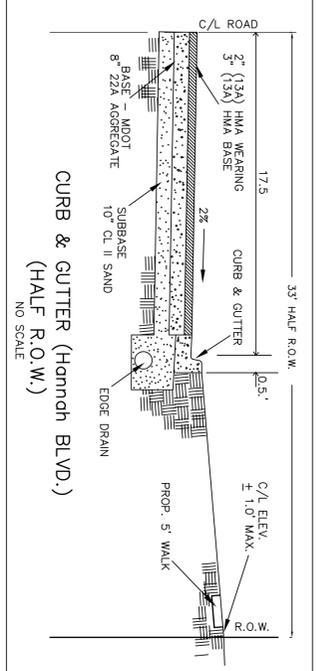
EX. LEGEND

SET 1/2" BAR WITH CAP
 FOUND MONUMENT UNLESS NOTED
 DISTANCE NOT TO SCALE

ASPHALT
 CONCRETE
 EXISTING SPOT ELEVATION
 EXISTING CONTOUR ELEVATION

GAS LINE
 UNDERGROUND TELEPHONE
 UNDERGROUND ELECTRIC
 OVERHEAD WIRE
 WETLAND BOUNDARY
 EDGE OF WOODS
 DECIDUOUS TREE
 CONIFEROUS TREE
 BUSH

SANITARY MANHOLE
 DRAINAGE MANHOLE
 ELECTRIC MANHOLE
 TELEPHONE MANHOLE
 CATCH BASIN
 SANITARY CLEANOUT
 FIRE HYDRANT
 VALVE
 UTILITY POLE
 LIGHT POLE
 GUY POLE
 UTILITY POLE/STAL
 TRANSFORMER
 ELECTRIC METER
 GAS METER
 WATER METER
 SOIL BORING
 SIGN
 POST



REVISIONS	08-24-20 SUP	2-11-20 SUP	03-02-20 SUP
<p>Hannah Farms East STORM, GRADING, AND STORM WATER MANAGEMENT PLAN SCALE: 1" = 50' DATE: 3-25-19 AUTHORIZED BY: Andrew Group, LLC</p>			
DESIGNER	APPROVED BY:	SHEET	JOB #
JMK	JMK	3 OF 6	96034

KEBS, INC.
 216 HASLETT ROAD, HASLETT, MI 48840
 PH. 517-339-1014 FAX. 517-339-8047

KEBS ENGINEERING
 BRYAN LAND SURVEYS

Project Office
 269-781-9800

Survey#98986TOPJEFF

E-96034

BOUNDARY & TOPOGRAPHIC SURVEY

"HANNAH FARMS EAST- NORTH PORTION"

EXISTING SURVEY & TREE REMOVAL PLAN NORTH

FOR: EYDE COMPANY

- LEGEND**
- = SET 1/2" BAR WITH CAP
 - = FOUND IRON AS NOTED
 - = DEED LINE
 - = DISTANCE NOT TO SCALE
 - = FENCE
 - = ASPHALT
 - = CONCRETE
 - = DECK
 - = EXISTING SPOT ELEVATION
 - = EXISTING CONTOUR ELEVATION
 - = SANITARY SEWER
 - = STORM SEWER
 - = WATER LINE
 - = GAS LINE
 - = UNDERGROUND TELEPHONE
 - = UNDERGROUND TELEVISION
 - = UNDERGROUND ELECTRIC
 - = OVERHEAD WIRES
 - ⊙ = DECIDUOUS TREE
 - ⊙ = CONIFEROUS TREE
 - ⊙ = SANITARY MANHOLE
 - ⊙ = DRAINAGE MANHOLE
 - ⊙ = ELECTRIC MANHOLE
 - ⊙ = TELEPHONE MANHOLE
 - ⊙ = CATCHBASIN
 - ⊙ = SANITARY CLEANOUT
 - ⊙ = FIRE HYDRANT
 - ⊙ = VALVE
 - ⊙ = UTILITY POLE
 - ⊙ = LIGHT POLE
 - ⊙ = GUY POLE
 - ⊙ = GUY WIRE
 - ⊙ = UTILITY PEDESTAL
 - ⊙ = TRANSFORMER
 - ⊙ = ELECTRIC METER
 - ⊙ = GAS METER
 - ⊙ = WATER METER
 - ⊙ = SOIL BORING
 - ⊙ = SIGN
 - ⊙ = POST
 - = WETLAND BOUNDARY
 - ⊙ = TREE IDENTIFICATION NUMBER

SEWER INVENTORY

CATCH BASIN #100
(BEEHIVE)
RIM- 839.11
24" RCP NORTH- 832.91
24" RCP SOUTH- 832.41
FLOWS NORTH EVEN WITH LOWER
SOUTH INVERT

BENCHMARKS:

BENCHMARK #1 ELEVATION: 864.68 (N.A.V.D. 88)
NORTHWEST BOLT UNDER "E" ON FIRE HYDRANT AT NORTHWEST
CORNER OF ENTRANCE TO M.A.C. (OFF-SITE)

BENCHMARK #2 ELEVATION: 864.09 (N.A.V.D. 88)
NORTHEAST BOLT UNDER "E" ON FIRE HYDRANT AT
SOUTHEAST CORNER OF M.A.C. PROPERTY ON HANNAH
BOULEVARD (OFF-SITE)

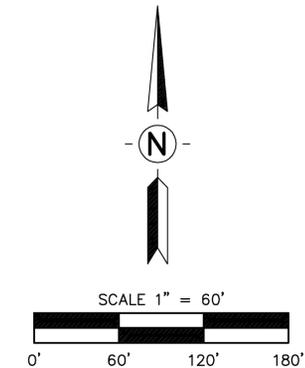
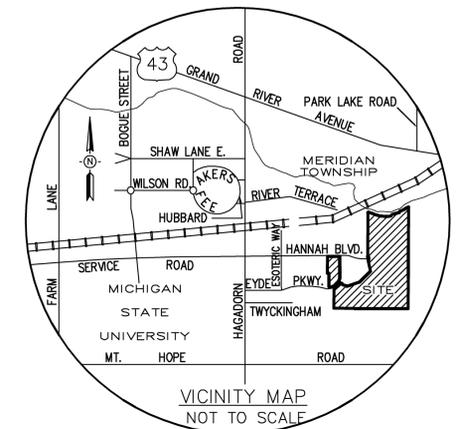
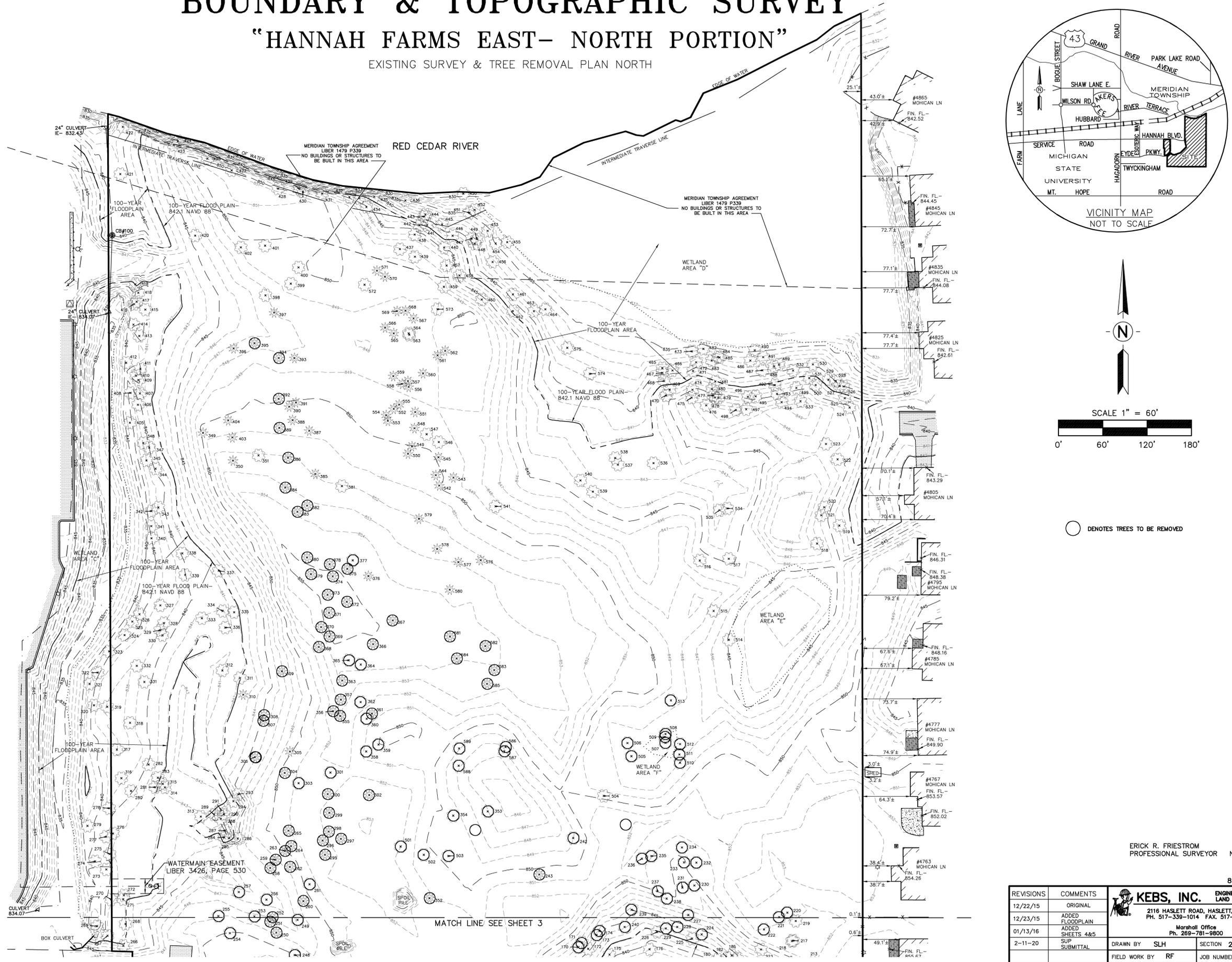
BENCHMARK #3 ELEVATION: 864.41 (N.A.V.D. 88)
BIG ARM OF FIRE HYDRANT ON THE WEST SIDE OF EYDE
PARKWAY, FIRST HYDRANT SOUTH OF THE INTERSECTION OF EYDE
PARKWAY AND HANNAH BOULEVARD. (SEE SHEET 4)

BENCHMARK #4 ELEVATION: 863.87 (N.A.V.D. 88)
BIG ARM OF FIRE HYDRANT AT THE NORTHEAST CORNER OF THE
LANSING COMMUNITY COLLEGE PARKING LOT ON THE WEST SIDE
OF THE SOUTHWEST PARCEL. (SEE SHEET 5)

BENCHMARK #5 ELEVATION: 853.12 (N.A.V.D. 88)
SOUTHWEST FLANGE BOLT OF FIRE HYDRANT ON THE SOUTH SIDE
OF HANNAH BOULEVARD, FIRST HYDRANT EAST OF THE
INTERSECTION OF EYDE PARKWAY AND HANNAH BOULEVARD. (SEE
SHEET 4)

BENCHMARK #6 ELEVATION: 846.60 (N.A.V.D. 88)
CHISELED "X" ON SOUTHWEST CORNER OF THE HEADWALL ON THE
SOUTH SIDE OF HANNAH BOULEVARD ON THE WEST SIDE OF THE
EASTERN PARCEL. (SEE SHEET 3)

BENCHMARK #7 ELEVATION: 865.46 (N.A.V.D. 88)
NORTHEAST FLANGE BOLT UNDER "W" IN EJM ON FIRE HYDRANT
AT THE NORTHEAST CORNER OF PARKING LOT FOR BUILDING
#2852. (SEE SHEET 4)



MATCH LINE SEE SHEET 3

ERICK R. FRIESTROM DATE
PROFESSIONAL SURVEYOR NO. 53497

REVISIONS	COMMENTS	KEBS, INC. ENGINEERING AND LAND SURVEYING	
12/22/15	ORIGINAL	2116 HASLETT ROAD, HASLETT, MI 48840 PH. 517-339-1014 FAX. 517-339-8047 Marshall Office Ph. 269-781-9800	
12/23/15	ADDED FLOODPLAIN		
01/13/16	ADDED SHEETS 4&5		
2-11-20	SUP SUBMITTAL		
		DRAWN BY SLH	SECTION 20, T4N, R1W
		FIELD WORK BY RF	JOB NUMBER: 96034
		SHEET 4 OF 6	

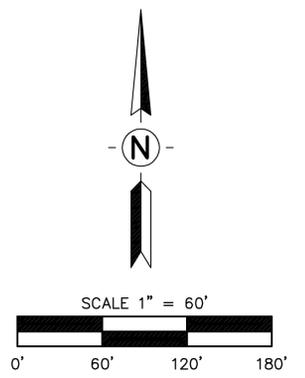
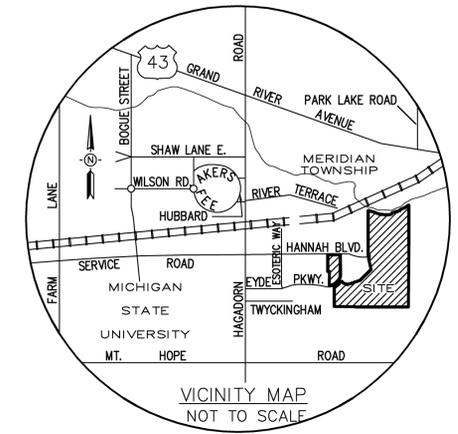
I:\96034\96034\96034-EX-TREE REMOVAL.dwg, 2/11/2020 05:45:45 AM

BOUNDARY & TOPOGRAPHIC SURVEY

"HANNAH FARMS EAST- SOUTH PORTION"

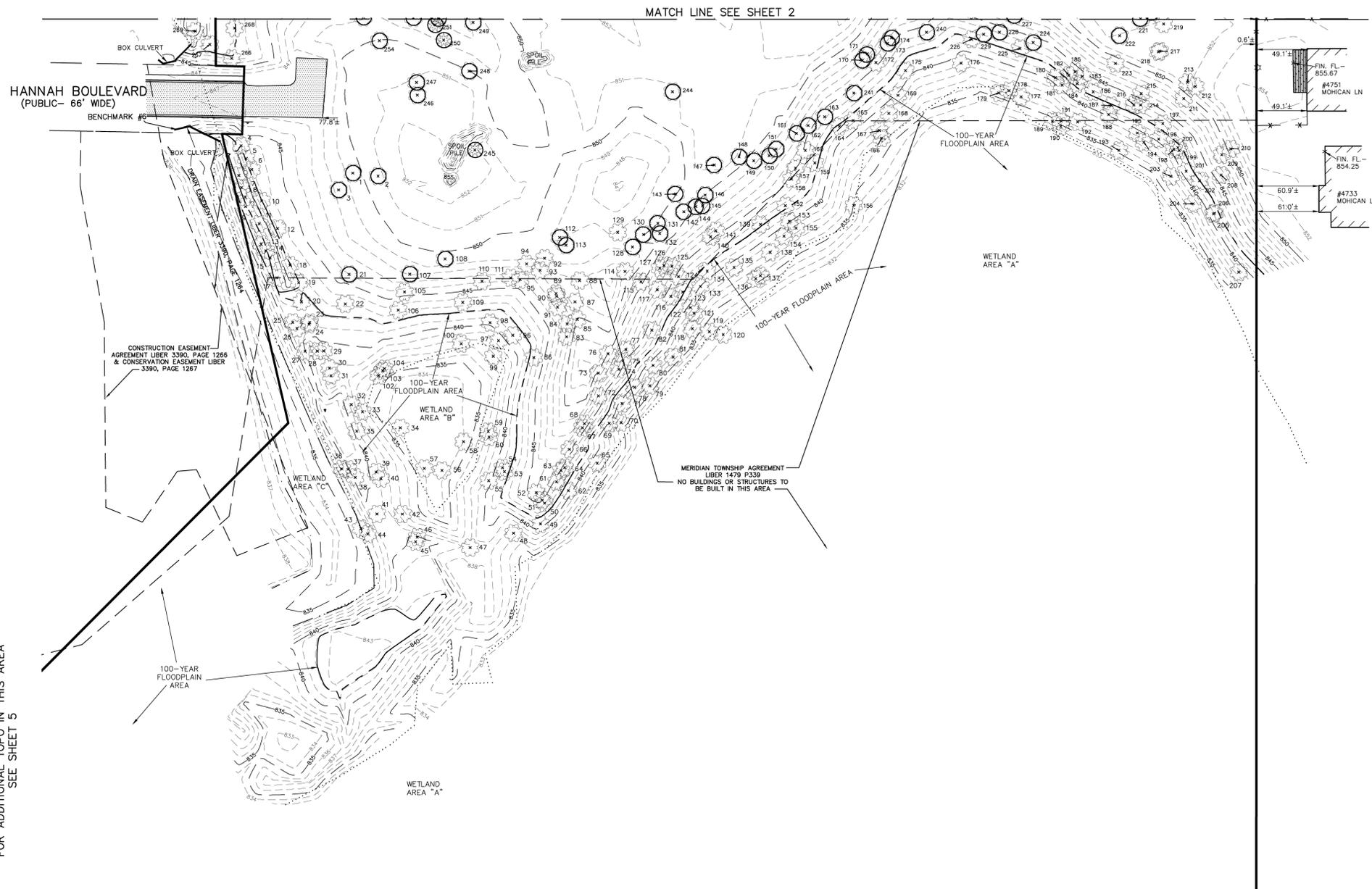
EXISTING SURVEY & TREE REMOVAL PLAN SOUTH

FOR: EYDE COMPANY



- LEGEND**
- = SET 1/2" BAR WITH CAP
 - = FOUND IRON AS NOTED
 - = DEED LINE
 - = DISTANCE NOT TO SCALE
 - = FENCE
 - = ASPHALT
 - = CONCRETE
 - = DECK
 - = EXISTING SPOT ELEVATION
 - = EXISTING CONTOUR ELEVATION
 - = SANITARY SEWER
 - = STORM SEWER
 - = WATER LINE
 - = GAS LINE
 - = UNDERGROUND TELEPHONE
 - = UNDERGROUND TELEVISION
 - = UNDERGROUND ELECTRIC
 - = OVERHEAD WIRES
 - = DECIDUOUS TREE
 - = CONIFEROUS TREE
 - = SANITARY MANHOLE
 - = DRAINAGE MANHOLE
 - = ELECTRIC MANHOLE
 - = TELEPHONE MANHOLE
 - = CATCHBASIN
 - = SANITARY CLEANOUT
 - = FIRE HYDRANT
 - = VALVE
 - = UTILITY POLE
 - = LIGHT POLE
 - = GUY POLE
 - = GUY WIRE
 - = UTILITY PEDESTAL
 - = TRANSFORMER
 - = ELECTRIC METER
 - = GAS METER
 - = WATER METER
 - = SOIL BORING
 - = SIGN
 - = POST
 - = WETLAND BOUNDARY
 - = TREE IDENTIFICATION NUMBER

FOR ADDITIONAL TOPO IN THIS AREA
SEE SHEET 5



○ DENOTES TREES TO BE REMOVED

BENCHMARKS:

- BENCHMARK #1** ELEVATION: 864.68 (N.A.V.D. 88)
NORTHWEST BOLT UNDER "E" ON FIRE HYDRANT AT NORTHWEST CORNER OF ENTRANCE TO M.A.C. (OFF-SITE)
- BENCHMARK #2** ELEVATION: 864.09 (N.A.V.D. 88)
NORTHEAST BOLT UNDER "E" ON FIRE HYDRANT AT SOUTHEAST CORNER OF M.A.C. PROPERTY ON HANNAH BOULEVARD (OFF-SITE)
- BENCHMARK #3** ELEVATION: 864.41 (N.A.V.D. 88)
BIG ARM OF FIRE HYDRANT ON THE WEST SIDE OF EYDE PARKWAY, FIRST HYDRANT SOUTH OF THE INTERSECTION OF EYDE PARKWAY AND HANNAH BOULEVARD. (SEE SHEET 4)
- BENCHMARK #4** ELEVATION: 863.87 (N.A.V.D. 88)
BIG ARM OF FIRE HYDRANT AT THE NORTHEAST CORNER OF THE LANSING COMMUNITY COLLEGE PARKING LOT ON THE WEST SIDE OF THE SOUTHWEST PARCEL. (SEE SHEET 5)
- BENCHMARK #5** ELEVATION: 853.12 (N.A.V.D. 88)
SOUTHWEST FLANGE BOLT OF FIRE HYDRANT ON THE SOUTH SIDE OF HANNAH BOULEVARD, FIRST HYDRANT EAST OF THE INTERSECTION OF EYDE PARKWAY AND HANNAH BOULEVARD. (SEE SHEET 4)
- BENCHMARK #6** ELEVATION: 846.60 (N.A.V.D. 88)
CHISELED "X" ON SOUTHWEST CORNER OF THE HEADWALL ON THE SOUTH SIDE OF HANNAH BOULEVARD ON THE WEST SIDE OF THE EASTERN PARCEL. (SEE SHEET 3)
- BENCHMARK #7** ELEVATION: 865.46 (N.A.V.D. 88)
NORTHEAST FLANGE BOLT UNDER "W" IN EJW" ON FIRE HYDRANT AT THE NORTHEAST CORNER OF PARKING LOT FOR BUILDING #2852. (SEE SHEET 4)

REVISIONS	COMMENTS	KEBS, INC. ENGINEERING AND LAND SURVEYING	
12/22/15	ORIGINAL	2116 HASLETT ROAD, HASLETT, MI 48840 PH. 517-339-1014 FAX. 517-339-8047	
12/23/15	ADDED FLOODPLAIN	Marshall Office Ph. 269-781-9800	
01/13/16	ADDED SHEETS 4&5	DRAWN BY SLH	SECTION 20, T4N, R1W
2-11-20	SUP SUBMITTAL	FIELD WORK BY RF	JOB NUMBER: 96034
		SHEET 5 OF 6	

ERICK R. FRIESTROM DATE
PROFESSIONAL SURVEYOR NO. 53497

89986.TOP/BND

I:\96\96034\96034.EP\96034.EP.TREE.REMOVAL.dwg, 2/11/2020 05:59:19 AM

N00
NORTH-SO

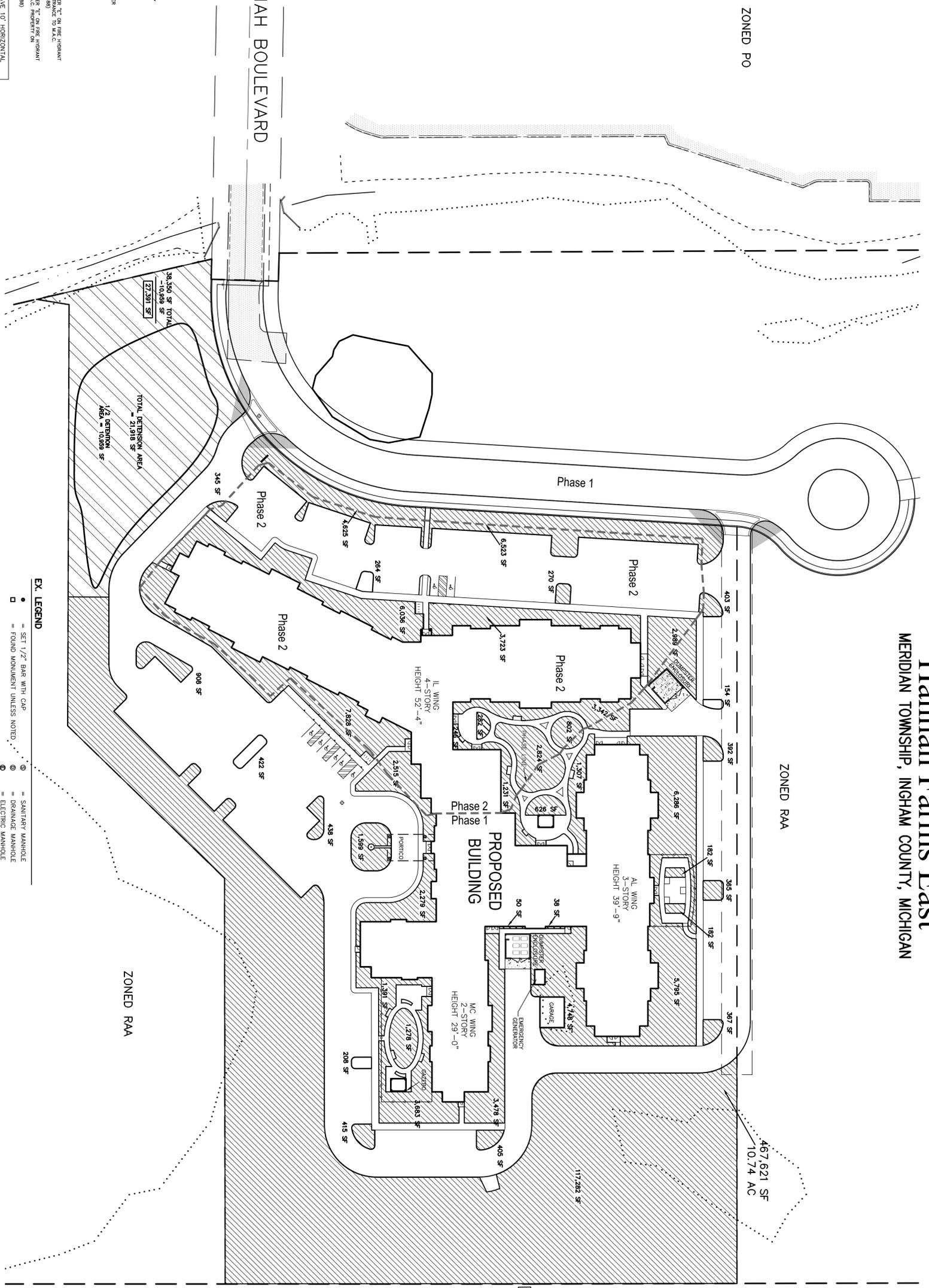
ZONED PO

SUP PLAN FOR:
Hannah Farms East
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

ZONED RAA

467,621 SF
10.74 AC

HANNAH BOULEVARD



38,350 SF TOTAL
-10,989 SF
27,361 SF

TOTAL DETENTION AREA
= 21,918 SF
1/6 DETENTION
AREA = 10,959 SF

EX. LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND MONUMENT UNLESS NOTED
- = DISTANCE NOT TO SCALE
- = FENCE
- = ASPHALT
- = CONCRETE
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- = WETLAND BOUNDARY
- = EDGE OF WOODS
- = DECIDUOUS TREE
- = CONIFEROUS TREE
- = BUSH
- = SANITARY MANHOLE
- = DRAINAGE MANHOLE
- = ELECTRIC MANHOLE
- = TELEPHONE MANHOLE
- = CATCH BASIN
- = SANITARY CLEANOUT
- = VALVE
- = FIRE HYDRANT
- = UTILITY POLE
- = LIGHT POLE
- = GUY POLE
- = GUY WIRE
- = UTILITY POEDESTAL
- = TRANSFORMER
- = ELECTRIC METER
- = GAS METER
- = WATER METER
- = SOIL BORING
- = POST

EX. SEWER INVENTORY

CATCH BASIN #100
REVISION #1
24' x 24' x 10' NORTH - 832.81
FLOWS NORTH EVEN WITH LOWERS
HANNAH BOULEVARD
ELEVATION = 841.11 (N.A.S.D. 89)

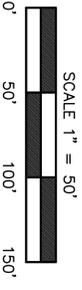
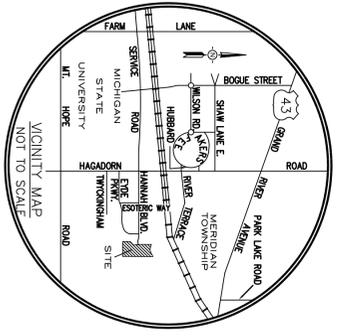
BENCHMARKS

BM 21 - NORTHWEST CORNER OF ENTRANCE TO U.S.C.
ELEVATION = 844.68 (N.A.S.D. 89)
BM 22 - NORTH-EAST BLDG. CORNER TO ON R.R. HYDRANT
HANNAH BOULEVARD
ELEVATION = 841.11 (N.A.S.D. 89)

NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 5" VERTICAL SEPARATION FROM ALL SEWERS.

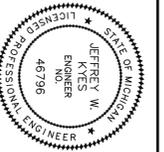
LEGEND

- = EXT. CONTOURS
- = EXT. WATER MAIN
- = EXT. SANITARY SEWER
- = EXT. STORM SEWER
- = EXT. ELEVATIONS
- = PROPOSED WATER MAIN
- = PROPOSED SANITARY SEWER
- = PROPOSED STORM SEWER
- = PROPOSED CATCH BASIN
- = PROPOSED UTILITY EMBANKMENT
- = CENTER LINE OF ROAD
- = ROAD RIGHT OF WAY
- = PROPERTY LINE
- = FIRE HYDRANT
- = WATER VALVE
- = THRUST BLOCK
- = PROPOSED TOP OF CURB ELEV.



MAXIMUM IMPERVIOUS SURFACE = 75%
PROPOSED IMPERVIOUS SURFACE 241,704 SF / 467,621 SF = 51.69%

DATE: 03-09-2019
PAGE: 02 OF 02



REVISIONS:	08-24-20 SUP	2-11-20 SUP	03-02-20 SUP
KESB, INC. 216 HASLETT ROAD, HASLETT, MI 48840 Ph. 517-339-0114 FAX: 517-339-8047 Meridian Office Ph. 269-781-9800			
KES ENGINEERING BRYAN LAND SURVEYS PERVIOUS IMPERVIOUS PLAN		APPROVED BY: JMK SHEET 6 OF 6 JOB #: 96034	
SCALE: 1" = 50' DATE: 3-25-19 AUTHORIZED BY: Andrew Group, LLC		SURVEY#89986TOPJEFF E-96034	

NATURAL FEATURES INVENTORY AND IMPACT ASSESSMENT

for the

**Hannah Farms East
Section 20, Meridian Township, Michigan**

Prepared for:

**Andev Group, LLC
680 N. Lake Shore Dr., Unit 1103,
Chicago, IL 60611**



MARX
WETLANDS
LLC

Prepared by:

Marx Wetlands, LLC

8/20/2020

TABLE OF CONTENTS

Section	Page
1.0 INTRODUCTION	1
2.0 SITE LOCATION & CONDITIONS AND PROJECT DESCRIPTION	1
3.0 METHODS	3
4.0 RESULTS, FINDINGS, AND DISCUSSION	3
4.1 Existing Structures, Materials, and Adjacent Land use.....	3
4.2 Topography	4
4.3 Vegetation.....	4
4.4 Tree Inventory.....	9
4.5 Wetlands	11
4.6 Special Flood Hazard Area	12
4.7 Water Bodies.....	13
4.8 Soils	14
4.9 Identified Areas of Groundwater Vulnerability	15
4.10 Slopes Greater than 20 Percent.....	16
4.11 Wildlife	16
5.0 CONCLUSIONS AND RECOMMENDATIONS	17

APPENDICES

- I. Figure 1.1: Site Location Map
- Figure 1.2. Site Plan (2-2020)
- Figure 2: Aerial Imagery Map
- Figure 3: Pre-settlement Vegetation/MNFI ca. 1800 map
- Figure 4: Ingham County Drain Map- Meridian Township NE
- Figure 5: Township Natural Features Map
- Figure 6: National Wetland Inventory Map
- Figure 7: Identified Areas of Groundwater Vulnerability
- Figure 8: Flood Insurance Rate Map
- Figure 9: County Soils Survey- Hydric Soils Survey Map
- II. Vegetation Lists
- III. Tree Inventory Data and Table (Provided by G.F. Marx of Marx Wetlands 2015)
- IV. Wetland Delineation Report (Marx Wetlands LLC; Dated 8-28-2018) & Wetland Verification–WDV 18-15 (Fishbeck; Dated December 10, 2018)

1.0 INTRODUCTION

Marx Wetlands, LLC (MW) was contracted by Andev Group LLC (Applicant/Developer) to prepare an updated natural features inventory and impact assessment for the project Site, which is comprised of one (1) vacant property located directly east of the dead-end of Hannah Blvd, approximately 0.10 miles east of its intersection with Eyde Parkway in Section 20 of Meridian Township (T4N, R1W), Ingham County, Michigan (hereafter referred to as “Site”).

The Developer (Andev Group LLC) is proposing a new independent, assisted living, and memory center facility, which will include the construction of one (1) proposed building and associated parking and one main access drive connection to Hannah Boulevard. The development will also include associated stormwater treatment system, utilities, and open green space pursuant to Meridian Township’s building requirements.

As part of a Special Use Permit Application, the Charter Township of Meridian Department of Community Planning and Development requires a “Natural Features Assessment,” which is to include “a written description of the anticipated impacts on the natural features at each phase and at project completion that contains the following:

- a. An inventory of natural features proposed to be retained, removed, or modified. Natural features shall include, but are not limited to, wetlands, significant stands of trees or individual trees greater than 12 inches dbh, floodways, floodplains, water bodies, identified groundwater vulnerable areas, slopes greater than 20 percent, ravines, and vegetative cover types with potential to sustain significant or endangered wildlife.
- b. Description of the impacts on natural features.
- c. Description of any proposed efforts to mitigate any negative impacts.

After obtaining site location information, Marx Wetlands LLC (MW) conducted desktop information reviews, an on-site assessment and information analysis to help address the Township’s natural features assessment requirements. MW also conducted a wetland determination and delineation on August 8, 2018. MW’s wetland delineation was verified by Meridian Township’s wetland consultant (Fishbeck) on December 5, 2018. In addition, a tree survey was conducted by Marx Wetlands LLC (data provided by Gary Marx). The wetland delineation, verification, and tree survey results are included in this report as well.

2.0 SITE LOCATION & CONDITIONS AND PROJECT DESCRIPTION

The Site is located along the east side of the Lodges of East Lansing housing complex, on the south bank of the Red Cedar River, and west of a residential subdivision in the east half of Section 20, Meridian Charter Township, Ingham County, Michigan. Please refer to Figure 1.1: Site Location Map in Appendix I.

The Developer is proposing to construct a senior residential complex on the Site, which is +/- 60 acres in size and is currently vacant. The topography of the Site is rolling, higher in the middle of

the site and lower on the south end and in the northeast corner. The Site contains areas of planted pines, a large wetland at its south end, and areas of open field and floodplain forest. Refer to the Figure 2: Aerial Imagery Map in Appendix I.

The majority of the project footprint will be situated within upland disturbed fields or upland scrub-shrub/forest in Meridian Township. Based on MW's review, the project footprint (i.e., lot lines, roads, etc.) does not appear to impact the existing wetlands or 40-foot wetland buffers. The green open spaces will largely occupy upland land directly adjacent to areas of wetland and/or 100-year floodplain in attempts to minimize impacts to on-site features. It appears that project activities such as grading, clearing associated with the proposed development and the construction of two (2) stormwater treatment areas will occur in upland. Prior to site clearing and grading, soil erosion and sediment control measures will be installed and will be inspected and maintained during the construction project. All soil erosion and sedimentation control measures will be removed upon completion of construction and stabilization. **This impact assessment assumes that grading will not extend outside the proposed lot lines.** Please refer to *Figures 1.1 Site Location Map & 1.2 Preliminary Site Plan (Dated 2-20-2020)* in **Appendix I**.

On August 8, 2018, MW conducted a wetland determination and delineation for the property and identified eight (8) wetlands (Wetlands A, B, C, D, E, F, G, and H) and the Red Cedar River were identified within the Site and/or along the site's perimeters. Six (6) wetlands (Wetlands A, B, C, D, G, and H) are likely regulated by Michigan's Department of Environment, Great Lakes, and Energy (EGLE) and Meridian Township. Wetlands E and F are not anticipated to be regulated by EGLE. Refer to the wetland delineation report prepared by Marx Wetlands LLC (Dated August 28, 2018) provided in **Appendix IV**.

Fishbeck conducted a wetland verification with Marx Wetlands on December 5, 2018 and confirmed the on-site wetland boundaries and made minor changes. Fishbeck also determined that six wetlands (A-D, G, and H) are likely regulated by both EGLE and Meridian Township. Wetland E may be considered regulated by Meridian Township, if it is deemed essential for its preservation. Hannah Farms Drain was identified along the western boundary of the Site. Refer to Fishbeck's *Wetland Verification Report WDV 18-15* provided in **Appendix IV**.

A natural features assessment for the whole Site was compiled and updated based on data and on-site visits associated with the wetland delineation and verification in 2018, tree survey conducted in November 2015 by Gary Marx of MW, and a previous Natural Features Inventory (Dated January 25, 2016; MW-Gary F. Marx).

Based on review of aerial photographs and the on-site visits, the Site contains primarily undeveloped land, consisting of areas of upland open fields, scrub-shrub, forested, and wetland. Mowed paths were observed scattered throughout the Site. Upland scrub-shrub and forested areas were identified in the central portions of the Site. The Red Cedar is located along the northern boundary of the Site. The Site is within a largely commercial and residential region of Meridian Township, Michigan. The overall Site was rolling, where topography generally drops in elevation to the on-site wetlands and/or on-site watercourses. Refer to the *Figure 2: Aerial*

Imagery Map in **Appendix I**. The yellow polygon depicts the approximate overall Project Site within Meridian Township, Ingham County, Michigan.

3.0 METHODS

MW conducted a desktop review for the Site using publicly available information and imagery, including the United States Geological Service (USGS) topographic map, aerial photographs, National Wetland Inventory (NWI) map, county soil survey map, county drain maps, Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), and Meridian Township's Natural Features Map, which primarily includes wetlands and floodplains.

An updated natural features assessment for the whole Site was compiled based on data and on-site visits associated with the wetland delineation and verification in 2018, tree survey (conducted in November 2015 by MW), and previous Natural Features Inventory (Dated January 25, 2016; MW-Gary F. Marx). The on-site visits consisted of a site reconnaissance to evaluate the current and prior land use, conduct habitat type determination, habitat quality evaluation, wetland determination and delineation, wildlife observations, and floodplain or other special concern observations. The wetland determination and delineation was performed in accordance with the Michigan Department of Environmental Quality Wetland Identification Manual (2001), the Northcentral-Northeast Manual to the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. The findings from the desktop review, site visits and wetland delineation (August 2018), and Fishbeck's wetland verification (December 2018), a tree survey (November 2015) and natural features inventory conducted by Gary Marx of Marx Wetlands LLC were combined to help interpret the Site's natural features and evaluate potential project impacts upon those natural features.

4.0 RESULTS, FINDINGS, AND DISCUSSION

4.1 Existing Structures, Materials, and Adjacent Land use

The overall Site largely contains undeveloped land, consisting of areas of upland fields, upland scrub-shrub/forest, and wetland. Other than the road end of Hannah Blvd, there are no existing structures on the site. Most of the land immediately surrounding the Site is already developed. The Site is bound by the Lodges of East Lansing residential buildings to the west; the Indian Lakes Estates residential subdivision to east); a large private residential compound to the south; and the Red Cedar River borders the Site to the north. Refer to *Figure 2: Aerial Imagery Map* in **Appendix I**.



Photograph 1. Typical view of a mowed path (facing east).



Photograph 2. View of Hannah Boulevard dead-end (facing west).



Photograph 3. View of upland old field and forest in background of the photograph. Facing north.



Photograph 4. View of upland mixed deciduous forested area including plant pines (Facing NW).

4.2 Topography

The Site varies in elevation from approximately 830 to 860 feet above sea level (asl) and can be characterized as rolling and local microtopographic relief was identified near the wetland areas (particularly the north and south end of the Site), on-site drain (Hannah Farms Drain), and Red Cedar River. The lowest elevations on the Site are about 830 feet asl found in both the large wetland to the south and the edge of the Red Cedar River to the north. The highest elevation is about 856 found near the west-central part of the site. Refer to *Figure 1: Site Location Map* in **Appendix I**.

4.3 Vegetation

A vegetation assessment was conducted during the on-site visit to describe the dominant cover or community types observed throughout the Site. Based on review of aerial photographs, available on-line resources, and on-site visits, the Site largely contains undeveloped land, consisting of areas of upland fields, upland scrub-shrub and mixed-deciduous forest, and wetland.

MW found three (3) distinct community types present on the Site: 1) upland fields; 2) upland scrub-shrub/mixed deciduous forest; and 3) wetlands (forested floodplain and forested/emergent wetland). The descriptions of the three (3) main cover types identified within the Site are described below:

Cover Type Descriptions

1) Upland Old Field with scattered trees

Upland herbaceous species found in the areas of upland old field include species associated with disturbed lands in the Great Lakes region. These include non-native species, invasive species, native species that are tolerant of human land uses, and native pioneer species that normally colonize land after activities are abandoned. The upland fields were identified in the west-central portions of the Site. Examples of these species present on the Site include blackberry (*Rubus alleghaniensis*), Tartarian honeysuckle (*Lonicera tartarica*), tall goldenrod (*Solidago altissima*), black raspberry (*Rubus occidentalis*), wild carrot (*Daucus carota*), common plantain (*Plantago major*), common buckthorn (*Rhamnus cathartica*), orchard grass (*Dactylus glomerata*), common milkweed (*Asclepias syriaca*), smooth brome (*Bromus inermis*), Japanese hedge-parsley (*Torilis japonica*), common primrose (*Oenothera biennis*), bluegrasses (*Poa pratensis* & *P. compressa*), big bluestem (*Andropogon gerardii*), wild-bergamot (*Monarda fistulosa*), purple coneflower (*Echinacea purpurea*), and sunflowers (*Helianthus spp.*) Scattered trees in this area include planted white pines (*Pinus strobus*), as well as box elder (*Acer negundo*), and cottonwood (*Populus deltoides*). Refer to *Table 1* in **Appendix II** for a complete list of identified plant species within this land cover type.

2) Upland Scrub-shrub/Mixed Deciduous Forest

The upland scrub-shrub/mixed deciduous forest areas were observed throughout the Site. The upland, scrub-shrub and mixed deciduous forested areas contain the following species: white avens (*Geum canadense*), ebony spleenwort (*Asplenium platyneuron*), white vervain (*Verbena urticifolia*), bluestem goldenrod (*Solidago caesia*), beggar's lice (*Hackelia virginiana*), penn sedge (*Carex pennsylvanica*), Virginia creeper (*Parthenocissus quinquefolia*), oaks (*Quercus alba*, *Q. macrocarpa*, and *Q. rubra*), black walnut (*Juglans nigra*), planted white pine (*Pinus strobus*), box-elder (*Acer negundo*), sugar maple (*Acer saccharum*), black cherry (*Prunus serotina*), scattered with basswood (*Tilia americana*), American elm (*Ulmus americana*), bitternut hickory (*Carya cordiformis*), trembling aspen (*Populus tremuloides*), Siberian elm (*Ulmus pumila*), and ash (*Fraxinus spp.*) trees. Common native and non-native shrub species include common buckthorn, Eurasian honeysuckle (*Lonicera spp.*), staghorn sumac (*Rhus typhina*), blackberry and black raspberry. Refer to *Table 2* in **Appendix II**, for a complete list of identified plant species within the Upland Scrub-shrub/Mixed Deciduous Forest land cover type.

3) Wetlands

Majority of the on-site wetlands are forested wetlands. **Wetland A and G** are linear multi-classified wetland containing open water, emergent, and scrub-shrub components observed along the western boundary of the Site, which extend off-site to the west and south

respectively. Herbaceous vegetation within these wetlands include: reed canary grass (*Phalaris arundinacea*), rice-cut grass (*Leersia oryzoides*), cattails (*Typha angustifolia* and *T. latifolia*), grass-leaved goldenrod (*Euthamia graminifolia*), dark green bulrush (*Scirpus atrovirens*), and sedges (*Carex grayii*, *C. scoparia*, and *C. vulpinoidea*). Woody vines include riverbank grape (*Vitis riparia*) and poison-ivy (*Toxicodendron radicans*); and shrub species include common buckthorn, and dogwoods (*Cornus amomum* and *C. racemosa*).

Wetland B is a floodplain wetland associated with the Red Cedar River, extending off-site to the north and east. Wetland C is a large wetland system associated with Herron's Creek, extending south and west off-site. Wetland B is dominated by native hardwood forest trees, and relatively weedy shrubs and groundcover plants. This assemblage includes almost exclusively native species. Examples of the species present on the Site include red oak (*Quercus rubra*), swamp white oak (*Quercus bicolor*), silver maple (*Acer saccharinum*), cottonwood, hackberry (*Celtis occidentalis*). Herbaceous vegetation within these wetlands include: rice-cut grass (*Leersia oryzoides*), reed canary grass, moneywort (*Lysimachia nummularia*), bulrush (*Bolboschoenus fluviatilis*), sensitive fern (*Onoclea sensibilis*), and sedges (*Carex grayii*, *C. intumescens*, *C. scoparia*, *C. stipata*, and *C. vulpinoidea*). Shrub vegetation include silky dogwood (*Cornus amomum*), elderberry (*Sambucus canadensis*), and common buckthorn. **Wetland C** is also dominated by native hardwood forest trees typically found in such forests in southern Michigan. The area is characterized by muck soils and these soils are saturated to the surface much of the time. The dominant species in this area include silver maple, red maple (*Acer rubrum*), green ash (*F. pennsylvanica*), cottonwood, American elm (*Ulmus americana*), sycamore (*Platanus occidentalis*), and swamp white oak (*Quercus bicolor*). Wetland C contains similar species to those in Wetland B, but also contains the following species: leafy satin grass (*Muhlenbergia mexicana*), lady fern (*Athyrium filix-femina*), tamarack (*Larix laricina*), Louisiana iris (*Iris × vinicolor*), and sedges (*C. lacustris* and *C. stricta*).

Wetlands D, E, F, and H are small forested wetlands. Herbaceous vegetation within these wetlands include false nettle (*Boehmeria cylindrica*), reed canary grass, white grass (*Leersia virginica*), fowl manna grass (*Glyceria striata*), water-pepper (*Persicaria hydropiper*), and sedges (*Carex grayi*, *C. scoparia*, and *C. vulpinoidea*). Woody vines include riverbank grape and poison-ivy; and a few shrub species include common buckthorn, and dogwoods. Eurasian honeysuckles were observed along the margins of most of these wetlands. Trees observed within Wetlands D, E, F, and H include silver maple, box-elder, white swamp oak, elm, and cottonwood.

Vegetation Assessment

Several species associated with disturbed lands in the Great Lakes region were observed throughout the Site. These include non-native species, invasive species, native species that are tolerant of human land uses, and native pioneer species that normally colonize land after activities are abandoned. Examples of these species present on the Site include smooth brome (non-native grass), (non-native forb), Eurasian honeysuckles (invasive shrub), common plantain (non-native forb), common buckthorn (invasive tree), multiflora rose (invasive shrub), autumn-

olive (invasive shrub), tall goldenrod (native forb, but weedy), and cottonwood/trembling aspen (pioneer/early successional species).

The Vegetation ca. 1800 map produced by the Michigan Natural Features Inventory (MNFI) shows the Site appears to be part of an extensive sugar maple-beech forest spanning for many miles southward from the Red Cedar River. Refer to *Figure 3: Pre-settlement Vegetation/MNFI ca. 1800 map* in **Appendix I**. In addition, hardwood swamps were once scattered throughout this area as well, particularly corresponding with the large wetland complex associated with Herron Creek (Wetland C). Prior to extensive land clearing these shady forests were common on the flatter till plains of mid-Michigan. They often contained a wide variety of tree species, such as sugar maple, red maple, red oak, white oak, American beech, white ash, basswood, tulip tree, walnut, and hop-hornbeam. These forests were commonly cleared for agricultural purposes. It is possible that the central portion of the Site may have been cleared many decades ago for this purpose; notice the lighter color indicating open land in the 1983 USGS Topographic map (refer to Figure 1 in **Appendix I**). As twentieth century commercial and residential development began to fill in lands between East Lansing and Okemos, the Site was likely left idle due to the presence of adjacent wetland areas and the infeasibility of continuing agriculture on such a small scale. As a result, the Site contains both native and non-native plants that are able to recolonize.

Refer to the 1983 USGS Topographic map that depict light (gray) color indicating some areas of open/developed land in the property particularly near the upland fields and the dead-end of Hannah Boulevard (refer to Figure 1 in **Appendix I**). The areas of upland fields have a relatively low native mean Coefficient of Conservatism of 2.29 (adventive species were assumed as 0) is an overall indicator that this Site has been subjected to past disturbances.

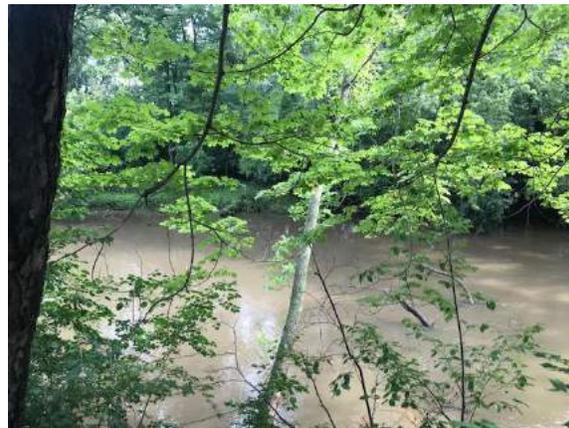
The upland scrub/shrub and mixed-deciduous forested areas of the Site would normally have been cleared for agriculture; however, it is likely that these areas were retained due to the nearby wetlands. The upland scrub-shrub/forest areas are largely dominated by native hardwood forest trees, including early successional trees with a relatively weedy shrubs and groundcover plants. This land cover assemblage includes both native and non-native species. Examples of the species present on the Site include cottonwood, naturally established trees (i.e., black cherry, oaks, maples, elms, hickories), non-native smooth brome, and scattered common buckthorn (invasive). The tree species are likely the remaining native species, which are possibly descendent and/or residual from the original sugar maple-beech forest that likely occurred within this location. There is evidence that as vegetation recolonization progressed, the Site became relatively brushy in areas, particularly along forest edges and along the network of mowed paths and road end at Hannah Boulevard where autumn-olive, multiflora rose, Eurasian honeysuckles, and common buckthorn were more often observed. Therefore, due to the possible previous disturbances of habitat fragmentation, partial prior tree clearing, surrounding residential development of this general region of Meridian Township, etc., the areas of forest/scrub-shrub appear to contain a mix of non-native and native species within the understory; however, contains several native hardwood trees. The scrub-shrub/forest habitat's relatively low native mean Coefficient of Conservatism of 3.23 is an overall indicator that this site was modified in the past; however, does

retain native forest remnant species and has the highest rating compared with the upland old fields and wetland habitats within the Site. Refer to the *Vegetation Lists* in **Appendix II**.

The wetland areas were identified in low-lying lands (particularly in the northern portion of the Site along Red Cedar River and southern end along Herron Creek) or small depressions within the Site and contain both native and non-native species. Examples of the species present on the Site include naturally established cottonwood, swamp white oak, multiflora rose (non-native shrub), common buckthorn (invasive), and reed canary grass (weedy native). The dominant plant species identified within the on-site wetlands was reed canary grass (aggressive, weedy native). This is likely because these wetlands may have not been subject to recent site disturbance or significant modifications, other than periodic flooding, siltation associated with the Herron Creek, adjacent land-use change, etc. The overall wetland habitat still has a relatively low native mean Coefficient of Conservatism of 2.9. Therefore, this overall rating indicates that this Site was likely modified in the past; however, the wetlands appear to contain several native species. Refer to the *Vegetation Lists* in **Appendix II**.



Photograph 5. View of upland disturbed old fields.



Photograph 6. Red Cedar River. Facing West.



Photograph 7. Upland forest/scrub-shrub.



Photograph 8. Typical emergent/forested wetland (Wetland B). No direct wetland impacts anticipated.



Photograph 9. Wetland C, large wetland system identified within the southern portion of the Site.



Photograph 10. Hannah Farms Drain (Wetland A/G).

Although the Developer intends to preserve as many trees as possible particularly within the higher quality habitats (i.e., wetland and forest habitats), the proposed development of the Site will require clearing some existing vegetation. The upland disturbed fields and portions of the upland scrub-shrub/forest will be converted into the proposed senior residential compound.

No formal mitigation for vegetation removal has been planned. Traditional landscape grass, shrub, and tree plantings are expected for this development; however, no formal landscaping plans are designed at this time. It is likely that much of the existing vegetation, particularly some of the large or remnant trees may be incorporated into the traditional landscaping to meet open/green space requirements.

4.4 Tree Inventory

Separate from MW's wetland delineation conducted in 2018, a tree survey of the entire Site was conducted by Marx Wetlands (Gary Marx) in 2015. The tree data was provided to MW to accompany this inventory and impact assessment of natural features. The survey included trees considered "significant" or deserving special protection because of their size, relative rarity, or historical importance. During the tree survey, trees with a diameter at breast height (DBH) (the standard measure for tree size) of 12 inches or greater were located on the Site. Dead trees appear to have been excluded from this inventory. The trees were identified to species and their size recorded in a table and existing conditions depicted on the *Topographic Survey* (**Appendix III**).

Results of the inventory identified 648 significant trees of 22 different species on the parcel. Of the 648 trees, only 17 were larger than 30 inches in diameter, the largest being a cottonwood with a diameter of 55 inches, and second a red oak (*Quercus rubra*) with a diameter of 47 inches. Approximately 5.6% (n=36) of the trees had multiple trunks of varying sizes. Approximately 16.5% (n=107) of the trees were between 20 and 30 inches and approximately 66% (N=428) were between 12 and 20 inches DBH. See Table 1 below:

Table 1. Tree Survey Breakdown

TOTALS		
<u>Scientific Name</u>	<u>Common Name</u>	<u>Count</u>
<i>Acer negundo</i>	Box Elder	45
<i>Acer rubrum</i>	Red Maple	1
<i>Acer saccharinum</i>	Silver Maple	16
<i>Acer saccharum</i>	Sugar Maple	46
<i>Celtis occidentalis</i>	Hackberry	8
<i>Fagus grandifolia</i>	American Beech	1
<i>Fraxinus pennsylvanica</i>	Green Ash	18
<i>Juglans nigra</i>	Black Walnut	10
<i>Ostrya virginiana</i>	Ironwood	1
<i>Pinus strobus</i>	White Pine	109
<i>Pinus sylvestris</i>	Scotch Pine	1
<i>Platanus occidentalis</i>	Sycamore	2
<i>Populus deltoides</i>	Cottonwood	74
<i>Populus tremuloides</i>	Quaking Aspen	1
<i>Prunus serotina</i>	Black Cherry	90
<i>Quercus alba</i>	White Oak	5
<i>Quercus macrocarpa</i>	Bur Oak	2
<i>Quercus bicolor</i>	Swamp White Oak	8
<i>Quercus rubra</i>	Red Oak	90
<i>Tilia americana</i>	Basswood	52
<i>Ulmus americana</i>	American Elm	7
<i>Ulmus pumila</i>	Siberian Elm	1

Impact Assessment

The areas associated with the proposed building and parking indicate that 120 protected (i.e., 12 inches DBH or larger) trees, comprising of approximately 85 hardwood trees and 35 softwood trees will be removed. The tree clearing areas appear to contain non-protected (less than 12 inches DBH in size) trees, protected native hardwood tree species (i.e., oaks, black walnut, black cherry, red/silver maples, etc.), and non-native, weedy, or planted species, such as box-elder, cottonwood, and white pine. **Please note that this is a rough estimate and may be subject to change depending on grading extents.**

Tree clearing activities appear to be outside the wetlands and their buffers. Refer to Existing Topographic Survey for the project (*Hannah Farms East- Dated 2/2020*) provided in **Appendix III**. The highlighted trees are slated for removal by project activities.

In addition, the majority ($\pm 81.5\%$) of the on-site protected trees will be retained post-construction and the higher quality areas (i.e., wetlands and forest habitats) does not appear to be directly impacted by proposed project activities. **Although some native species are proposed**

for removal, it is not anticipated that tree clearing activities will significantly impact the overall existing or available forest habitat within the Site or local region.

4.5 Wetlands

Marx Wetlands LLC conducted a wetland determination and delineation for the Site on August 8, 2008. MW identified eight (8) wetlands (Wetlands A through H), Red Cedar River, and one (1) county drain (Hannah Farms Drain-**Figure 4** in **Appendix I**). In addition, Fishbeck conducted a wetland verification with Marx Wetlands LLC on December 5, 2018 and identified the on-site wetlands and confirmed their boundaries. Refer to the Wetland Delineation Report and Verification (Marx Wetlands 2018 & Fishbeck WDV-18-15 2018) provided in **Appendix IV**.

Meridian Township Natural Features Map (Figure 5 in **Appendix I**) depicts six (6) township mapped wetlands, which include the floodplain forested wetland in the northeast corner of the Site, the forested wetland occupying the southern portion of the Site, a linear wetland associated with the Hannah Drain, and two isolated wetlands. The delineated wetlands generally corresponds with the Township's map. In addition, the National Wetland Inventory Map-NWI (Figure 6 in **Appendix I**) also indicates the Site contains two (2) main wetland areas classified as a forested (PFO1C) wetland type, which generally correspond to the delineated wetland areas (Wetlands B and C) and wetlands shown on the *Meridian Township's Natural Features Map*.

Regulations

State Regulations

Part 301, Inland Lakes and Streams, states that a feature is considered a regulated watercourse by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), if it possesses a defined bed, bank, and evidence of continued flow or a continued occurrence of water. Red Cedar River and Hannah Farms Drain were identified within the Site or along site boundaries. **These watercourses are anticipated to be regulated by EGLE under Part 301. Hannah Farms Drain is considered an Ingham County Drain.**

Part 303, Wetlands Protection, of the NREPA states that if a wetland is five acres in size or larger and/or connected to or located within 500 feet of a river, stream, lake, or pond, it is considered regulated by the EGLE.

Fishbeck's wetland verification and the wetland delineation conducted by Marx Wetlands determined six (6) regulated wetlands (Wetlands A, B, C, D, G, and H) because of their connection with the on-site watercourses. Wetlands E and F were determined as not likely EGLE regulated because they are less than 5 acres in size and do not appear to be contiguous (i.e., within 500 feet or connected to a regulating feature).

Local Regulations

In addition, *Meridian Township's Chapter 22 Environment, Article IV Wetland Protection*, states that protected wetlands include all wetlands subject to the regulation by the EGLE as well as any wetlands two acres or more, in size, including the area of any contiguous inland lake, pond, river,

or stream. Any wetlands less than two acres in size and not connected to a body of water may still be regulated, if it is determined that the protection of the area is important for the preservation of the state's natural resources. In addition, any wetlands, equal to or greater than one-quarter acre and equal to or less than two acres in size, which are not contiguous to any inland lake, stream, river or pond and are determined to be essential to the preservation of the natural resources of the Township (Meridian Township- Code 1974, § 105-3; Ord. No. 2002-02, 3-19-2002; Ord. No. 2003-11, 7-6-2003; Ord. No. 2011-04, 3-15-2011).

According to Fishbeck's wetland verification (WDV 18-15; Dated December 10, 2018), Wetlands A, B, C, D, G, and H also falls under the jurisdiction of Meridian Township. Wetlands E and F were considered not regulated by both EGLE's Part 303 and Meridian Township; however, Wetland E could also be considered possibly regulated by Meridian Township if the preservation of the wetland is deemed essential for the Township's natural resources.

Impact Assessment

The current site plan appears to avoid the regulated wetland and wetland buffers and minimizes native vegetation clearing to the maximum extent practicable. Therefore, it is the professional opinion of Marx Wetlands LLC that the current site plan appears to be a viable option for the development of the Site.

A permit or approval is likely required by the EGLE and/or Meridian Township for any proposed work (e.g., filling, dredging, construction, and draining and/or other development) that takes place within the boundaries of a regulated wetland. Most construction activities that take place outside of these boundaries do not require a wetland permit from the EGLE or Meridian Township. **Please note that the EGLE and Township have the final authority on the extent of regulated wetlands, lakes, and streams in the State of Michigan and Meridian Township, respectively.**

4.6 Special Flood Hazard Area

Flood Hazard Areas are those which are most likely to be inundated during flood events. Flood Hazard Areas are regulated by local, state, and federal regulations designed to reduce the damage to structures during floods. The regulations apply to areas within 100-year floodplains, which are defined by a one percent (1%) annual probability of flood occurrence. These areas are mapped by the Federal Emergency Management Agency (FEMA) on Flood Insurance Rate Maps, or FIRMs. These maps were developed using flow modeling and the existing USGS topographic maps. The modeling produces an elevation associated with 100-year flood events, and areas below these elevations are designated as the 100-year floodplains.

FEMA FIRMs for Ingham County were reviewed to determine if portions of the Site are mapped as floodplains, floodways, or other flood prone areas. These maps record the following data: 100-year (1% chance of annual flooding) and 500-year (0.2% annual chance of flooding) floodplains, the height of the base flood elevation, and the risk to premium areas developed across a floodplain.

A review of FEMA FIRM Panel No. 26065C0154D, (eff. 8/16/2011) revealed that the Site contains 100-year floodplain mapped areas as Zone AE (with available Base Flood Elevation- BFE at approximately 842 feet above sea level) associated with Red Cedar River, Herron Creek, Hannah Farms Drain and associated wetlands within the Site. The remaining areas within the Site are mapped as Zone X: an area that is determined to be outside the 100-year floodplain. Refer to *Figure 8: Flood Insurance Rate Map* in **Appendix I**.

FIRM maps can incorrectly show areas of 100-year floodplain. In such cases, a site's topography can be surveyed using modern techniques. When such studies show that the mapped floodplain is above the determined flood elevation or that the FIRM is otherwise inaccurate, this information can be sent to the National Flood Insurance Program to obtain a Letter of Map Amendment (LOMA) which officially changes the area included within the floodplain. It does not appear that this site will require such additional work.

Part 31, Water Resources Protection, of the NREPA regulates activities within the 100-year floodplain and floodway of a river, stream, or drain, and within the floodplain of any watercourse with an upstream drainage area of two square miles or larger. Most construction activities that take place above the designated 100-year floodplain elevation may not require EGLE permitting and/or approvals. The Red Cedar River, Hannah Farms Drain, and Herron Creek are anticipated to have an EGLE regulated 100-year floodplain that has an upstream drainage area larger than two square miles in size. **A floodplain elevation request or pre-application meeting through the EGLE can assist with the project development process and/or floodplain permitting, if applicable.**

Floodways

A *floodway* is the portion of the floodplain that is required to carry and discharge flood waters during a flood event. They have more rapidly moving water during flood events. They include river channels, upper banks, and adjacent areas that effectively become part of the water transit process during a flood. The FIRM for Meridian Township shows that there are two (2) floodway areas; 1) one associated with Red Cedar River in the northern portion of the Site and 2) one associated with Herron Creek identified in the southern portion of the Site. No activities at the Site are anticipated to have any impact upon these floodway areas, nor will these floodway areas have any impact on development at the Site. **Therefore, the proposed development does not appear to directly impact any EGLE regulated 100-year floodways. However, a floodplain elevation or pre-application meeting request could help determine permit approvals or requirements, if applicable.**

4.7 Water Bodies

Streams, rivers, lakes, and many ponds are afforded legal protection under a combination of Township, county, state, and federal regulations pertaining to wetlands, flood prone areas, and water bodies. Any filling or alteration of these areas would typically require one or more permits from state agencies, county agencies, federal agencies, or Meridian Township.

There are three open water bodies on or directly adjacent to the Site. These include the Herron Creek, the Red Cedar River, and the Hannah Drain (county drain) along the site's west boundary that functions as a stream. Activities on the Site are not expected to directly impact these water bodies or any others.

County Drain Information

According to the Ingham County Drain Map- Meridian Township SW (Figure 4 in **Appendix I**), the Site appears to contain the Hannah Farms Drain (H0300-Open) within the limits of on-site wetlands (Wetland A/G– delineated by MW 2018), which appears to drain north into Red Cedar River. The Herron Creek Drain is also a designated Ingham County Drain (H2100) identified within the limits of the large wetland system (Wetland C). Red Cedar River is depicted as a natural river and does not appear to be a designated county drain (Refer to Figure 4 in **Appendix I**). Typically, county drains have an easement for construction and maintenance purposes and where development or structures are prohibited. **Therefore, be sure to contact the Ingham County Drain Commissioners office to see if the proposed site development requires any approvals or permits through Ingham County.**

Impact Assessment

Based on the available information acquired from Ingham County, it appears that the project is not anticipated to directly impact any existing drains. If the construction of the proposed roads to service the development will involve the removal/replacement or installation of any culverts within the drains and/or enter the designated drain easements, approvals or permits through Ingham County and/or EGLE may be required. **Marx Wetlands LLC recommends that the Developer should formally consult Ingham County Drain Commissioner to determine if site development requires any easement approvals or permits.**

4.8 Soils

According to the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey, the soils contained within Meridian Township, Ingham County) have been mapped largely with several soil types. The map identifies six soil types: Houghton muck, 0 to 1 percent slopes (Hn; 11.7% of the site), Oshtemo-Spinks loamy sands, 0 to 6 percent slopes (OtB; 34% of the site), Oshtemo-Spinks loamy sands 6 to 12 % slopes (OtC; 43.3% of the site), Sebewa loam, 0 to 2 percent slopes (Sb; 3.4 % of the site), Urban land-Boyer-Spinks complex, 0 to 10 % slopes (UeB; 1% of the site) and Urban land-Fluvaquents complex (Uu; 6.4% of the site). Refer to *Figure 9: County Soils Survey with Hydric Soils Ratings Map* in **Appendix I**.

The Oshtemo Spinks loamy sands are found in the higher upland parts of the site, consist of well drained, moderately rapidly permeable soils on outwash plains, and are formed in moderately coarse and coarse textured deposits. Houghton muck (Hn), which is found in the large southern wetland (Wetland C) on the site, form in deep organic deposits formed in stable wetland areas and have organic material greater than 51 inches deep. They are very poorly drained soils as are typically found in these wetlands. Sebewa loam (Sb), also found in the southernmost wetland (Wetland C) and in the small wetland in the southwest corner of the site, is also a poorly drained soil found in outwash plains. It is a hydric soil, as is the Houghton muck, and is typically found in

wetland areas. Urban land-Fluvaquents (Uu) complex soils are found in urban area floodplains, and typically include 55 percent urban land. Therefore, Hn, Sb, and Uu soil types contain hydric indicators and considered poorly drained or flooded/ponded soils, which can be inundated or saturated throughout the growing season.

Site balancing, filling, and subsurface excavation activities will take place within the limits of disturbance which are contained primarily within the areas of the more well-drained soil types or upland areas. The most suitable soils (with hydric ratings less than 4%) will largely be utilized on the Site for the proposed site development. According to the SUP Site Plan, grading will likely occur within the upland areas and outside of the wetlands and their 40-foot buffers.

Soil erosion and sedimentation control (SESC) measures will be installed and maintained by the Developer throughout the construction period, as required by the State of Michigan, Meridian Township, the Ingham County Drain Commissioner and will be removed once the entire Site has been stabilized. These measures will significantly reduce the possibility of soil erosion and the water transport of these soil materials, which could cause the degradation of areas receiving the Site's stormwater runoff.

4.9 Identified Areas of Groundwater Vulnerability

Areas of groundwater vulnerability are those areas where the hydrologic and geologic surface and subsurface setting makes the groundwater more vulnerable to contamination than in other areas. The 2005 Meridian Township Master Plan groundwater vulnerability map shows areas identified as being vulnerable (refer to Figure 7: Identified Areas of Groundwater Vulnerability in Appendix I). This map is based upon the aggregation of four different vulnerability assessments or estimates. A small part of the subject Site falls within one of the designated areas. This area is located in the southeast corner of the site, within the large forested wetland that makes up the southern third of the site. This area will not be disturbed in any way by the proposed project. Therefore, all construction activity on the Site will be outside the bounds of Identified Areas of Groundwater Vulnerability. Stormwater on the site will be collected and treated in accordance with local regulations designed to protect water quality and runoff volumes.

In addition, based on the site plan (Figure 1.2 in **Appendix I**) provided to MW, the proposed development does not appear to directly impact any wetlands or other aquatic features; however, it is important to note that the site plan appears to be preliminary and is not intended to be used as a final construction plan.

It is MW's professional opinion that the proposed development should be designed minimize impacts to the natural features to the maximum extent practicable and follow standard SESC measures in accordance with local and state regulations in order to protect water quality of nearby wetland areas. **The current site plan (preliminary) appears to avoid direct impacts to the regulated wetland areas in Meridian Township and associated 40-foot wetland buffers.**

4.10 Slopes Greater than 20 Percent

Slopes of greater than 20% are highly susceptible to soil erosion which can lead to sedimentation in other on and off-site areas such as ponds, streams and lakes. On the Site, slopes steeper than 20% do not exist. While slopes do exist adjacent to the southern Forested Wetland and the northern Floodplain Forest, the slopes are less than 20%. Even though the slopes are less than 20%, they will not be disturbed by the proposed project.

The development project is anticipated to follow structure and grading setbacks and requirements provided in Meridian Township ordinances. During construction, any slopes (if applicable) created by the project that are over 20% will be intentionally designed and stabilized with appropriate landscaping materials. Soil erosion and sedimentation control (SESC) measures will be placed and maintained in the areas necessary to control any erosion that may occur during construction.

The project is anticipated to meet state and local water quality standards and utilize the best available technologies that are necessary when considering the receiving waters and associated aquatic resources. Any excavated material and structures will be placed in upland (non-wetland). The project is not anticipated to significantly impact on-site features or impact any sensitive areas identified for groundwater vulnerability because the current site plan appears to avoid direct impacts to the likely regulated wetlands and buffers.

4.11 Wildlife

Evidence of wildlife presence has been observed throughout the Site in the form of tracks, droppings, and holes, the amount of animal usage being greater than in the surrounding areas as this is a large undeveloped area with forest, field, and swamp areas surrounded by urbanized development. Evidence of white-tailed deer (*Odocoileus virginiana*), eastern cottontail rabbit (*Sylvilagus floridanus*), gray squirrels (*Sciurus carolinensis*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), and paper wasps (species undetermined) were observed. Squirrel evidence was mainly in the forested areas. Deer usage seemed to be throughout the site. One freshly dug animal den which was found may be used by raccoon or woodchuck (*Marmota monax*), though this was not certain.

It is likely that the Site or adjacent undeveloped areas may contain foraging habitat or resting grounds for numerous other wildlife, such as Monarch butterflies (*Danaus plexippus*), honeybees (*Apis mellifera*), mourning doves (*Zenaida macroura*), and eastern cottontail (*Sylvilagus floridanus*). Overall, the Site appears to contain species that can be considered urban or suburban wildlife, which are common across the Midwest. Typically, urban wildlife are mainly generalists species that have wide tolerance in diet and behavioral flexibility. They are very unlike threatened and endangered species, which are almost all specialized or restricted to unique habitats and intolerant of human disturbances.

The proposed site plan (Figure 1.2 in **Appendix I**) has been designed to minimize impacts to natural features, specifically regulated wetlands and their buffers. In addition, upland open space has been incorporated into the site plan, which would likely provide some habitat for wildlife

post-construction. Majority of the on-site development is restricted to the upland disturbed old fields and/or forested/scrub-shrub areas of the Site. It appears that the proposed development has avoided on-site regulated wetlands and buffers to the maximum extent practicable. Therefore, any declines in certain very abundant wildlife species are not anticipated by the proposed site development. Wildlife will be temporarily displaced by the proposed development; however, the undeveloped portions of the Site (specifically the higher quality habitats- wetlands, watercourses, forest, etc.) will remain relatively intact post-construction. It is anticipated that some of these common urban and suburban wildlife species will continue to use the Site after the completion of the development.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The proposed Site was reviewed for remnant and existing natural resources and features. The approximately Site contains one (1) vacant property located directly east of the dead-end of Hannah Blvd, approximately 0.10 miles east of its intersection with Eyde Parkway within section 20 of Meridian Township, Ingham County, Michigan. The Site is bound by the Lodges of East Lansing residential buildings to the west; the Indian Lakes Estates residential subdivision to east); a large private residential compound to the south; and the Red Cedar River borders the Site to the north.

The Site is vacant but contains the road end of Hannah Boulevard. The Site largely contains undeveloped land, consisting of areas of upland fields, upland scrub-shrub and mixed-deciduous forest, and wetland. Mowed paths were also observed throughout the Site. MW and Fishbeck (Meridian Township's wetland consultant) identified and confirmed six (6) regulated wetlands (Wetlands A, B, C, D, G, and H) on August 8 and December 5, 2018, respectively. Also, Fishbeck indicated that Wetland E may also be regulated by Meridian Township if its preservation is essential to the Township's resources. Red Cedar River, Herron Creek, and Hannah Farms Drain (county drain) were also identified within Site boundaries. **All wetlands (regulated by both EGLE and Meridian Township) and the 40-foot buffers appear to be outside of the proposed project footprint.**

The Site is rolling, a result of its glacial moraine past and location adjacent to the Red Cedar River. Most of the on-site soils are upland loams, sandy loams or loamy sands that formed under what was once a sugar maple-beech forest. The delineated wetland areas contain mainly mucky soils and sandy loams with hydric inclusions or indicators. The soils are likely original to the Site and are upland loamy sands and muck soils that formed under what was once a beech maple forest, and under the large wetland areas. The upland portion of the Site was once a small portion of that upland forest which covered thousands of acres but was cut down to make way for agriculture. Within the last few decades this particular Site has been surrounded by residential and growing commercial development.

Wildlife that use the site are common in the urban and suburban landscape and their populations are not anticipated to be significantly affected by the development of this site. Vegetation on the Site includes planted pines, native trees, and relatively common native and non-native

groundcover species. The loss of vegetation due to development on the Site will occur, though the species lost are very unlikely to include any that are locally rare (i.e. rare county-wide) or state threatened and endangered. There are numerous trees on the Site which are in good condition, including both planted pines and unplanted hardwoods. The only significant remaining natural heritage on this Site appears to be the original topography, soils, and the relatively undisturbed areas of the floodplain forest and the southern forested wetland. The commercialized land use context, vehicle access, and economic valuation might limit some design options, but for this Site the primary likelihood of preserving natural resource values within the developed would be associated with incorporating some of the larger or native trees into the landscape design, and thereby preserving them on the post development landscape. The proposed development will not impact the larger wetlands on the site, nor will it encroach into the floodway of the adjacent waterways.

The proposed development is positioned to utilize the upland areas within the overall Site to the maximum extent practicable, while avoiding sensitive and regulated areas (i.e., wetlands/40-foot buffer, 100-year floodplains, and drains). The areas within the upland fields and mixed deciduous scrub-shrub/forest are proposed for development. Tree clearing and landscaping activities are anticipated within the proposed project footprint. The Developer's selection of the site plan included an analysis of alternative on-site layouts, while taking into consideration existing site conditions, specific project and site requirements, building requirements and setbacks, visibility and accessibility, safety, parking, traffic flow into and out of the Site, and existing natural features. The existing natural features (i.e., forest habitat, wetlands, drains, floodplains, etc.) have also limited site design options. The current design provides a convenient access to the proposed development while preserving the natural features, including woodlands and wetlands to the maximum extent practicable. The proposed site plan appears to preserve the natural resource values of the Site because of the avoidance of regulated wetlands and wetland buffers, and by incorporating some of the larger or native trees into the overall landscape design; and thereby, preserving them on the post-development landscape.

Final Notes:

- The delineated wetland areas and the 40-foot buffer in Meridian Township appear to be avoided by project activities and preserved to the maximum extent practicable. However, the conceptual site plan does not indicate if treated stormwater will remain on the property or discharge into the existing wetlands; therefore, engineered plans including the stormwater management, calculations, and design of the proposed stormwater basin should be reviewed to determine if regulated features will be impacted by project activities. **Therefore, if the treated stormwater runoff is proposed to directly discharge into the regulated wetlands or watercourses, minor permits through Meridian Township and/or EGLE will likely be required.**
- **The Site contains a 100-year floodplain and floodway associated with Red Cedar River, Herron Creek, and Hannah Farms Drain (county drain); however, the proposed site plan does not appear to impact below the designated 100-year floodplain elevation as depicted by FEMA Firm Maps. However, Marx Wetlands LLC recommends that a**

floodplain elevation request and/or pre-application meeting request through EGLE be considered to help determine permit requirements, if applicable.

- Although the site plan does not appear to directly impact any county drains, Marx Wetlands LLC recommends that the Developer formally consult the Drain Commissioners office of Ingham County to determine if site development requires any approvals or permits.

Therefore, through consideration of these factors and requirements, it appears that the preferred site plan is a viable option for the development of the proposed Site because it appears to avoid the regulated wetlands and buffers and minimizes native vegetation clearing to the maximum extent practicable. **However, the final notes listed above should be addressed and determined prior to the commencement of project activities.**

Thank you for the opportunity to provide this inventory and impact assessment of on-site natural features in regard to the proposed project. If you have any questions, please contact me at your convenience.

Sincerely,

Marx Wetlands, LLC



Bryana J. Guevara, CSWO (MI)
Environmental Scientist
ISA Certified Arborist #MI-4202A
Professional Wetland Scientist #2949

APPENDIX I

Figure 1.1: Site Location Map

Figure 1.2 Site Plan

Figure 2: Aerial Imagery Map

Figure 3: Pre-settlement Vegetation/MNFI ca. 1800 map

Figure 4: Ingham County Drain Map

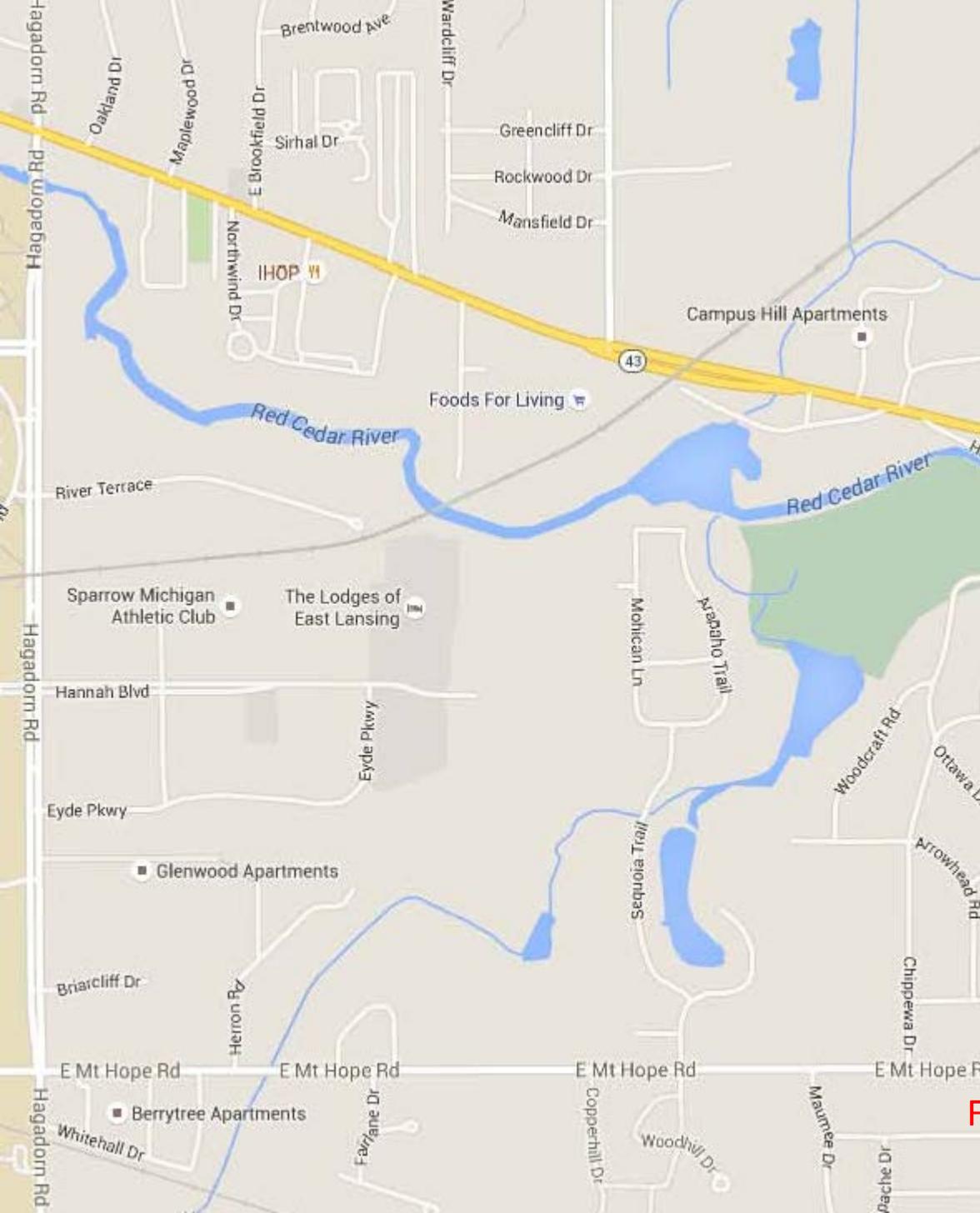
Figure 5: Township Natural Features Map

Figure 6: National Wetland Inventory Map

Figure 7: Groundwater Vulnerability Map

Figure 8: Flood Insurance Rate Map

Figures 9: County Soils Survey-Hydric Soils Map

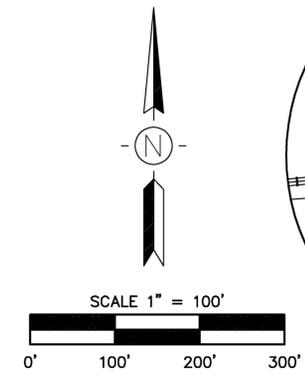
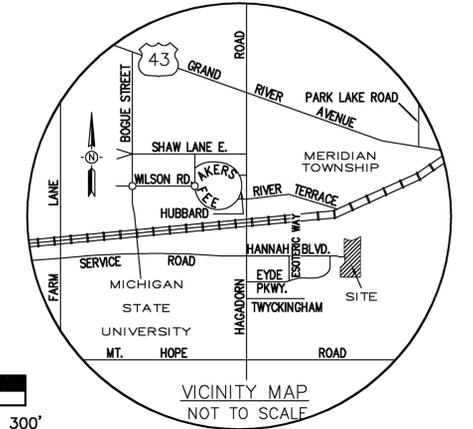


SUP PLAN FOR: Hannah Farms East

MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

CLIENT:
Andev Group, LLC
680 N. LAKE SHORE DR.
CHICAGO, IL 60611
PH: (312) 927-4449

ENGINEER/SURVEYOR:
KEBS, INC.
2116 HASLETT RD.
HASLETT, MI 48840
PH: (517) 339-1014
FAX: (517) 339-8047



LEGAL DESCRIPTION:

Parcel B:
A parcel of land in the Northeast 1/4 and the Southeast 1/4 of Section 20, T4N, R1W, Meridian Township, Ingham County, Michigan, the surveyed boundary of said parcel described as: Commencing at the West 1/4 corner of said Section 20; thence S89°36'48"E along the East-West 1/4 line of said Section 20 a distance of 2651.27 feet to the Center of said Section 20; thence continuing S89°36'48"E along said East-West 1/4 line 308.73 feet; thence S00°05'46"W along the North line of Hannah Boulevard; thence S87°58'54"E along said North line 27.63 feet; thence S02°04'01"W along said West line 198.16 feet to the Southwest corner of said Indian Lakes Estates No. 3 Subdivision; thence S88°31'51"E 12.78 feet; thence Northwesterly 317.98 feet along a curve to the left, said curve having a radius of 208.00 feet, a delta angle of 87°35'30", and a chord of 287.91 feet bearing N47°39'59"E; thence N03°52'14"E 321.52 feet; thence S89°37'52"E 745.58 feet to the West line of Indian Lakes Estates No. 3 Subdivision; as recorded in Liber 29 of Plats, Pages 37-38, Ingham County Records; thence S00°14'01"W along said West line 198.16 feet to the Southwest corner of said Indian Lakes Estates No. 3 Subdivision; thence S00°22'28"W along the West line of Indian Lakes Estates No. 2 Subdivision, as recorded in Liber 28 of Plats, Pages 30-31, Ingham County Records, a distance of 304.03 feet; thence N89°43'39"W 399.81 feet; thence S44°40'28"W 215.00 feet; thence N89°26'32"W 415.00 feet; thence S09°37'28"W 32.47 feet; thence N12°37'45"W 176.58 feet to said South line of Hannah Boulevard; thence S87°58'54"E along said South line 19.92 feet to the point of beginning; said parcel containing 10.73 acres more or less, said parcel subject to all easements and restrictions if any.

SITE DATA

EXISTING ZONING RAA
SPECIAL USE PERMITS REQUIRED:
NON-RESIDENTIAL USE IN RESIDENTIAL DISTRICT
BUILDING OVER 25,000 GROSS SQUARE FEET
TOTAL SITE AREA = 10.73 ACRES

ALLOWABLE DENSITY = 25 UNITS/ACRE
10.73 ACRES X 25 = 268 UNITS
230 UNITS PROPOSED

PROPOSED USE:
INDEPENDENT LIVING (IL)
ASSISTED LIVING (AL)
MEMORY CARE (MC)

MAXIMUM BUILDING COVERAGE = 35%
PROPOSED BUILDING COVERAGE = 88,920 SF/467,621 SF = 19%

PROPOSED BUILDING 268,263 SF/467,621
MAXIMUM BUILDING FOR SUP 275,000 SF/467,621

MAXIMUM IMPERVIOUS SURFACE = 75%
PROPOSED IMPERVIOUS SURFACE 244,352 SF/467,621 SF = 52.25%

REQUIRED SETBACKS

BUILDING:
FRONT - 85' FROM ROAD CENTERLINE
SIDE AND REAR - 25' FROM NON-RESIDENTIAL DISTRICT
50' MIN FROM RESIDENTIAL DISTRICT IF BUILDING LESS THAN 35' IN HEIGHT.
IF BUILDING OVER 35' IN HEIGHT THEN INCREASE SETBACK 1.5' FOR EACH 1' OVER 35' HIGH

PROPOSED BUILDING SETBACKS:
IL WING - 52'4" HIGH
SETBACK = 50' + (52'4" - 35')1.5 = 76'
AL WING - 39'9" HIGH
SETBACK = 50' + (39'9" - 35')1.5 = 58'
MC WING - 29' HIGH
SETBACK = 50'

PARKING:
20' FROM ROAD RIGHT OF WAY
20' FROM RESIDENTIAL DISTRICT IF LESS THAN 50 SPACES
40' FROM RESIDENTIAL DISTRICT IF MORE THAN 50 SPACES

REQUIRED PARKING
IL - 1 SPACE PER UNIT
AL AND MC 1 SPACE FOR EVERY 4 UNITS + 1 SPACE FOR EACH EMPLOYEE IN THE LARGEST SHIFT

IL - 121 UNITS = 121 SPACES REQUIRED
AL & MC - 109 UNITS/4 = 28 SPACES REQUIRED
LARGEST SHIFT - 40 EMPLOYEES = 40 SPACES REQUIRED

TOTAL SPACES REQUIRED = 189 SPACES
TOTAL SPACES PROPOSED = 227 SPACES

BIKE PARKING PROPOSED FOR IL UNITS AND EMPLOYEES = 16 TOTAL
INTERIOR LANDSCAPE ISLAND REQUIRED = 200 SF FOR EACH 10 PARKING SPACES
227 SPACES/10 X 200 = 4,540 SF REQUIRED
5,087 SF PROPOSED

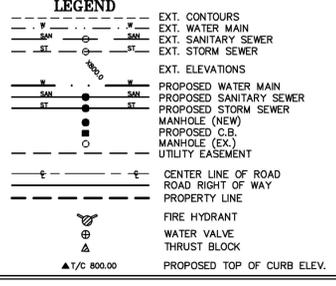
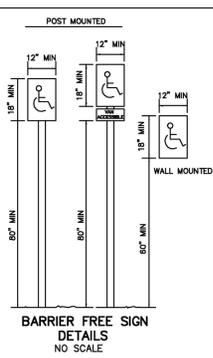
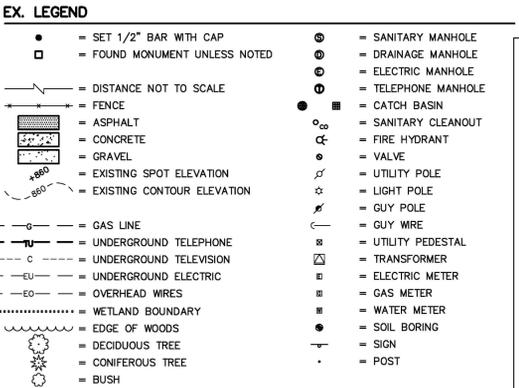
UTILITIES

WATER:
TWP. PUBLIC WATER MAIN
SANITARY:
TWP. PUBLIC SANITARY
STORM:
ON-SITE DETENTION BASIN
TRASH:
ON-SITE DUMPSTERS

NOTES

- LOCATE UTILITIES PRIOR TO INSTALLATION (COORDINATE W/ ENGINEER)
- AS-BUILT UTILITY LOCATIONS & ELEVATIONS MUST BE DELIVERED TO THE CITY ENGINEER UPON COMPLETION OF THE PROJECT

E-96034LAY1
E-94114
SURVEY#89986TOPJEFF



NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.

EX. SEWER INVENTORY

CATCH BASIN #100 (SEEKING)
RM - 839.11
24" RCP NORTH - 832.91
24" RCP SOUTH - 832.41
FLOWS NORTH EVEN WITH LOWER SOUTH INVERT

BENCHMARKS (OFFSITE)

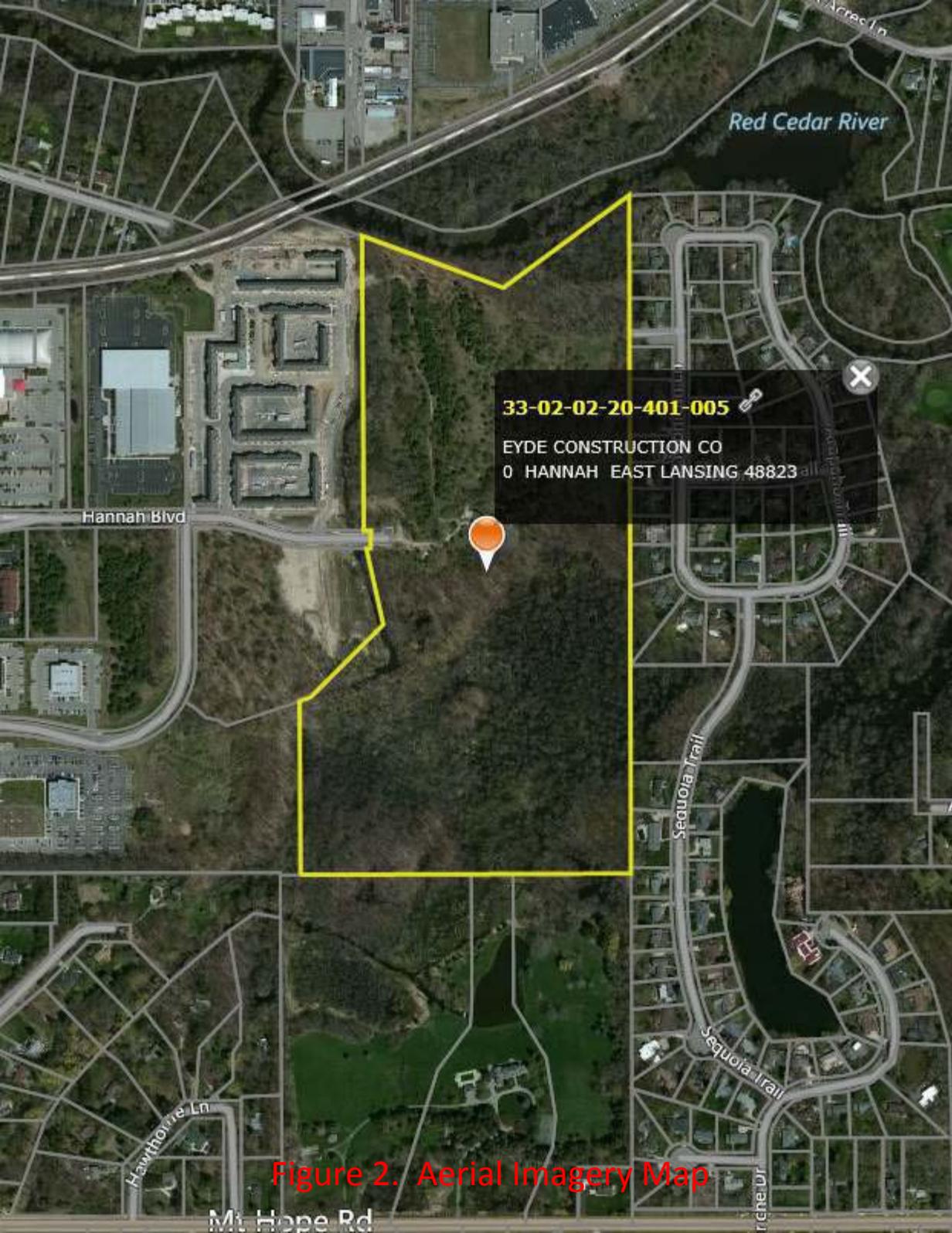
BM#1 - NORTHWEST BOLT UNDER "E" ON FIRE HYDRANT AT NORTHWEST CORNER OF ENTRANCE TO M.A.C. ELEVATION = 864.86 (N.A.V.D. 86)
BM#2 - NORTHWEST BOLT UNDER "E" ON FIRE HYDRANT AT SOUTHEAST CORNER OF M.A.C. PROPERTY ON HANNAH BOULEVARD ELEVATION = 864.11 (N.A.V.D. 86)

SHEET INDEX

1. OVERALL PLAN & OFF SITE UTILITY PLAN
2. DIMENSION PLAN
3. STORM, GRADING, AND STORM WATER MANAGEMENT PLAN
4. EXISTING SURVEY & TREE REMOVAL PLAN NORTH
5. EXISTING SURVEY & TREE REMOVAL PLAN SOUTH
6. PERVIOUS IMPERVIOUS PLAN
- LANDSCAPE PLAN (BY OTHERS)



<p>REVISIONS</p> <p>2-11-20 SUP SUBMITTAL</p> <p>2-20-20 GARAGE</p>	<p>KEBS, INC. KYES ENGINEERING BRYAN LAND SURVEYS</p> <p>2116 HASLETT ROAD, HASLETT, MI 48840 PH. 517-339-1014 FAX. 517-339-8047</p> <p>Marshall Office Ph. 269-781-9800</p> <p>Hannah Farms East</p> <p>OVERALL PLAN & OFF SITE UTILITY PLAN</p>	<p>DESIGNER: JWK</p> <p>PROJECT MGR. JWK</p> <p>CHECKED: JWK</p> <p>APPROVED BY: JWK</p> <p>JOB #: 96034</p>
---	---	--



33-02-02-20-401-005

EYDE CONSTRUCTION CO
0 HANNAH EAST LANSING 48823

Hannah Blvd

Red Cedar River

Sequoia Trail

Hawthorne Ln

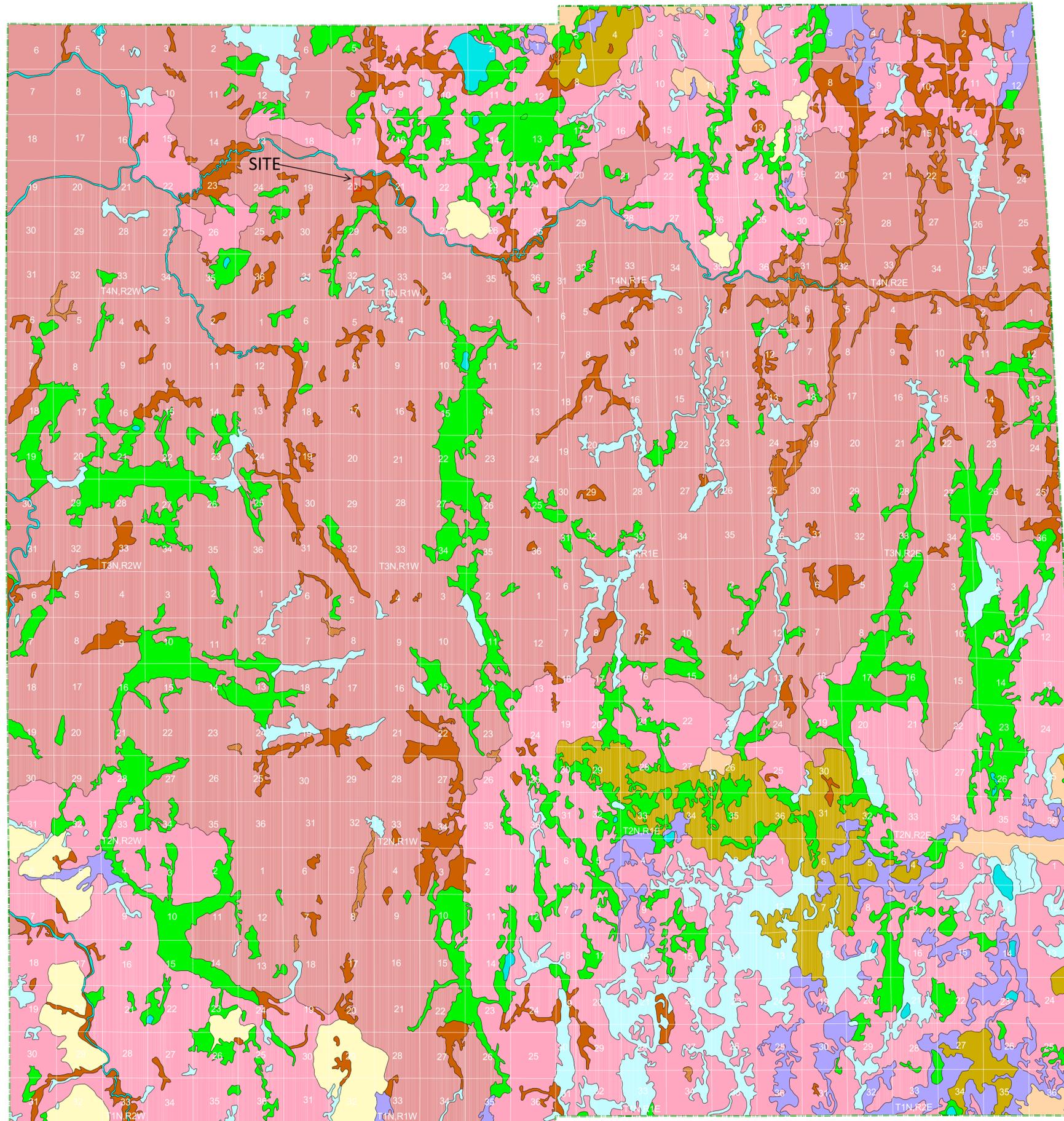
Mt Hope Rd

Figure 2. Aerial Imagery Map

Vegetation circa 1800 of Ingham County, Michigan

An Interpretation of the General Land Office Surveys

By P. J. Comer and D. A. Albert
Michigan Natural Features Inventory
1997



- Legend**
- ✓ ASPEN-BIRCH FOREST
 - ✓ BEECH-SUGAR MAPLE FOREST
 - ✓ BEECH-SUGAR MAPLE-HEMLOCK FOREST
 - ✓ BLACK ASH SWAMP
 - ✓ BLACK OAK BARREN
 - ✓ CEDAR SWAMP
 - GRASSLAND
 - HEMLOCK-WHITE PINE FOREST
 - HEMLOCK-YELLOW BIRCH FOREST
 - JACK PINE-RED PINE FOREST
 - ✓ LAKE/RIVER
 - ✓ MIXED CONIFER SWAMP
 - ✓ MIXED HARDWOOD SWAMP
 - ✓ MIXED OAK FOREST
 - ✓ MIXED OAK SAVANNA
 - MIXED PINE-OAK FOREST
 - ✓ MUSKEG/BOG
 - ✓ OAK-HICKORY FOREST
 - OAK-PINE BARREN
 - PINE BARREN
 - SAND DUNE
 - ✓ SHRUB SWAMP/EMERGENT MARSH
 - SPRUCE-FIR-CEDAR FOREST
 - ✓ WET PRAIRIE
 - WHITE PINE-MIXED HARDWOOD FOREST
 - WHITE PINE-RED PINE FOREST
 - WHITE PINE-WHITE OAK FOREST
- ✓ = LAND COVER TYPE PRESENT ON THIS MAP



Scale 1:80,000



Map Projection: Lambert Conformal Conic

SOURCE: Comer, P.J., D.A. Albert, H.A. Wells, B.L. Hart, J.B. Raab, D.L. Price, D.M. Kashian, R.A. Comer, D.W. Schuen (Map Interpretation), M.B. Austin, T.R. Leibfried, K.M. Koroch, L. Prange-Gregory, J.G. Spitzley, C.J. DeLain, L.J. Scribner, (Digital Map Production). 1995. Michigan's Presettlement Vegetation, as Interpreted from the General Land Office Surveys 1816-1856. Michigan Natural Features Inventory, Lansing, MI. Digital Map.



Figure 3. Presettlement Vegetation/MNFI cs. 1800 Map

MERIDIAN TOWNSHIP SW, T.4N. - R.1W. , INGHAM COUNTY, MICHIGAN



PATRICK E. LINDEMANN
INGHAM COUNTY DRAIN COMMISSIONER

PRELIMINARY

MERIDIAN TOWNSHIP SW DRAIN MAP
T.4N. - R.1W.
INGHAM COUNTY, MICHIGAN



LEGEND

- MUNICIPAL BOUNDARIES
- SECTIONS
- COUNTY
- DRAINAGE DISTRICT BOUNDARIES
- OPEN DRAIN
- CLOSED DRAIN
- ROADS
- RAILROADS
- NATURAL WATERCOURSE

RED = FORMERLY KNOWN AS

DISCLAIMER:

This map is a generalized representation of established drain routes and courses and/or drainage district boundaries. It is provided by the Ingham County Drain Commissioner for reference and display purposes only and does not confirm, create, refute, remove, expand, alter or otherwise affect any rights or obligations recognized or imposed by federal, state or local law, ordinance, regulation or rule.

0 0.13 0.25 0.5 Miles

1 INCH = 500 FEET

DRAIN INDEX

DRAIN NO	DRAIN NAME	DRAIN NO	DRAIN NAME	DRAIN NO	DRAIN NAME
A0900	ARMORE DRAIN	G2101	GRETENBURGER RELIEF DRAIN	N1300	NORTHWIND DRAIN
A2100	ADDISON DRAIN	H0300	HANNAH FARM DRAIN	O0200	OKEMOS PRESERVE DRAIN
B2804	BUTTON SPRING LAKES BRANCH DRAIN	H2100	HERRON CREEK DRAIN	O0400	OKEMOS DRAIN
B3600	BRIARWOOD DRAIN	H6200	HOSKINS DRAIN	O0900	OKEMOS TILE DRAIN
B4013	BANTA CONSOLIDATED DRAIN	I0200	INDIAN HILLS DRAIN	P1500	PROCTOR DRAIN
B5100	BIEBESHIEMER DRAIN	I0600	INDIAN LAKES DRAIN	R0100	RABY DRAIN
B5200	BENNETT DRAIN	I0602	INDIAN LAKES NO. 2 DRAIN	R1500	RIVERWOOD DRAIN AND BRANCHES DRAIN
C1000	CHIPPEWA HILLS DRAIN	I0603	INDIAN LAKES MAUMEE BRANCH DRAIN	S0200	SANCTUARY DRAIN
C8100	CIBA GEIGY DRAIN	K0400	KENT DRAIN	S2600	SPROSS DRAIN
D0202	DANIELS EXTENSION DRAIN	K1100	KINAWA VIEW DRAIN	S4520	SMITH CONSOLIDATED DRAIN
E0300	EBERLY DRAIN	M1700	MEADOWS DRAIN	S6000	SHAKER HEIGHTS DRAIN
E1600	EAST GATE DRAIN	M1800	MUD LAKE OUTLET DRAIN	T1800	SANDERS-TACOMA HILLS DRAIN
F0900	FOREST HILLS DRAIN	M2900	MEIERS DRAIN	T2100	TWYCKINGHAM DRAIN
G2100	GRETENBURGER DRAIN	N1200	NILSON DRAIN	U0200	UNRUH DRAIN

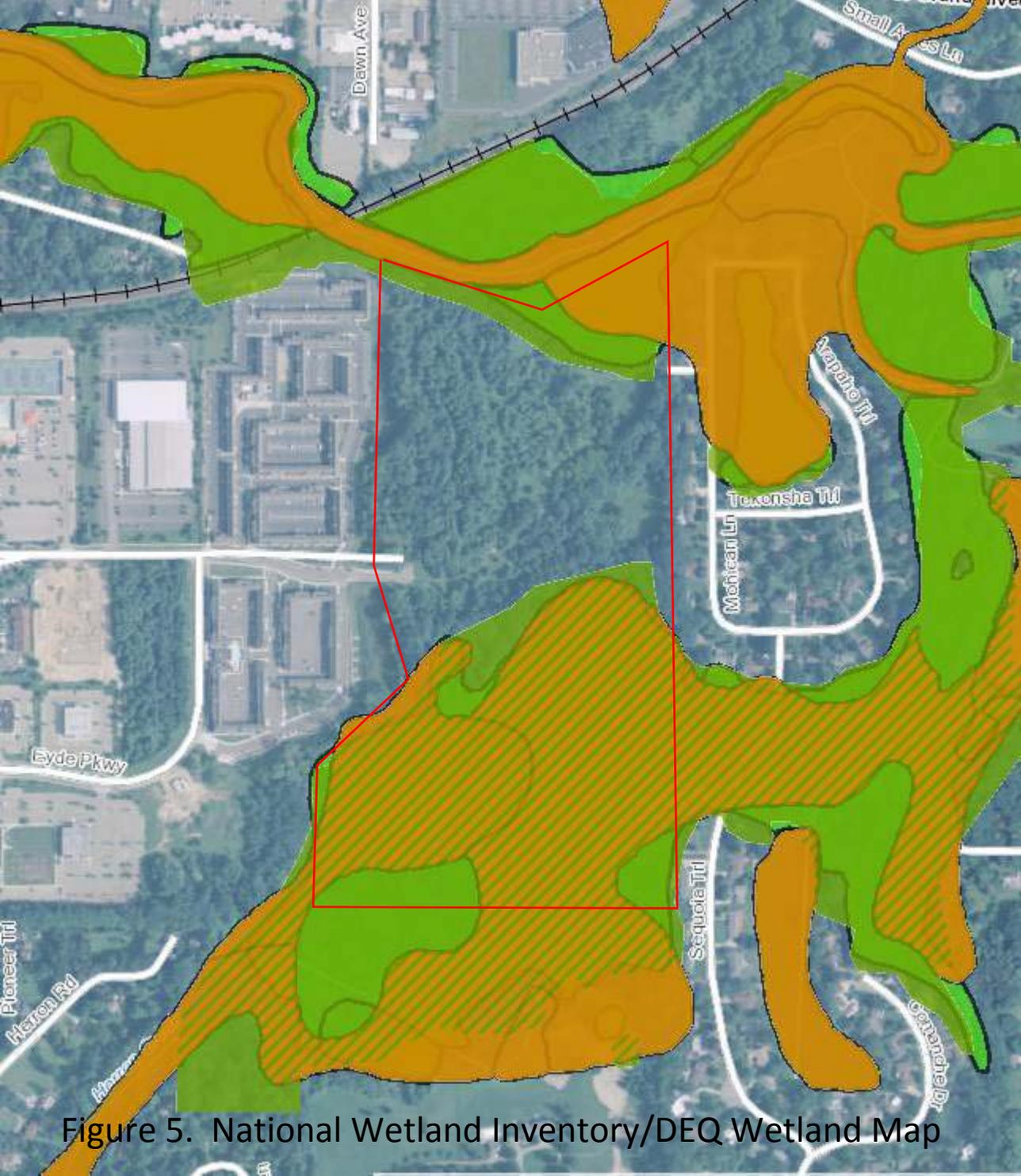


Figure 5. National Wetland Inventory/DEQ Wetland Map

Map 7-3
GROUNDWATER VULNERABILITY

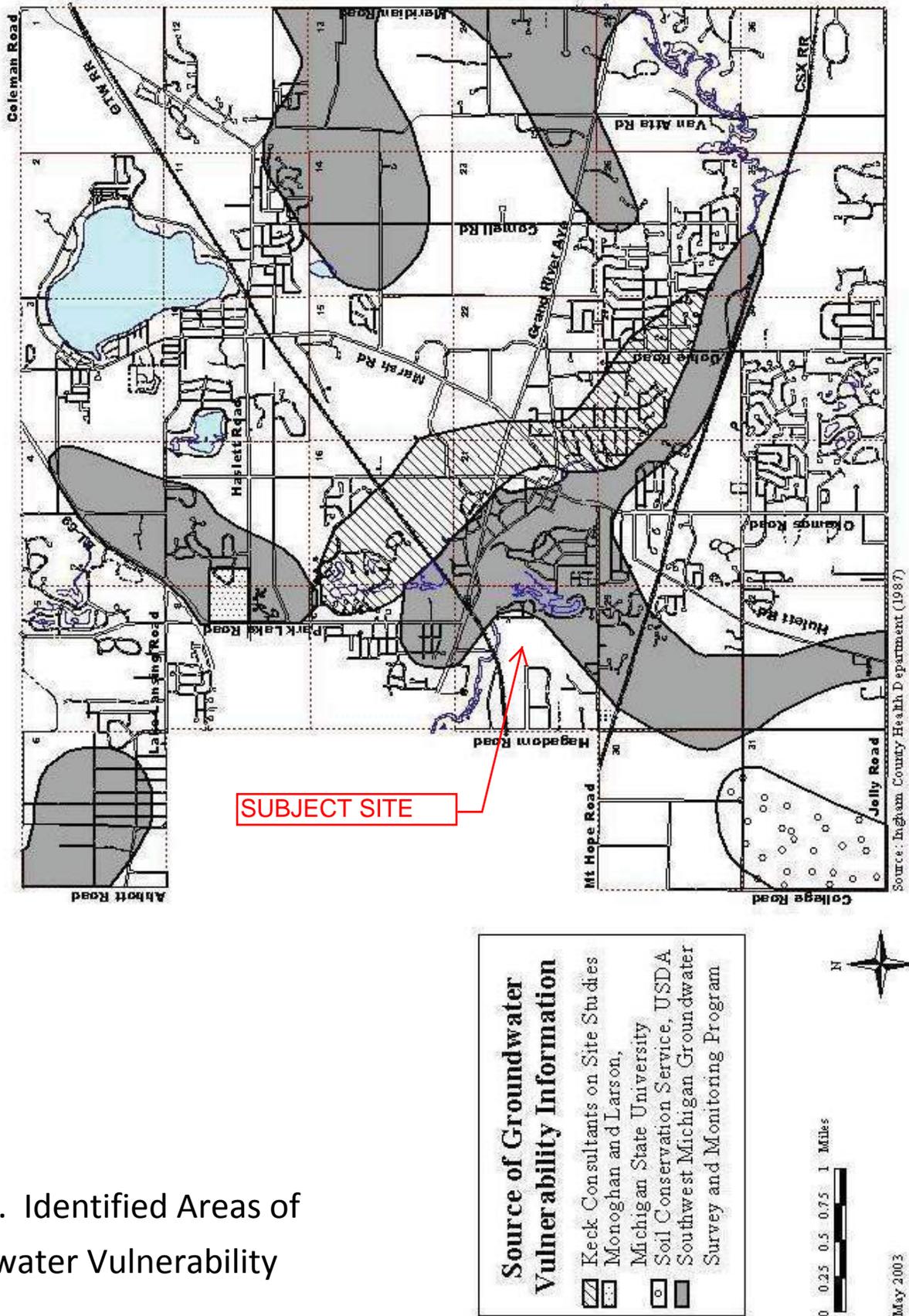


Figure 7. Identified Areas of Groundwater Vulnerability

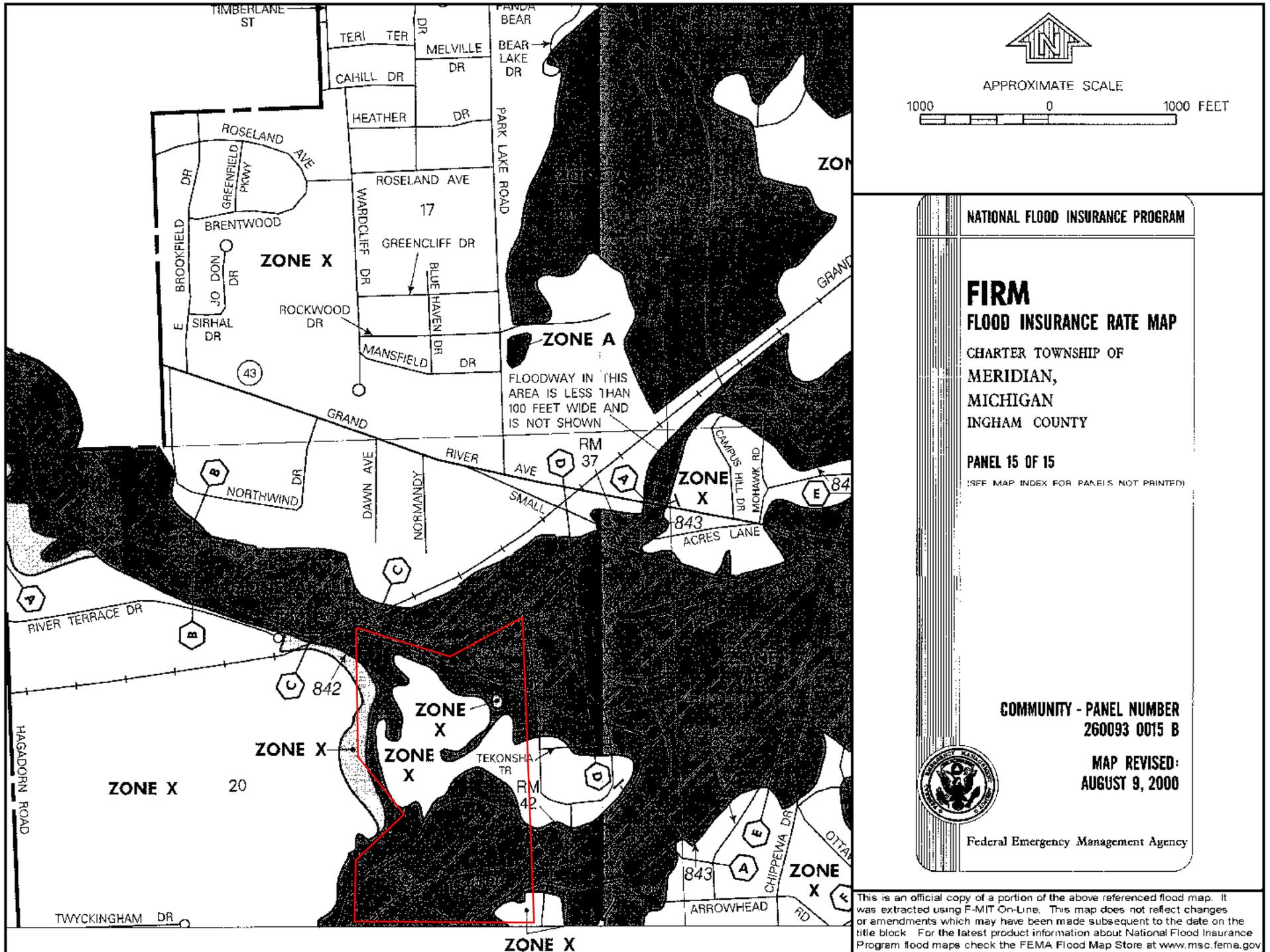
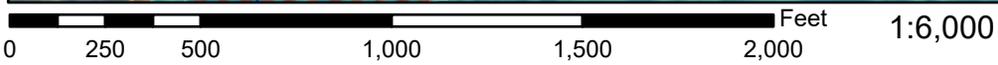
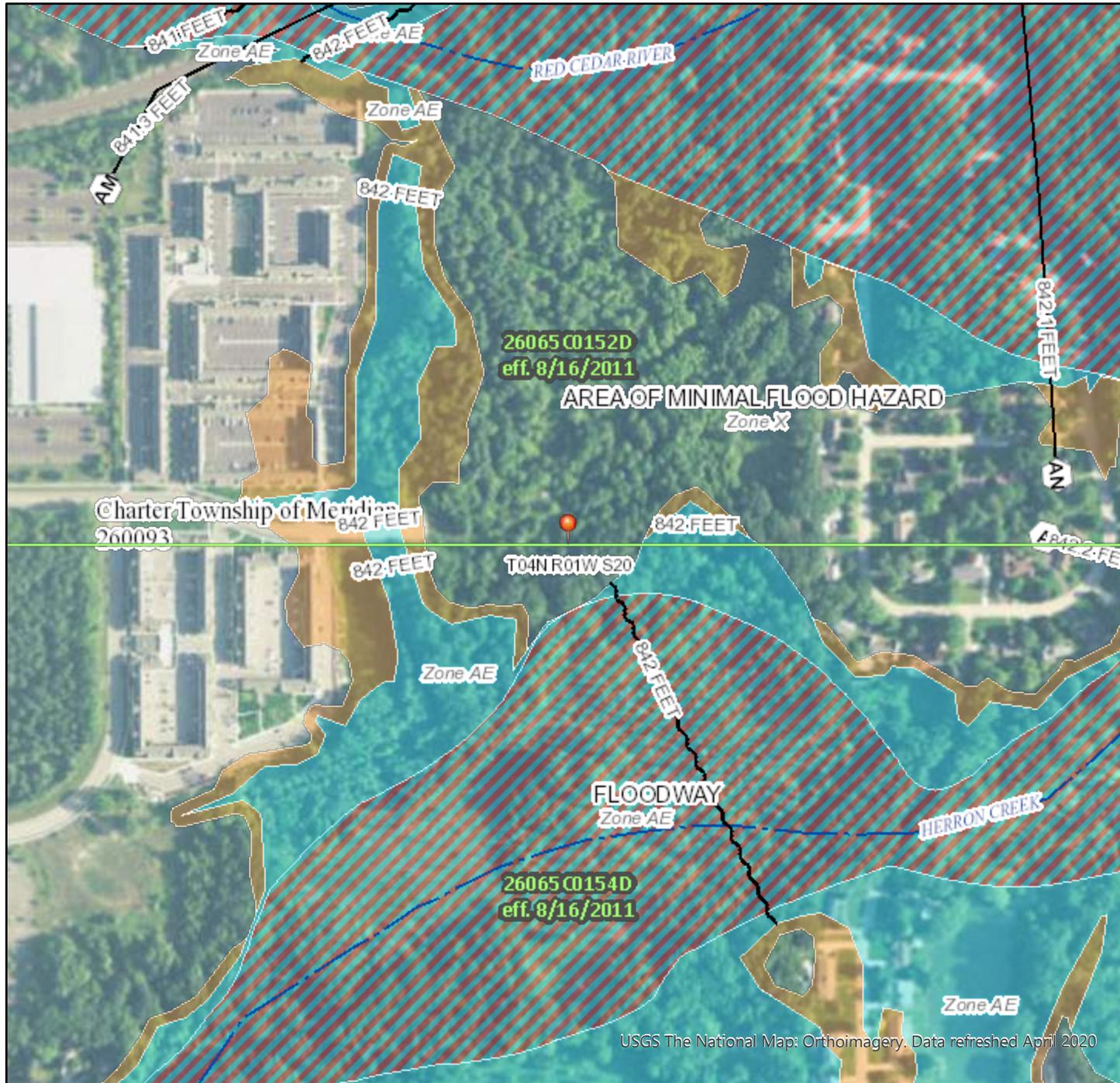


Figure 6. Flood Insurance Rate Map (FIRM)

National Flood Hazard Layer FIRMette



84°27'17"W 42°43'21"N



84°26'39"W 42°42'54"N

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D

OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall

OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5 Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature

MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **8/13/2020 at 11:09 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

USGS The National Map: Orthoimagery. Data refreshed April 2020

Soil Map—Ingham County, Michigan
(Hannah Farms East)



Map Scale: 1:3,600 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

Figure 8. County
Soil Survey Map



Soil Map—Ingham County, Michigan
(Hannah Farms East)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ingham County, Michigan
Survey Area Data: Version 13, Sep 18, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

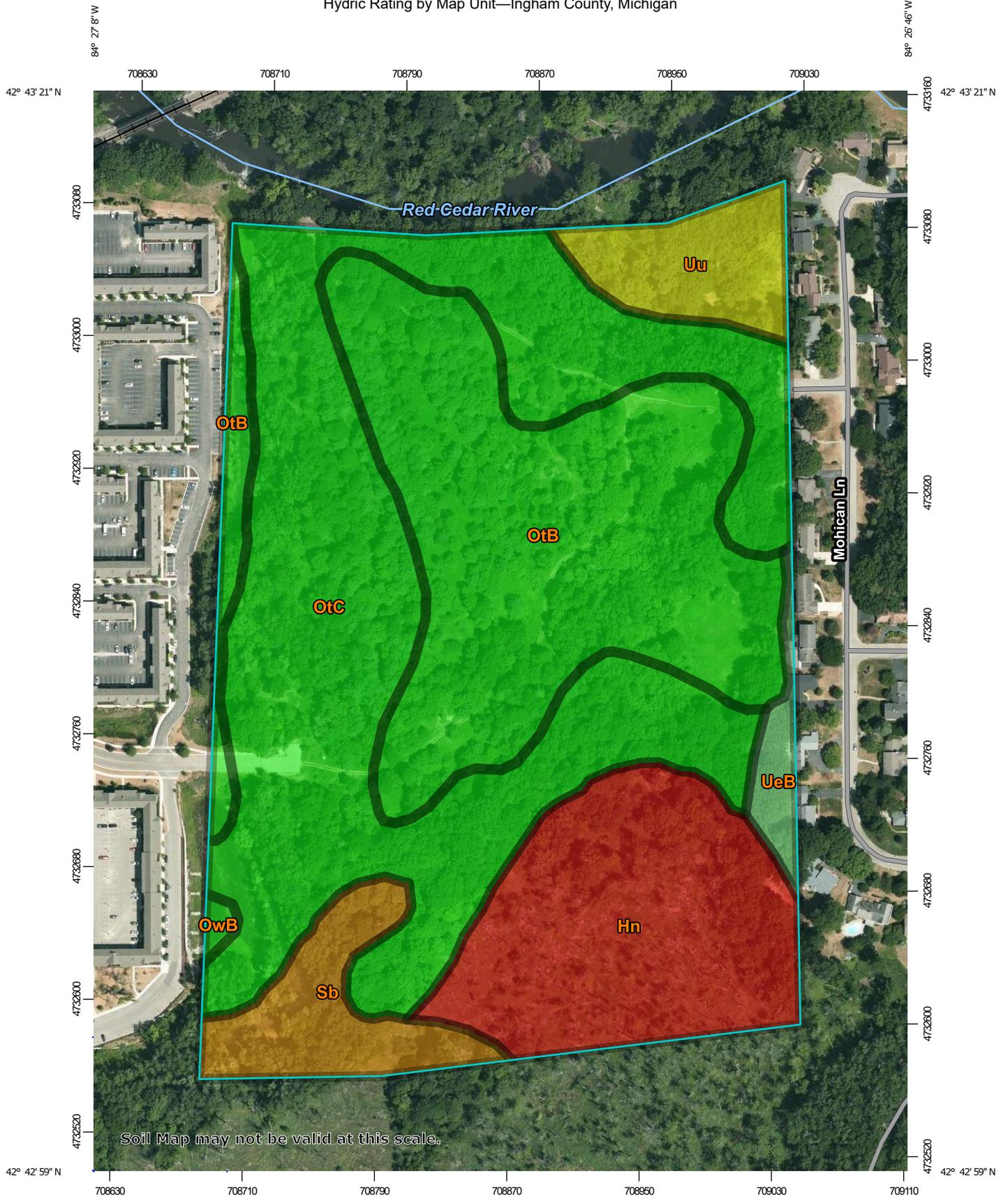
Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

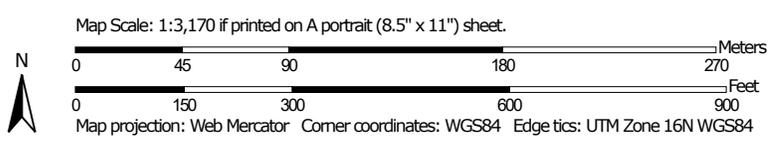
Map Unit Legend

Ingham County, Michigan (MI065)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Hn	Houghton muck, 0 to 1 percent slopes	10.5	22.7%
OtB	Oshtemo-Spinks loamy sands, 0 to 6 percent slopes	12.4	26.6%
OtC	Oshtemo-Spinks loamy sands, 6 to 12 percent slopes	15.7	33.9%
Sb	Sebewa loam, 0 to 2 percent slopes	5.9	12.7%
UeB	Urban land-Boyer-Spinks complex, 0 to 10 percent slopes	0.4	0.9%
Uu	Urban land-Fluvaquents complex	1.5	3.2%
Totals for Area of Interest		46.4	100.0%

Hydric Rating by Map Unit—Ingham County, Michigan



Soil Map may not be valid at this scale.



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

-  Hydric (100%)
-  Hydric (66 to 99%)
-  Hydric (33 to 65%)
-  Hydric (1 to 32%)
-  Not Hydric (0%)
-  Not rated or not available

Soil Rating Lines

-  Hydric (100%)
-  Hydric (66 to 99%)
-  Hydric (33 to 65%)
-  Hydric (1 to 32%)
-  Not Hydric (0%)
-  Not rated or not available

Soil Rating Points

-  Hydric (100%)
-  Hydric (66 to 99%)
-  Hydric (33 to 65%)
-  Hydric (1 to 32%)
-  Not Hydric (0%)
-  Not rated or not available

Water Features

 Streams and Canals

Transportation

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ingham County, Michigan
 Survey Area Data: Version 18, Jun 1, 2020

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 4, 2018—Jul 18, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
Hn	Houghton muck, 0 to 1 percent slopes	100	7.1	16.3%
OtB	Oshtemo-Spinks loamy sands, 0 to 6 percent slopes	0	13.4	30.7%
OtC	Oshtemo-Spinks loamy sands, 6 to 12 percent slopes	0	17.8	40.9%
OwB	Owosso-Marlette sandy loams, 2 to 6 percent slopes	0	0.1	0.3%
Sb	Sebewa loam, 0 to 2 percent slopes	95	2.4	5.6%
UeB	Urban land-Boyer-Spinks complex, 0 to 10 percent slopes	4	0.7	1.6%
Uu	Urban land-Fluvaquents complex	45	2.0	4.7%
Totals for Area of Interest			43.6	100.0%

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

APPENDIX II- VEGETATION LISTS

Table 1. Species list including scientific and common name, wetness indicator code (WET), wetness co-efficient (W), conservation co-efficient (C), nativity, habit, and occurrence of species identified at the Hannah Farms East (Meridian Twp.) project site - Upland Old Field with Scattered Trees

<i>Scientific Name</i>	Common Name	WET	W	C	Native	Habit	Occurrence
<i>Acer negundo</i>	Box-elder	FAC	0	0	Yes	Tree	Occasional
<i>Andropogon gerardii</i>	Big bluestem	FAC	0	5	Yes	Grass	Infrequent
<i>Asclepias syriaca</i>	Common Milkweed	UPL	5	1	Yes	Forb	Infrequent
<i>Bromus inermis</i>	SMOOTH BROME	UPL	5	*	No	Grass	Common
<i>Cichorium intybus</i>	CHICORY	FACU	3	*	No	Forb	Occasional
<i>Cirsium arvense</i>	FIELD THISTLE	FACU	3	*	No	Forb	Infrequent
<i>Dactylis glomerata</i>	ORCHARD GRASS	FACU	3	*	No	Grass	Common
<i>Daucus carota</i>	QUEEN ANNE'S LACE	UPL	5	*	No	Forb	Common
<i>Echinacea purpurea</i>	PURPLE CONEFLOWER	UPL	5	*	No	Forb	Infrequent
<i>Elaeagnus umbellata</i>	AUTUMN-OLIVE	UPL	5	*	No	Shrub	Occasional
<i>Helianthus divaricatus</i>	Woodland Sunflower	UPL	5	5	Yes	Forb	Infrequent
<i>Juniperus virginiana</i>	Red-cedar	FACU	3	3	Yes	Tree	Infrequent
<i>Lonicera tatarica</i>	TARTARIAN HONEYSUCKLE	FACU	3	*	No	Shrub	Occasional
<i>Monarda fistulosa</i>	wild-bergamont	FACU	3	2	Yes	Forb	Occasional
<i>Oenothera biennis</i>	Evening-Primrose	FACU	3	2	Yes	Forb	Infrequent
<i>Panicum virgatum</i>	Switchgrass	FAC	0	4	Yes	Grass	Infrequent
<i>Pinus strobus</i>	White Pine	FACU	3	3	Yes	Tree	Occasional
<i>Plantago lanceolata</i>	ENGLISH PLANTAIN	FACU	3	*	No	Forb	Occasional
<i>Plantago major</i>	COMMON PLANTAIN	FACU	3	*	No	Forb	Occasional
<i>Phleum pratense</i>	TIMOTHY	FACU	3	*	No	Grass	Common
<i>Poa compressa</i>	CANADA BLUEGRASS	FACU	3	*	No	Grass	Common
<i>Poa pratensis</i>	KENTUCKY BLUEGRASS	FACU	3	*	No	Grass	Common
<i>Populus deltoides</i>	Cottonwood	FAC	0	1	Yes	Tree	Occasional
<i>Prunus serotina</i>	Black Cherry	FACU	3	2	Yes	Tree	Infrequent
<i>Rhamnus cathartica</i>	COMMON BUCKTHORN	FAC	0	*	No	Shrub	Occasional
<i>Rubus allegheniensis</i>	Blackberry	FACU	3	1	Yes	Shrub	Occasional
<i>Rubus occidentalis</i>	Black Raspberry	UPL	5	1	Yes	Shrub	Occasional
<i>Rosa multiflora</i>	MULTIFLORA ROSE	FACU	3	*	No	Shrub	Infrequent
<i>Schizachyrium scoparium</i>	Little Bluestem	FACU	3	5	Yes	Grass	Infrequent
<i>Solidago altissima</i>	Tall Goldenrod	FACU	3	1	Yes	Forb	Common
<i>Solidago canadensis</i>	Canada Goldenrod	FACU	3	1	Yes	Forb	Occasional
<i>Toxicodendron radicans</i>	Poison-Ivy	FAC	0	2	Yes	Vine	Infrequent
<i>Verbascum thapsis</i>	COMMON MULLEIN	UPL	5	*	No	Forb	Infrequent
Count = 33	Average Wetness Co-efficient =		2.94				
	Average Conservation Co-efficient =			2.29			

Table 2. Species list including scientific and common name, wetness indicator code (WET), wetness co-efficient (W), conservation co-efficient (C), nativity, habit, and occurrence of species identified at the Hannah Farms East (Meridian Twp.) project site - Upland Scrub-shrub/Mixed Deciduous Forest

<i>Scientific Name</i>	Common Name	WET	W	C	Native	Habit	Occurrence
<i>Acer negundo</i>	Box-elder	FAC	0	0	Yes	Tree	Common
<i>Acer platanoides</i>	NORWAY MAPLE	UPL	5	*	No	Tree	Infrequent
<i>Acer rubrum</i>	Red Maple	FAC	0	1	Yes	Tree	Infrequent
<i>Acer saccharinum</i>	Silver Maple	FACW	-3	2	Yes	Tree	Infrequent
<i>Acer saccharum</i>	Sugar Maple	FACU	3	5	Yes	Tree	Occasional
<i>Apocynum cannabinum</i>	Indian-hemp	FAC	0	3	Yes	Forb	Occasional
<i>Asplenium platyneuron</i>	Ebony spleenwort	FACU	3	2	Yes	Fern	Occasional
<i>Carex pensylvanica</i>	Penn Sedge	UPL	5	4	Yes	Sedge	Common
<i>Carpinus caroliniana</i>	Musclewood	FAC	0	6	Yes	Tree	Infrequent
<i>Carya cordiformis</i>	Bitternut Hickory	FAC	0	5	Yes	Tree	Infrequent
<i>Celtis occidentalis</i>	Hackberry	FAC	0	5	Yes	Tree	Infrequent
<i>Cornus foemina</i>	Gray Dogwood	FAC	0	1	Yes	Shrub	Occasional
<i>Elaeagnus umbellata</i>	AUTUMN-OLIVE	FACU	3	*	No	Shrub	Infrequent
<i>Fagus grandifolia</i>	American Beech	FACU	3	6	Yes	Tree	Infrequent
<i>Fragaria virginiana</i>	Wild Strawberry	FACU	3	2	Yes	Forb	Common
<i>Fraxinus americana</i>	White Ash	FACU	3	5	Yes	Tree	Occasional
<i>Fraxinus pennsylvanica</i>	Green Ash	FACW	-3	2	Yes	Tree	Infrequent
<i>Geranium maculatum</i>	Wild Geranium	FACU	3	4	Yes	Forb	Infrequent
<i>Geum canadense</i>	White Avens	FAC	0	1	Yes	Forb	Occasional
<i>Glechoma hederacea</i>	GROUND-IVY	FACU	3	*	No	Forb	Occasional
<i>Hackelia virginiana</i>	Beggar's lice	FACU	3	1	Yes	Forb	Occasional
<i>Hesperis matronalis</i>	DAME'S ROCKET	FACU	3	*	No	Forb	Common
<i>Juglans nigra</i>	Black Walnut	FACU	3	5	Yes	Tree	Occasional
<i>Lonicera maackii</i>	AMUR HONEYSUCKLE	UPL	5	*	No	Shrub	Common
<i>Lonicera tatarica</i>	TARTARIAN HONEYSUCKLE	FACU	3	*	No	Shrub	Common
<i>Morus alba</i>	WHITE MULBERRY	FACU	3	*	No	Tree	Infrequent
<i>Ostrya virginiana</i>	Hophornbeam	FACU	3	5	Yes	Tree	Occasional
<i>Parthenocissus quinquefolia</i>	Virginia creeper	FACU	3	5	Yes	Vine	Common
<i>Pinus strobus</i>	White Pine	FACU	3	3	Yes	Tree	Occasional
<i>Podophyllum peltatum</i>	May-apple	FACU	3	3	Yes	Forb	Infrequent
<i>Populus deltoides</i>	Cottonwood	FAC	0	1	Yes	Tree	Occasional
<i>Populus grandidentata</i>	Bigtooth Aspen	FACU	3	4	Yes	Tree	Infrequent
<i>Populus tremuloides</i>	Trembling Aspen	FAC	0	1	Yes	Tree	Occasional
<i>Prunus serotina</i>	Black Cherry	FACU	3	2	Yes	Tree	Common
<i>Quercus alba</i>	White Oak	FACU	3	5	Yes	Tree	Occasional
<i>Quercus macrocarpa</i>	Bur Oak	FACU	3	5	Yes	Tree	Infrequent
<i>Quercus rubra</i>	Red Oak	FACU	3	5	Yes	Tree	Occasional
<i>Rhamnus cathartica</i>	COMMON BUCKTHORN	FAC	0	*	No	Shrub	Common
<i>Rhus typhina</i>	Staghorn sumac	FACU	3	2	Yes	Shrub	Infrequent
<i>Rosa multiflora</i>	MULTIFLORA ROSE	FACU	3	*	No	Shrub	Occasional
<i>Rubus allegheniensis</i>	Blackberry	FACU	3	1	Yes	Shrub	Common
<i>Rubus occidentalis</i>	Black Raspberry	UPL	5	1	Yes	Shrub	Occasional
<i>Solidago caesia</i>	Bluestem Goldenrod	FACU	3	6	Yes	Forb	Infrequent
<i>Tilia americana</i>	American Basswood	FACU	-3	5	Yes	Tree	Occasional
<i>Toxicodendron radicans</i>	Poison-Ivy	FAC	0	2	Yes	Vine	Common
<i>Ulmus pumila</i>	SIBERIAN ELM	FACU	3	*	No	Tree	Infrequent
<i>Verbena urticifolia</i>	White Vervain	FAC	0	4	Yes	Forb	Infrequent
<i>Vitis riparia</i>	Riverbank Grape	FAC	0	3	Yes	Vine	Occasional
<i>Zanthoxylum americanum</i>	Prickly-ash	FACU	3	3	Yes	Shrub	Common
Count = 49	Average Wetness Co-efficient =		1.94				
	Average Conservation Co-efficient =			3.23			

Table 3. Species list including scientific and common name, wetness indicator code (WET), wetness co-efficient (W), conservation co-efficient (C), nativity, habit, and occurrence of species identified at the Hannah Farms East (Meridian Twp.) project site -Wetlands

Scientific Name	Common Name	WET	W	C	Native	Habit	Occurrence
<i>Acer negundo</i>	Box-elder	FAC	0	0	Yes	Tree	Common
<i>Acer saccharinum</i>	Silver Maple	FACW	-3	2	Yes	Tree	Occasional
<i>Acer rubrum</i>	Red Maple	FAC	0	1	Yes	Tree	Infrequent
<i>Agrostis gigantea</i>	Redtop	FACW	-3	*	No	Grass	Occasional
<i>Athyrium filix-femina</i>	Lady Fern	FAC	0	4	Yes	Fern	Infrequent
<i>Boehmeria cylindrica</i>	False Nettle	OBL	-5	5	Yes	Forb	Occasional
<i>Bolboschoenus fluviatilis</i>	Bulrush	OBL	-5	6	Yes	Sedge	Infrequent
<i>Carex grayi</i>	Gray's Sedge	FACW	-3	6	Yes	Sedge	Occasional
<i>Carex intumescens</i>	Sedge	FACW	-3	3	Yes	Sedge	Infrequent
<i>Carex lacustris</i>	Lake Sedge	OBL	-5	6	Yes	Sedge	Occasional
<i>Carex scoparia</i>	Broom Sedge	FACW	-3	4	Yes	Sedge	Occasional
<i>Carex stipata</i>	Sedge	OBL	-5	1	Yes	Sedge	Infrequent
<i>Carex vulpinoidea</i>	Fox Sedge	OBL	-5	1	Yes	Sedge	Occasional
<i>Cornus amomum</i>	Silky Dogwood	FACW	-3	2	Yes	Shrub	Common
<i>Cornus foemina/racemosa</i>	Gray Dogwood	FAC	0	1	Yes	Shrub	Common
<i>Euthamia graminifolia</i>	Grass-leaved Goldenrod	FAC	0	3	Yes	Forb	Occasional
<i>Fraxinus nigra</i>	Black Ash	FACW	-3	6	Yes	Tree	Occasional
<i>Fraxinus pennsylvanica</i>	Green Ash	FACW	-3	2	Yes	Tree	Common
<i>Geum canadense</i>	White Avens	FAC	0	1	Yes	Forb	Occasional
<i>Glyceria striata</i>	Fowl Manna Grass	OBL	-5	4	Yes	Grass	Infrequent
<i>Iris x vinicolor</i>	Louisiana Iris	OBL	-5	*	No	Forb	Infrequent
<i>Juncus dudleyi</i>	Dudley's Rush	FACW	-3	5	Yes	Forb	Infrequent
<i>Juncus tenuis</i>	Path Rush	FAC	0	1	Yes	Forb	Infrequent
<i>Larix laricina</i>	Tamarack	FACW	-3	5	Yes	Tree	Infrequent
<i>Leersia oryzoides</i>	Rice cut Grass	OBL	-5	3	Yes	Grass	Occasional
<i>Leersia virginica</i>	White Grass	FACW	-3	5	Yes	Grass	Occasional
<i>Lysimachia nummularia</i>	Moneywort	FACW	-3	*	No	Forb	Infrequent
<i>Muhlenbergia mexicana</i>	Leafy Satin Grass	FACW	-3	3	Yes	Grass	Infrequent
<i>Onoclea sensibilis</i>	Sensitive Fern	FACW	-3	2	Yes	Fern	Occasional
<i>Persicaria hydropiper</i>	Water-pepper	OBL	-5	1	Yes	Forb	Infrequent
<i>Phalaris arundinacea</i>	Reed canary grass	FACW	-3	0	Yes	Grass	Common
<i>Platanus occidentalis</i>	Sycamore	FACW	-3	7	Yes	Tree	Infrequent
<i>Populus deltoides</i>	Cottonwood	FAC	0	1	Yes	Tree	Common
<i>Populus tremuloides</i>	Trembling Aspen	FAC	0	1	Yes	Tree	Infrequent
<i>Quercus bicolor</i>	Swamp White Oak	FACW	-3	8	Yes	Tree	Occasional
<i>Rhamnus cathartica</i>	Common Buckthorn	FAC	0	*	No	Shrub/Tree	Common
<i>Rosa multiflora</i>	Multiflora Rose	FACU	3	*	No	Shrub	Infrequent
<i>Rubus strigosus</i>	Red Raspberry	FAC	0	2	Yes	Shrub	Common
<i>Sambucus canadensis</i>	Elderberry	FACW	-3	3	Yes	Shrub	Occasional
<i>Scirpus atrovirens</i>	Dark Green Bulrush	OBL	-5	3	Yes	Sedge	Occasional
<i>Solidago gigantea</i>	Late Goldenrod	FACW	-3	3	Yes	Forb	Occasional
<i>Symphotrichum lanceolatum</i>	Panicled American-aster	FACW	-3	2	Yes	Forb	Infrequent
<i>Symphotrichum lateriflorum</i>	Calico American-aster	FAC	0	2	Yes	Forb	Infrequent
<i>Toxicodendron radicans</i>	Poison-Ivy	FAC	0	2	Yes	Vine	Common
<i>Typha angustifolia</i>	Narrowleaf Cattail	OBL	-5	*	No	Forb	Occasional
<i>Typha latifolia</i>	Broadleaf Cattail	OBL	-5	1	Yes	Forb	Occasional
<i>Ulmus americana</i>	American Elm	FACW	-3	1	Yes	Tree	Common
<i>Urtica dioica</i>	Stinging nettle	FAC	0	1	Yes	Forb	Occasional
<i>Verbena urticifolia</i>	White Vervain	FAC	0	4	Yes	Forb	Occasional
<i>Vitis riparia</i>	Riverbank Grape	FAC	0	3	Yes	Vine	Common
Count = 50	Average Wetness Co-efficient =		-2.4				
	Average Conservation Co-efficient =			2.88			

APPENDIX III

**Marx Wetland's Tree Survey Results Table & Existing Topographic Survey (Provided by KEBS
Inc.)**

Tree Survey Data - Hannah Farms East Site

Tag #	Scientific Name	Common Name	DBH	Condition	Multiple	TOTALS	Scientific Name	Common Name	Count
1	<i>Juglans nigra</i>	Black Walnut	16	G			<i>Acer negundo</i>	Box Elder	45
2	<i>Juglans nigra</i>	Black Walnut	21	G		1	<i>Acer rubrum</i>	Red Maple	1
3	<i>Juglans nigra</i>	Black Walnut	16.5	G		2	<i>Acer saccharinum</i>	Silver Maple	16
4	<i>Tilia americana</i>	Basswood	14	G		3	<i>Acer saccharum</i>	Sugar Maple	46
5	<i>Prunus serotina</i>	Black Cherry	14,14,14	G	M	4	<i>Celtis occidentalis</i>	Hackberry	8
6	<i>Tilia americana</i>	Basswood	18,13.5,13	G	M	5	<i>Fagus grandifolia</i>	American Beech	1
7	<i>Tilia americana</i>	Basswood	17	F		6	<i>Fraxinus pennsylvanica</i>	Green Ash	18
8	<i>Tilia americana</i>	Basswood	13,15,15	G	M	7	<i>Juglans nigra</i>	Black Walnut	10
9	<i>Tilia americana</i>	Basswood	12.5	F		8	<i>Ostrya virginiana</i>	Ironwood	1
10	<i>Tilia americana</i>	Basswood	16	G		9	<i>Pinus strobus</i>	White Pine	109
11	<i>Tilia americana</i>	Basswood	17,13,12	G	M	10	<i>Pinus sylvestris</i>	Scotch Pine	1
12	<i>Tilia americana</i>	Basswood	20,18	G	M	11	<i>Platanus occidentalis</i>	Sycamore	2
13	<i>Tilia americana</i>	Basswood	17.5	G		12	<i>Populus deltoides</i>	Cottonwood	74
14	<i>Prunus serotina</i>	Black Cherry	12,14.5	G	M	13	<i>Populus tremuloides</i>	Quaking Aspen	1
15	<i>Tilia americana</i>	Basswood	16.5	G		14	<i>Prunus serotina</i>	Black Cherry	90
16	<i>Tilia americana</i>	Basswood	13,12	G	M	15	<i>Quercus alba</i>	White Oak	5
17	<i>Prunus serotina</i>	Black Cherry	12	F		16	<i>Quercus macrocarpa</i>	Bur Oak	2
18	<i>Tilia americana</i>	Basswood	12,18,18,12	G	M	17	<i>Quercus bicolor</i>	Swamp White Oak	8
19	<i>Prunus serotina</i>	Black Cherry	15.5,15.5	G	M	18	<i>Quercus rubra</i>	Red Oak	90
20	<i>Tilia americana</i>	Basswood	13,22,22,12,21,20	G	M	19	<i>Tilia americana</i>	Basswood	52
21	<i>Juglans nigra</i>	Black Walnut	20.5	G		20	<i>Ulmus americana</i>	American Elm	7
22	<i>Juglans nigra</i>	Black Walnut	22	G		21	<i>Ulmus pumila</i>	Siberian Elm	1
23	<i>Acer saccharum</i>	Sugar Maple	13.5	G		22			
24	<i>Prunus serotina</i>	Black Cherry	14	G					
25	<i>Quercus alba</i>	White Oak	20	G					
26	<i>Quercus rubra</i>	Red Oak	21.5	G					
27	<i>Quercus macrocarpa</i>	Bur Oak	22	G		1			
28	<i>Quercus rubra</i>	Red Oak	14	G		2			
29	<i>Acer saccharum</i>	Sugar Maple	15.5	G		3			
30	<i>Quercus rubra</i>	Red Oak	23.5	G		4			
31	<i>Prunus serotina</i>	Black Cherry	15,16	G	M	5			
32	<i>Quercus rubra</i>	Red Oak	20,16.5	G	M	6			
33	<i>Tilia americana</i>	Basswood	14.5	F		7			
34	<i>Acer saccharinum</i>	Silver Maple	42	G		8			
35	<i>Populus deltoides</i>	Cottonwood	15	G		9			
36	<i>Populus deltoides</i>	Cottonwood	14	G		10			
37	<i>Populus deltoides</i>	Cottonwood	14.5	G		11			
38	<i>Populus deltoides</i>	Cottonwood	17.5	G		12			
39	<i>Populus deltoides</i>	Cottonwood	12	F		13			
40	<i>Populus deltoides</i>	Cottonwood	14	G		14			
41	<i>Populus deltoides</i>	Cottonwood	13	G		15			
42	<i>Populus deltoides</i>	Cottonwood	18	G		16			
43	<i>Ulmus pumila</i>	Siberian Elm	20.5	F		17			
44	<i>Populus deltoides</i>	Cottonwood	12	G					
45	<i>Populus deltoides</i>	Cottonwood	19	G					
46	<i>Populus deltoides</i>	Cottonwood	12	G					
47	<i>Acer saccharum</i>	Sugar Maple	22	G					
48	<i>Acer saccharum</i>	Sugar Maple	16	G					
49	<i>Acer saccharum</i>	Sugar Maple	25.5	G					
50	<i>Acer saccharum</i>	Sugar Maple	15.5	G					
51	<i>Acer saccharum</i>	Sugar Maple	17.5	G					
52	<i>Acer saccharum</i>	Sugar Maple	21	G					
53	<i>Acer saccharum</i>	Sugar Maple	25	G					
54	<i>Acer saccharum</i>	Sugar Maple	19.5	G					
55	<i>Acer saccharum</i>	Sugar Maple	18	G					
56	<i>Acer saccharinum</i>	Silver Maple	20.5	G					
57	<i>Acer saccharinum</i>	Silver Maple	27	G					
58	<i>Acer saccharinum</i>	Silver Maple	29	G					
59	<i>Acer saccharinum</i>	Silver Maple	22	G					
60	<i>Fraxinus pennsylvanica</i>	Green Ash	20	P					
61	<i>Acer saccharum</i>	Sugar Maple	16.5	G					
62	<i>Acer saccharum</i>	Sugar Maple	28	G					
63	<i>Acer saccharum</i>	Sugar Maple	14.5	G					
64	<i>Acer saccharum</i>	Sugar Maple	18	G					
65	<i>Acer saccharum</i>	Sugar Maple	22.5	G					
66	<i>Acer saccharum</i>	Sugar Maple	20.5	F					
67	<i>Acer saccharum</i>	Sugar Maple	19	G					
68	<i>Acer saccharum</i>	Sugar Maple	18	G					
69	<i>Acer saccharum</i>	Sugar Maple	13.5	G					
70	<i>Prunus serotina</i>	Black Cherry	13.5	F					
71	<i>Acer saccharum</i>	Sugar Maple	16	G					
72	<i>Acer saccharum</i>	Sugar Maple	24	G					
73	<i>Quercus rubra</i>	Red Oak	26	G					
74	<i>Acer saccharum</i>	Sugar Maple	16	G					
75	<i>Prunus serotina</i>	Black Cherry	12.5	F					
76	<i>Acer saccharum</i>	Sugar Maple	13	G					
77	<i>Quercus rubra</i>	Red Oak	26	G					
78	<i>Quercus rubra</i>	Red Oak	14	G					
79	<i>Prunus serotina</i>	Black Cherry	14	G					
80	<i>Prunus serotina</i>	Black Cherry	14	G					
81	<i>Prunus serotina</i>	Black Cherry	13.5	G					
82	<i>Quercus rubra</i>	Red Oak	18	G					
83	<i>Prunus serotina</i>	Black Cherry	15.5	G					
84	<i>Quercus rubra</i>	Red Oak	14	G					
85	<i>Quercus rubra</i>	Red Oak	13	G					
86	<i>Acer saccharum</i>	Sugar Maple	26	G					
87	<i>Acer saccharum</i>	Sugar Maple	16	G					
88	<i>Acer saccharum</i>	Sugar Maple	20,16,20	G	M				
89	<i>Prunus serotina</i>	Black Cherry	18	G					
90	<i>Prunus serotina</i>	Black Cherry	16	G					
91	<i>Quercus rubra</i>	Red Oak	25	G					
92	<i>Quercus rubra</i>	Red Oak	15	G					
93	<i>Acer saccharum</i>	Sugar Maple	12.5	G					
94	<i>Quercus rubra</i>	Red Oak	15.5	G					
95	<i>Quercus rubra</i>	Red Oak	16	G					
96	<i>Quercus rubra</i>	Red Oak	19	G					
97	<i>Quercus rubra</i>	Red Oak	16.5	G					
98	<i>Prunus serotina</i>	Black Cherry	30.5	G					
99	<i>Tilia americana</i>	Basswood	18	G					
100	<i>Prunus serotina</i>	Black Cherry	30	G					
102	<i>Tilia americana</i>	Basswood	13	G					
103	<i>Tilia americana</i>	Basswood	16.5	G					
104	<i>Tilia americana</i>	Basswood	20	G					
105	<i>Acer saccharum</i>	Sugar Maple	12	G					
106	<i>Prunus serotina</i>	Black Cherry	19	G					
107	<i>Acer saccharum</i>	Sugar Maple	15	P					
108	<i>Juglans nigra</i>	Black Walnut	15.5,16.5	G	M				
109	<i>Prunus serotina</i>	Black Cherry	12.5	F					

LARGEST TREES

Scientific Name	Common Name	Count	
<i>Populus deltoides</i>	Cottonwood	55	G
<i>Quercus rubra</i>	Red Oak	47	G
<i>Populus deltoides</i>	Cottonwood	46	G
<i>Quercus rubra</i>	Red Oak	44	G
<i>Acer saccharinum</i>	Silver Maple	42	G
<i>Acer saccharum</i>	Sugar Maple	38	G
<i>Quercus rubra</i>	Red Oak	36	F
<i>Quercus rubra</i>	Red Oak	35	G
<i>Fraxinus pennsylvanica</i>	Green Ash	34	P
<i>Populus deltoides</i>	Cottonwood	34	G
<i>Populus deltoides</i>	Cottonwood	32.5	G
<i>Quercus rubra</i>	Red Oak	31.5	F
<i>Quercus rubra</i>	Red Oak	31.5	G
<i>Prunus serotina</i>	Black Cherry	31	G
<i>Populus deltoides</i>	Cottonwood	31	G
<i>Prunus serotina</i>	Black Cherry	30.5	G
<i>Prunus serotina</i>	Black Cherry	30	G

MULTIPLES

Multiples	36
Total Multiple Stems	95
Total Stems 12"dbh or Greater	648

110	<i>Acer saccharinum</i>	Silver Maple	18.15	G	M
111	<i>Quercus rubra</i>	Red Oak	17	G	
112	<i>Acer negundo</i>	Box Elder	15.5	F	
113	<i>Acer saccharum</i>	Sugar Maple	12	G	
114	<i>Juglans nigra</i>	Black Walnut	13	P	
115	<i>Acer saccharum</i>	Sugar Maple	12	F	
116	<i>Quercus rubra</i>	Red Oak	18	G	
117	<i>Quercus rubra</i>	Red Oak	20	G	
118	<i>Quercus alba</i>	White Oak	16	G	
119	<i>Acer saccharinum</i>	Silver Maple	22.5	G	
120	<i>Celtis occidentalis</i>	Hackberry	13	G	
121	<i>Prunus serotina</i>	Black Cherry	12.5	G	
122	<i>Prunus serotina</i>	Black Cherry	18	G	
123	<i>Acer saccharum</i>	Sugar Maple	19	G	
124	<i>Quercus rubra</i>	Red Oak	18	G	
125	<i>Quercus rubra</i>	Red Oak	16	G	
126	<i>Quercus rubra</i>	Red Oak	20	G	
127	<i>Quercus rubra</i>	Red Oak	20	G	
128	<i>Prunus serotina</i>	Black Cherry	16	G	
129	<i>Quercus rubra</i>	Red Oak	13	G	
130	<i>Prunus serotina</i>	Black Cherry	16	G	
131	<i>Prunus serotina</i>	Black Cherry	20.5	G	
132	<i>Quercus rubra</i>	Red Oak	20	G	
133	<i>Tilia americana</i>	Basswood	17	G	
134	<i>Tilia americana</i>	Basswood	17	G	
135	<i>Quercus rubra</i>	Red Oak	21	G	
136	<i>Fagus grandifolia</i>	American Beech	13.5	G	
137	<i>Tilia americana</i>	Basswood	14.5	G	
138	<i>Prunus serotina</i>	Black Cherry	16	G	
139	<i>Quercus rubra</i>	Red Oak	23	G	
140	<i>Prunus serotina</i>	Black Cherry	14	G	
141	<i>Ulmus americana</i>	American Elm	13.5	F	
142	<i>Acer saccharum</i>	Sugar Maple	14	G	
143	<i>Acer saccharum</i>	Sugar Maple	13	G	
144	<i>Quercus rubra</i>	Red Oak	19	G	
145	<i>Quercus rubra</i>	Red Oak	22	G	
146	<i>Quercus rubra</i>	Red Oak	19	G	
147	<i>Quercus rubra</i>	Red Oak	13.5	G	
148	<i>Quercus rubra</i>	Red Oak	15	G	
149	<i>Fraxinus pennsylvanica</i>	Green Ash	13.5	P	
150	<i>Prunus serotina</i>	Black Cherry	22	G	
151	<i>Ulmus americana</i>	American Elm	22	G	
152	<i>Prunus serotina</i>	Black Cherry	20	G	
153	<i>Prunus serotina</i>	Black Cherry	16	G	
154	<i>Acer saccharinum</i>	Silver Maple	12.5	G	
155	<i>Acer saccharinum</i>	Silver Maple	17.5	G	
156	<i>Acer saccharum</i>	Sugar Maple	21	G	
157	<i>Prunus serotina</i>	Black Cherry	16	G	
158	<i>Prunus serotina</i>	Black Cherry	31	G	
159	<i>Acer saccharum</i>	Sugar Maple	14.5	G	
160	<i>Acer saccharum</i>	Sugar Maple	15	G	
161	<i>Prunus serotina</i>	Black Cherry	14.5	G	
162	<i>Prunus serotina</i>	Black Cherry	15	G	
163	<i>Prunus serotina</i>	Black Cherry	18	G	
164	<i>Fraxinus pennsylvanica</i>	Green Ash	17	P	
165	<i>Tilia americana</i>	Basswood	18.5	G	
166	<i>Quercus rubra</i>	Red Oak	22	G	
167	<i>Quercus alba</i>	White Oak	22.5	G	
168	<i>Acer saccharum</i>	Sugar Maple	17.5	G	
169	<i>Prunus serotina</i>	Black Cherry	21.5	G	
170	<i>Acer negundo</i>	Box Elder	16	F	
171	<i>Acer negundo</i>	Box Elder	15	G	
172	<i>Prunus serotina</i>	Black Cherry	15	G	
173	<i>Tilia americana</i>	Basswood	13	G	
174	<i>Prunus serotina</i>	Black Cherry	14	G	
175	<i>Ostrya virginiana</i>	Ironwood	12	G	
176	<i>Acer saccharum</i>	Sugar Maple	13	G	
177	<i>Quercus rubra</i>	Red Oak	44	G	
178	<i>Tilia americana</i>	Basswood	14	G	
179	<i>Acer saccharum</i>	Sugar Maple	17	F	
180	<i>Prunus serotina</i>	Black Cherry	26	G	
181	<i>Prunus serotina</i>	Black Cherry	14	F	
182	<i>Prunus serotina</i>	Black Cherry	15	G	
183	<i>Prunus serotina</i>	Black Cherry	27	G	
184	<i>Prunus serotina</i>	Black Cherry	16	G	
185	<i>Prunus serotina</i>	Black Cherry	13	G	
186	<i>Prunus serotina</i>	Black Cherry	20	G	
187	<i>Prunus serotina</i>	Black Cherry	14.5	G	
188	<i>Prunus serotina</i>	Black Cherry	12	G	
189	<i>Tilia americana</i>	Basswood	16	G	
190	<i>Tilia americana</i>	Basswood	13	F	
191	<i>Tilia americana</i>	Basswood	16.5	G	
192	<i>Fraxinus pennsylvanica</i>	Green Ash	34	P	
193	<i>Tilia americana</i>	Basswood	13	G	
194	<i>Prunus serotina</i>	Black Cherry	20	G	
195	<i>Prunus serotina</i>	Black Cherry	14	G	
196	<i>Quercus rubra</i>	Red Oak	19	G	
197	<i>Quercus rubra</i>	Red Oak	12	G	
198	<i>Prunus serotina</i>	Black Cherry	20	G	
199	<i>Prunus serotina</i>	Black Cherry	20	G	
200	<i>Quercus rubra</i>	Red Oak	25	G	
201	<i>Quercus rubra</i>	Red Oak	19	G	
202	<i>Prunus serotina</i>	Black Cherry	27.5	G	
203	<i>Tilia americana</i>	Basswood	14	G	
204	<i>Fraxinus pennsylvanica</i>	Green Ash	17.5	P	
205	<i>Prunus serotina</i>	Black Cherry	16	G	
206	<i>Prunus serotina</i>	Black Cherry	16	G	
207	<i>Quercus rubra</i>	Red Oak	36	F	
208	<i>Quercus rubra</i>	Red Oak	21	G	
209	<i>Quercus rubra</i>	Red Oak	14	G	
210	<i>Quercus rubra</i>	Red Oak	16	G	
211	<i>Quercus rubra</i>	Red Oak	25	G	
212	<i>Quercus rubra</i>	Red Oak	22	G	
213	<i>Quercus rubra</i>	Red Oak	21	F	
214	<i>Quercus rubra</i>	Red Oak	26	G	
215	<i>Prunus serotina</i>	Black Cherry	20	G	
216	<i>Prunus serotina</i>	Black Cherry	16	F	
217	<i>Quercus rubra</i>	Red Oak	12.5	G	
218	<i>Quercus rubra</i>	Red Oak	13.5	G	
219	<i>Quercus rubra</i>	Red Oak	13.5	G	
220	<i>Quercus rubra</i>	Red Oak	16	G	

221	<i>Quercus rubra</i>	Red Oak	16.5	G	
222	<i>Quercus rubra</i>	Red Oak	13	G	
223	<i>Prunus serotina</i>	Black Cherry	19	G	
224	<i>Acer saccharinum</i>	Silver Maple	12	G	
225	<i>Acer saccharinum</i>	Silver Maple	17	G	
226	<i>Quercus rubra</i>	Red Oak	14	G	
227	<i>Quercus rubra</i>	Red Oak	15	G	
228	<i>Quercus rubra</i>	Red Oak	18	G	
229	<i>Quercus rubra</i>	Red Oak	17	G	
230	<i>Acer negundo</i>	Box Elder	12	G	
231	<i>Acer negundo</i>	Box Elder	12	G	
232	<i>Acer negundo</i>	Box Elder	13	G	
233	<i>Prunus serotina</i>	Black Cherry	18	G	
234	<i>Acer negundo</i>	Box Elder	14.5	G	
235	<i>Prunus serotina</i>	Black Cherry	12	G	
236	<i>Prunus serotina</i>	Black Cherry	12	G	
237	<i>Prunus serotina</i>	Black Cherry	13	G	
238	<i>Prunus serotina</i>	Black Cherry	14	G	
239	<i>Quercus rubra</i>	Red Oak	23.5	G	
240	<i>Quercus rubra</i>	Red Oak	19	G	
241	<i>Prunus serotina</i>	Black Cherry	12.5	F	
242	<i>Prunus serotina</i>	Black Cherry	15	G	
243	<i>Pinus strobus</i>	White Pine	12.5	G	
244	<i>Acer negundo</i>	Box Elder	16	G	
245	<i>Pinus strobus</i>	White Pine	12	G	
246	<i>Pinus strobus</i>	White Pine	13	G	
247	<i>Pinus strobus</i>	White Pine	15	G	
248	<i>Acer negundo</i>	Box Elder	13	G	
249	<i>Acer negundo</i>	Box Elder	15	G	
250	<i>Pinus strobus</i>	White Pine	16	G	
251	<i>Pinus strobus</i>	White Pine	13	G	
252	<i>Pinus strobus</i>	White Pine	13	G	
253	<i>Acer negundo</i>	Box Elder	12,13,12	G	M
254	<i>Pinus strobus</i>	White Pine	18.5	G	
255	<i>Acer negundo</i>	Box Elder	26	F	
256	<i>Acer negundo</i>	Box Elder	12	G	
257	<i>Acer negundo</i>	Box Elder	15	G	
258	<i>Pinus strobus</i>	White Pine	15	G	
259	<i>Pinus strobus</i>	White Pine	17	G	
260	<i>Pinus strobus</i>	White Pine	13	G	
261	<i>Acer negundo</i>	Box Elder	14	G	
262	<i>Pinus strobus</i>	White Pine	14	G	
263	<i>Pinus strobus</i>	White Pine	13	G	
264	<i>Pinus strobus</i>	White Pine	14	G	
265	<i>Pinus strobus</i>	White Pine	14	G	
266	<i>Quercus rubra</i>	Red Oak	18.5	G	
267	<i>Quercus rubra</i>	Red Oak	28,20,5,21	G	M
268	<i>Prunus serotina</i>	Black Cherry	18,16	G	M
269	<i>Tilia americana</i>	Basswood	15.5	G	
270	<i>Celtis occidentalis</i>	Hackberry	15	G	
271	<i>Prunus serotina</i>	Black Cherry	23	G	
272	<i>Tilia americana</i>	Basswood	15	G	
273	<i>Tilia americana</i>	Basswood	14	G	
274	<i>Quercus macrocarpa</i>	Bur Oak	22.5,13	G	M
275	<i>Fraxinus pennsylvanica</i>	Green Ash	12,14	P	M
276	<i>Tilia americana</i>	Basswood	14.5,12,13,13	G	M
277	<i>Tilia americana</i>	Basswood	12	G	
278	<i>Juglans nigra</i>	Black Walnut	15.5	F	
279	<i>Juglans nigra</i>	Black Walnut	17	P	
280	<i>Fraxinus pennsylvanica</i>	Green Ash	15	P	
281	<i>Acer negundo</i>	Box Elder	20	F	
282	<i>Prunus serotina</i>	Black Cherry	14	F	
283	<i>Prunus serotina</i>	Black Cherry	26	G	
284	<i>Populus deltoides</i>	Cottonwood	13	G	
285	<i>Populus deltoides</i>	Cottonwood	20	G	
286	<i>Populus deltoides</i>	Cottonwood	25	G	
287	<i>Populus deltoides</i>	Cottonwood	23	G	
288	<i>Populus deltoides</i>	Cottonwood	19	G	
289	<i>Populus deltoides</i>	Cottonwood	13,18	G	M
290	<i>Populus deltoides</i>	Cottonwood	25	G	
291	<i>Populus deltoides</i>	Cottonwood	12	G	
292	<i>Prunus serotina</i>	Black Cherry	25	F	
293	<i>Prunus serotina</i>	Black Cherry	25	G	
294	<i>Fraxinus pennsylvanica</i>	Green Ash	12	P	
295	<i>Pinus strobus</i>	White Pine	13,12	G	M
296	<i>Pinus strobus</i>	White Pine	14	G	
297	<i>Pinus strobus</i>	White Pine	12	G	
298	<i>Pinus strobus</i>	White Pine	14.5	G	
299	<i>Pinus strobus</i>	White Pine	14	G	
300	<i>Pinus strobus</i>	White Pine	16	G	
301	<i>Prunus serotina</i>	Black Cherry	20,12	G	M
302	<i>Pinus strobus</i>	White Pine	15	G	
303	<i>Acer negundo</i>	Box Elder	15	G	
304	<i>Pinus strobus</i>	White Pine	14.5	G	
305	<i>Pinus strobus</i>	White Pine	16.5	G	
306	<i>Pinus strobus</i>	White Pine	14	G	
307	<i>Pinus strobus</i>	White Pine	15.5	G	
308	<i>Pinus strobus</i>	White Pine	18	G	
309	<i>Pinus strobus</i>	White Pine	12	G	
310	<i>Pinus strobus</i>	White Pine	16	G	
311	<i>Prunus serotina</i>	Black Cherry	12	G	
312	<i>Acer negundo</i>	Box Elder	17	G	
313	<i>Tilia americana</i>	Basswood	13	G	
314	<i>Acer negundo</i>	Box Elder	13	F	
315	<i>Prunus serotina</i>	Black Cherry	13	G	
316	<i>Acer negundo</i>	Box Elder	20	G	
317	<i>Fraxinus pennsylvanica</i>	Green Ash	14	P	
318	<i>Prunus serotina</i>	Black Cherry	12	G	
319	<i>Prunus serotina</i>	Black Cherry	13	G	
320	<i>Acer negundo</i>	Box Elder	15	G	
321	<i>Tilia americana</i>	Basswood	18,12,12,13,13,13	G	M
322	<i>Fraxinus pennsylvanica</i>	Green Ash	22	P	
323	<i>Populus deltoides</i>	Cottonwood	14	G	
324	<i>Populus deltoides</i>	Cottonwood	46	G	
325	<i>Quercus bicolor</i>	Swamp White Oak	17	G	
326	<i>Quercus bicolor</i>	Swamp White Oak	26	G	
327	<i>Quercus bicolor</i>	Swamp White Oak	25	G	
328	<i>Quercus bicolor</i>	Swamp White Oak	15	G	
329	<i>Acer negundo</i>	Box Elder	12	G	
330	<i>Acer negundo</i>	Box Elder	15.5	F	
331	<i>Fraxinus pennsylvanica</i>	Green Ash	27	P	

332	<i>Acer negundo</i>	Box Elder	17	G	
333	<i>Acer negundo</i>	Box Elder	13	F	
334	<i>Prunus serotina</i>	Black Cherry	12	G	
335	<i>Acer negundo</i>	Box Elder	12.5	G	
336	<i>Acer negundo</i>	Box Elder	13	G	
337	<i>Prunus serotina</i>	Black Cherry	12	G	
338	<i>Populus deltoides</i>	Cottonwood	55	G	
339	<i>Populus deltoides</i>	Cottonwood	18	G	
340	<i>Quercus bicolor</i>	Swamp White Oak	19	G	
341	<i>Populus deltoides</i>	Cottonwood	27	P	
342	<i>Fraxinus pennsylvanica</i>	Green Ash	17	P	
343	<i>Fraxinus pennsylvanica</i>	Green Ash	17	P	
344	<i>Quercus rubra</i>	Red Oak	15	G	
345	<i>Populus deltoides</i>	Cottonwood	27	G	
346	<i>Fraxinus pennsylvanica</i>	Green Ash	12	P	
347	<i>Celtis occidentalis</i>	Hackberry	13	G	
348	<i>Fraxinus pennsylvanica</i>	Green Ash	12	P	
349	<i>Pinus strobus</i>	White Pine	17	G	
350	<i>Pinus strobus</i>	White Pine	15	G	
351	<i>Populus tremuloides</i>	Quaking Aspen	14	G	
352	<i>Pinus strobus</i>	White Pine	12	G	
353	<i>Acer negundo</i>	Box Elder	17	F	
354	<i>Pinus strobus</i>	White Pine	13	G	
355	<i>Pinus strobus</i>	White Pine	13.5	G	
356	<i>Pinus strobus</i>	White Pine	12	G	
357	<i>Pinus strobus</i>	White Pine	13.5	G	
358	<i>Acer negundo</i>	Box Elder	14	G	
359	<i>Prunus serotina</i>	Black Cherry	17	G	
360	<i>Acer negundo</i>	Box Elder	12	G	
361	<i>Pinus strobus</i>	White Pine	14	G	
362	<i>Acer negundo</i>	Box Elder	13	G	
363	<i>Pinus strobus</i>	White Pine	12	G	
364	<i>Prunus serotina</i>	Black Cherry	14	G	
365	<i>Pinus strobus</i>	White Pine	16	G	
366	<i>Pinus strobus</i>	White Pine	13	G	
367	<i>Pinus sylvestris</i>	Scotch Pine	12	G	
368	<i>Pinus strobus</i>	White Pine	13	G	
369	<i>Pinus strobus</i>	White Pine	12	G	
370	<i>Pinus strobus</i>	White Pine	13.5	G	
371	<i>Pinus strobus</i>	White Pine	16.5	G	
372	<i>Pinus strobus</i>	White Pine	13	G	
373	<i>Pinus strobus</i>	White Pine	13	G	
374	<i>Pinus strobus</i>	White Pine	13	G	
375	<i>Pinus strobus</i>	White Pine	13	G	
376	<i>Pinus strobus</i>	White Pine	13	G	
377	<i>Acer negundo</i>	Box Elder	14	G	
378	<i>Pinus strobus</i>	White Pine	14	G	
379	<i>Pinus strobus</i>	White Pine	12	G	
380	<i>Pinus strobus</i>	White Pine	13	G	
381	<i>Prunus serotina</i>	Black Cherry	15	G	
382	<i>Pinus strobus</i>	White Pine	16	G	
383	<i>Pinus strobus</i>	White Pine	15	G	
384	<i>Pinus strobus</i>	White Pine	15	G	
385	<i>Pinus strobus</i>	White Pine	13	G	
386	<i>Pinus strobus</i>	White Pine	14	G	
387	<i>Pinus strobus</i>	White Pine	13	G	
388	<i>Pinus strobus</i>	White Pine	13	G	
389	<i>Pinus strobus</i>	White Pine	12	G	
390	<i>Pinus strobus</i>	White Pine	13	G	
391	<i>Pinus strobus</i>	White Pine	12	G	
392	<i>Pinus strobus</i>	White Pine	13	G	
393	<i>Pinus strobus</i>	White Pine	13.5	G	
394	<i>Pinus strobus</i>	White Pine	13.5	G	
395	<i>Pinus strobus</i>	White Pine	12	G	
396	<i>Pinus strobus</i>	White Pine	13	G	
397	<i>Pinus strobus</i>	White Pine	14	G	
398	<i>Quercus rubra</i>	Red Oak	13.5	G	
399	<i>Pinus strobus</i>	White Pine	12.5	G	
400	<i>Pinus strobus</i>	White Pine	12	G	
401	<i>Quercus rubra</i>	Red Oak	12	G	
402	<i>Quercus rubra</i>	Red Oak	14	G	
403	<i>Pinus strobus</i>	White Pine	13	G	
404	<i>Pinus strobus</i>	White Pine	15	G	
405	<i>Tilia americana</i>	Basswood	13	G	
406	<i>Quercus rubra</i>	Red Oak	28,27	G	M
407	<i>Celtis occidentalis</i>	Hackberry	12	G	
408	<i>Tilia americana</i>	Basswood	12.5,12.5	G	M
409	<i>Tilia americana</i>	Basswood	14	G	
410	<i>Fraxinus pennsylvanica</i>	Green Ash	13	P	
411	<i>Fraxinus pennsylvanica</i>	Green Ash	29.5	P	
412	<i>Tilia americana</i>	Basswood	13.5	G	
413	<i>Tilia americana</i>	Basswood	19,17,17,13	G	M
414	<i>Tilia americana</i>	Basswood	12,12	G	M
415	<i>Quercus bicolor</i>	Swamp White Oak	15	G	
416	<i>Tilia americana</i>	Basswood	18,15	G	M
417	<i>Tilia americana</i>	Basswood	18	G	
418	<i>Tilia americana</i>	Basswood	13.5,12,13,13	G	M
419	<i>Quercus rubra</i>	Red Oak	13	G	
420	<i>Quercus rubra</i>	Red Oak	12	G	
421	<i>Quercus rubra</i>	Red Oak	25	G	
422	<i>Quercus bicolor</i>	Swamp White Oak	27	P	
423	<i>Quercus rubra</i>	Red Oak	16	G	
424	<i>Quercus bicolor</i>	Swamp White Oak	20	G	
425	<i>Quercus rubra</i>	Red Oak	47	G	
426	<i>Populus deltoides</i>	Cottonwood	19	G	
427	<i>Quercus alba</i>	White Oak	19	G	
428	<i>Prunus serotina</i>	Black Cherry	16	F	
429	<i>Quercus rubra</i>	Red Oak	21	G	
430	<i>Quercus rubra</i>	Red Oak	35	G	
431	<i>Quercus rubra</i>	Red Oak	21.5	G	
432	<i>Acer saccharum</i>	Sugar Maple	38	G	
433	<i>Quercus rubra</i>	Red Oak	31.5	F	
434	<i>Quercus rubra</i>	Red Oak	29	G	
435	<i>Quercus rubra</i>	Red Oak	21	G	
436	<i>Quercus rubra</i>	Red Oak	31.5	G	
437	<i>Acer saccharinum</i>	Silver Maple	13	G	
438	<i>Quercus rubra</i>	Red Oak	19.5	G	
439	<i>Acer negundo</i>	Box Elder	12	G	
440	<i>Acer saccharum</i>	Sugar Maple	27	G	
441	<i>Tilia americana</i>	Basswood	14.5	G	
442	<i>Celtis occidentalis</i>	Hackberry	12	G	

443	<i>Quercus rubra</i>	Red Oak	21.5	G	
444	<i>Quercus rubra</i>	Red Oak	16	G	
445	<i>Platanus occidentalis</i>	Sycamore	21	G	
446	<i>Acer saccharum</i>	Sugar Maple	15	G	
447	<i>Tilia americana</i>	Basswood	13	P	
448	<i>Tilia americana</i>	Basswood	24	G	
449	<i>Quercus alba</i>	White Oak	19	G	
450	<i>Acer saccharinum</i>	Silver Maple	49,14	G	M
451	<i>Tilia americana</i>	Basswood	19	F	
452	<i>Celtis occidentalis</i>	Hackberry	15.5	F	
453	<i>Celtis occidentalis</i>	Hackberry	14	G	
454	<i>Acer saccharum</i>	Sugar Maple	18	G	
455	<i>Tilia americana</i>	Basswood	15	G	
456	<i>Quercus rubra</i>	Red Oak	22	G	
457	<i>Quercus rubra</i>	Red Oak	13	G	
458	<i>Celtis occidentalis</i>	Hackberry	28,12	G	M
459	<i>Quercus rubra</i>	Red Oak	15	G	
460	<i>Quercus rubra</i>	Red Oak	19.5	G	
461	<i>Platanus occidentalis</i>	Sycamore	26	G	
462	<i>Quercus rubra</i>	Red Oak	14	G	
463	<i>Acer saccharinum</i>	Silver Maple	12	G	
464	<i>Acer saccharinum</i>	Silver Maple	13,12	G	M
465	<i>Populus deltoides</i>	Cottonwood	22.5	G	
466	<i>Populus deltoides</i>	Cottonwood	24.5	G	
467	<i>Ulmus americana</i>	American Elm	14	G	
468	<i>Ulmus americana</i>	American Elm	18	G	
469	<i>Ulmus americana</i>	American Elm	12	G	
470	<i>Populus deltoides</i>	Cottonwood	20	G	
471	<i>Prunus serotina</i>	Black Cherry	25	G	
472	<i>Populus deltoides</i>	Cottonwood	19	G	
473	<i>Acer negundo</i>	Box Elder	14.5	F	
474	<i>Populus deltoides</i>	Cottonwood	12	F	
475	<i>Populus deltoides</i>	Cottonwood	15,15	G	M
476	<i>Acer rubrum</i>	Red Maple	12.5	G	
477	<i>Populus deltoides</i>	Cottonwood	19	G	
478	<i>Populus deltoides</i>	Cottonwood	16	G	
479	<i>Populus deltoides</i>	Cottonwood	15.5	G	
480	<i>Populus deltoides</i>	Cottonwood	21	G	
481	<i>Ulmus americana</i>	American Elm	13	G	
482	<i>Populus deltoides</i>	Cottonwood	18	G	
483	<i>Populus deltoides</i>	Cottonwood	18	G	
484	<i>Populus deltoides</i>	Cottonwood	12	G	
485	<i>Populus deltoides</i>	Cottonwood	16	G	
486	<i>Populus deltoides</i>	Cottonwood	17	G	
487	<i>Populus deltoides</i>	Cottonwood	22	G	
488	<i>Populus deltoides</i>	Cottonwood	18	G	
489	<i>Populus deltoides</i>	Cottonwood	13.5	G	
490	<i>Ulmus americana</i>	American Elm	13	G	
491	<i>Fraxinus pennsylvanica</i>	Green Ash	13	P	
492	<i>Prunus serotina</i>	Black Cherry	17	G	
493	<i>Populus deltoides</i>	Cottonwood	20,17	G	M
494	<i>Populus deltoides</i>	Cottonwood	16	G	
495	<i>Populus deltoides</i>	Cottonwood	23.5	G	
496	<i>Populus deltoides</i>	Cottonwood	20.5	G	
497	<i>Populus deltoides</i>	Cottonwood	31	G	
498	<i>Populus deltoides</i>	Cottonwood	24	G	
499	<i>Populus deltoides</i>	Cottonwood	26.5	G	
500	<i>Populus deltoides</i>	Cottonwood	32.5	G	
501	<i>Prunus serotina</i>	Black Cherry	15	G	
502	<i>Prunus serotina</i>	Black Cherry	15	G	
503	<i>Prunus serotina</i>	Black Cherry	14	G	
504	<i>Prunus serotina</i>	Black Cherry	12	G	
505	<i>Populus deltoides</i>	Cottonwood	12	G	
506	<i>Populus deltoides</i>	Cottonwood	18	G	
507	<i>Populus deltoides</i>	Cottonwood	12	G	
508	<i>Populus deltoides</i>	Cottonwood	13.5	G	
509	<i>Populus deltoides</i>	Cottonwood	12.5	G	
510	<i>Populus deltoides</i>	Cottonwood	13	G	
511	<i>Populus deltoides</i>	Cottonwood	13	G	
512	<i>Populus deltoides</i>	Cottonwood	14	G	
513	<i>Acer negundo</i>	Box Elder	17	G	
514	<i>Populus deltoides</i>	Cottonwood	14	G	
515	<i>Acer negundo</i>	Box Elder	14.5	G	
516	<i>Prunus serotina</i>	Black Cherry	15	G	
517	<i>Acer negundo</i>	Box Elder	13	G	
518	<i>Acer negundo</i>	Box Elder	24	G	
519	<i>Quercus rubra</i>	Red Oak	14.5	G	
520	<i>Quercus rubra</i>	Red Oak	16	G	
521	<i>Prunus serotina</i>	Black Cherry	16	G	
522	<i>Tilia americana</i>	Basswood	14	G	
523	<i>Tilia americana</i>	Basswood	14	G	
524	<i>Juglans nigra</i>	Black Walnut	23.5	G	
525	<i>Populus deltoides</i>	Cottonwood	34	G	
526	<i>Quercus rubra</i>	Red Oak	21	G	
527	<i>Populus deltoides</i>	Cottonwood	17	G	
528	<i>Prunus serotina</i>	Black Cherry	13	G	
529	<i>Populus deltoides</i>	Cottonwood	25	G	
530	<i>Populus deltoides</i>	Cottonwood	21	G	
531	<i>Populus deltoides</i>	Cottonwood	19	G	
532	<i>Populus deltoides</i>	Cottonwood	18	G	
533	<i>Populus deltoides</i>	Cottonwood	21	G	
534	<i>Acer negundo</i>	Box Elder	12	G	
535	<i>Populus deltoides</i>	Cottonwood	17	G	
536	<i>Populus deltoides</i>	Cottonwood	19	G	
537	<i>Populus deltoides</i>	Cottonwood	13	G	
538	<i>Populus deltoides</i>	Cottonwood	20.5	G	
539	<i>Acer saccharinum</i>	Silver Maple	16	G	
540	<i>Prunus serotina</i>	Black Cherry	12	F	
541	<i>Acer negundo</i>	Box Elder	13	G	
542	<i>Pinus strobus</i>	White Pine	12.5	G	
543	<i>Pinus strobus</i>	White Pine	15	G	
544	<i>Pinus strobus</i>	White Pine	13.5	G	
545	<i>Pinus strobus</i>	White Pine	12	G	
546	<i>Acer negundo</i>	Box Elder	12	G	
547	<i>Acer negundo</i>	Box Elder	16	G	
548	<i>Pinus strobus</i>	White Pine	14	G	
549	<i>Pinus strobus</i>	White Pine	13	G	
550	<i>Pinus strobus</i>	White Pine	14	G	
551	<i>Pinus strobus</i>	White Pine	16	G	
552	<i>Pinus strobus</i>	White Pine	14	G	
553	<i>Pinus strobus</i>	White Pine	13	G	

554	<i>Pinus strobus</i>	White Pine	15	G
555	<i>Pinus strobus</i>	White Pine	13	G
556	<i>Pinus strobus</i>	White Pine	14	G
557	<i>Pinus strobus</i>	White Pine	12	G
558	<i>Pinus strobus</i>	White Pine	14	G
559	<i>Pinus strobus</i>	White Pine	13	G
560	<i>Pinus strobus</i>	White Pine	12	G
561	<i>Pinus strobus</i>	White Pine	15	G
562	<i>Pinus strobus</i>	White Pine	14	G
563	<i>Populus deltoides</i>	Cottonwood	12	G
564	<i>Pinus strobus</i>	White Pine	12	G
565	<i>Pinus strobus</i>	White Pine	13.5	G
566	<i>Pinus strobus</i>	White Pine	12	G
567	<i>Pinus strobus</i>	White Pine	15	G
568	<i>Pinus strobus</i>	White Pine	12	G
569	<i>Pinus strobus</i>	White Pine	15	G
570	<i>Pinus strobus</i>	White Pine	12	G
571	<i>Pinus strobus</i>	White Pine	13	G
572	<i>Quercus rubra</i>	Red Oak	16	G
573	<i>Quercus rubra</i>	Red Oak	14.5	G
574	<i>Acer saccharum</i>	Sugar Maple	13	G
575	<i>Populus deltoides</i>	Cottonwood	24	G
576	<i>Pinus strobus</i>	White Pine	13	G
577	<i>Pinus strobus</i>	White Pine	12	G
578	<i>Acer negundo</i>	Box Elder	12	G
579	<i>Acer negundo</i>	Box Elder	15	G
580	<i>Pinus strobus</i>	White Pine	12	G
581	<i>Pinus strobus</i>	White Pine	14	G
582	<i>Pinus strobus</i>	White Pine	12	G
583	<i>Pinus strobus</i>	White Pine	12	G
584	<i>Pinus strobus</i>	White Pine	13	G
585	<i>Pinus strobus</i>	White Pine	13	G
586	<i>Pinus strobus</i>	White Pine	12	G
587	<i>Pinus strobus</i>	White Pine	12	G
588	<i>Acer negundo</i>	Box Elder	13	F
589	<i>Prunus serotina</i>	Black Cherry	12	F

BOUNDARY & TOPOGRAPHIC SURVEY

"HANNAH FARMS EAST- NORTH PORTION"

EXISTING SURVEY & TREE REMOVAL PLAN NORTH

FOR: EYDE COMPANY

LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = FENCE
- = ASPHALT
- = CONCRETE
- = DECK
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- ☉ = DECIDUOUS TREE
- ☿ = CONIFEROUS TREE
- ⊙ = SANITARY MANHOLE
- ⊕ = DRAINAGE MANHOLE
- ⊖ = ELECTRIC MANHOLE
- ⊗ = TELEPHONE MANHOLE
- ⊘ = CATCHBASIN
- ⊙ = SANITARY CLEANOUT
- ⊙ = FIRE HYDRANT
- ⊙ = VALVE
- ⊙ = UTILITY POLE
- ⊙ = LIGHT POLE
- ⊙ = GUY POLE
- ⊙ = GUY WIRE
- ⊙ = UTILITY PEDESTAL
- ⊙ = TRANSFORMER
- ⊙ = ELECTRIC METER
- ⊙ = GAS METER
- ⊙ = WATER METER
- ⊙ = SOIL BORING
- ⊙ = SIGN
- ⊙ = POST
- = WETLAND BOUNDARY
- ⊙ = TREE IDENTIFICATION NUMBER

SEWER INVENTORY

CATCH BASIN #100
(BEEHIVE)
RIM- 839.11
24" RCP NORTH- 832.91
24" RCP SOUTH- 832.41
FLOWS NORTH EVEN WITH LOWER
SOUTH INVERT

BENCHMARKS:

BENCHMARK #1 ELEVATION: 864.68 (N.A.V.D. 88)
NORTHWEST BOLT UNDER "E" ON FIRE HYDRANT AT NORTHWEST
CORNER OF ENTRANCE TO M.A.C. (OFF-SITE)

BENCHMARK #2 ELEVATION: 864.09 (N.A.V.D. 88)
NORTHEAST BOLT UNDER "E" ON FIRE HYDRANT AT
SOUTHEAST CORNER OF M.A.C. PROPERTY ON HANNAH
BOULEVARD (OFF-SITE)

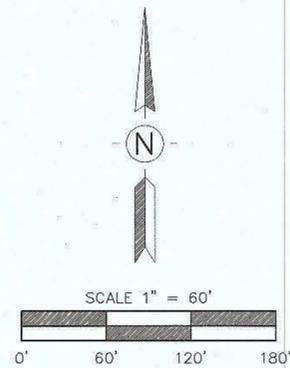
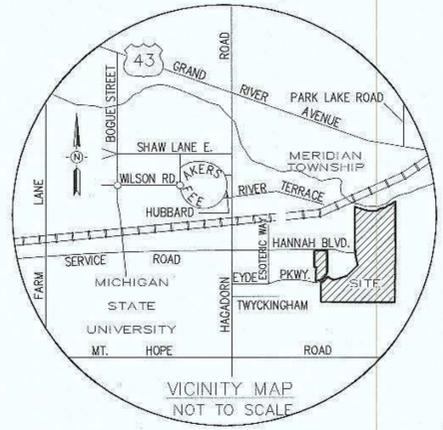
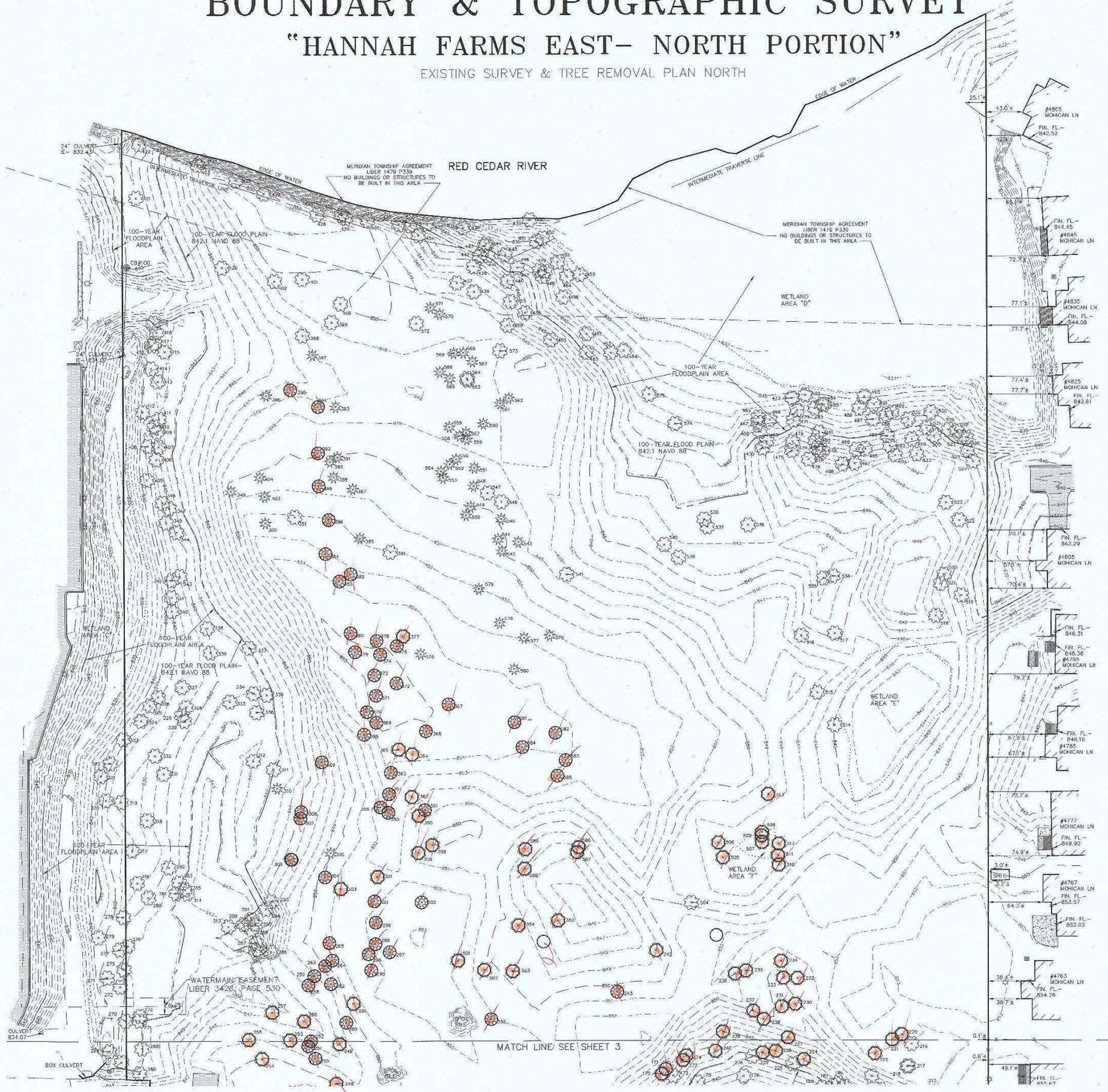
BENCHMARK #3 ELEVATION: 864.41 (N.A.V.D. 88)
BIG ARM OF FIRE HYDRANT ON THE WEST SIDE OF EYDE
PARKWAY, FIRST HYDRANT SOUTH OF THE INTERSECTION OF EYDE
PARKWAY AND HANNAH BOULEVARD. (SEE SHEET 4)

BENCHMARK #4 ELEVATION: 863.87 (N.A.V.D. 88)
BIG ARM OF FIRE HYDRANT AT THE NORTHEAST CORNER OF THE
LANSGING COMMUNITY COLLEGE PARKING LOT ON THE WEST SIDE
OF THE SOUTHWEST PARCEL. (SEE SHEET 5)

BENCHMARK #5 ELEVATION: 853.12 (N.A.V.D. 88)
SOUTHWEST FLANGE BOLT OF FIRE HYDRANT ON THE SOUTH SIDE
OF HANNAH BOULEVARD, FIRST HYDRANT EAST OF THE
INTERSECTION OF EYDE PARKWAY AND HANNAH BOULEVARD. (SEE
SHEET 4)

BENCHMARK #6 ELEVATION: 846.60 (N.A.V.D. 88)
CHISELED "X" ON SOUTHWEST CORNER OF THE HEADWALL ON THE
SOUTH SIDE OF HANNAH BOULEVARD ON THE WEST SIDE OF THE
EASTERN PARCEL. (SEE SHEET 3)

BENCHMARK #7 ELEVATION: 865.46 (N.A.V.D. 88)
NORTHEAST FLANGE BOLT UNDER "W" IN EJW" ON FIRE HYDRANT
AT THE NORTHEAST CORNER OF PARKING LOT FOR BUILDING
#2852. (SEE SHEET 4)



○ DENOTES TREES TO BE REMOVED

ERICK R. FRIESTROM DATE
PROFESSIONAL SURVEYOR NO. 53497

89986.TOP/BND

REVISIONS	COMMENTS	KEBS, INC. ENGINEERING AND LAND SURVEYING	
12/22/15	ORIGINAL	2116 HASLETT ROAD, HASLETT, MI 48840 PH. 517-339-1014 FAX. 517-339-8047 Marshall Office Ph. 289-781-9800	
12/23/15	ADDED FLOODPLAIN		
01/13/16	ADDED SHEETS 4&5		
2-11-20	SUP SUBMITTAL		
DRAWN BY SLH		SECTION 20, T4N, R1W	
FIELD WORK BY RF		JOB NUMBER:	
SHEET 4 OF 6		96034	

BOUNDARY & TOPOGRAPHIC SURVEY

"HANNAH FARMS EAST- SOUTH PORTION"

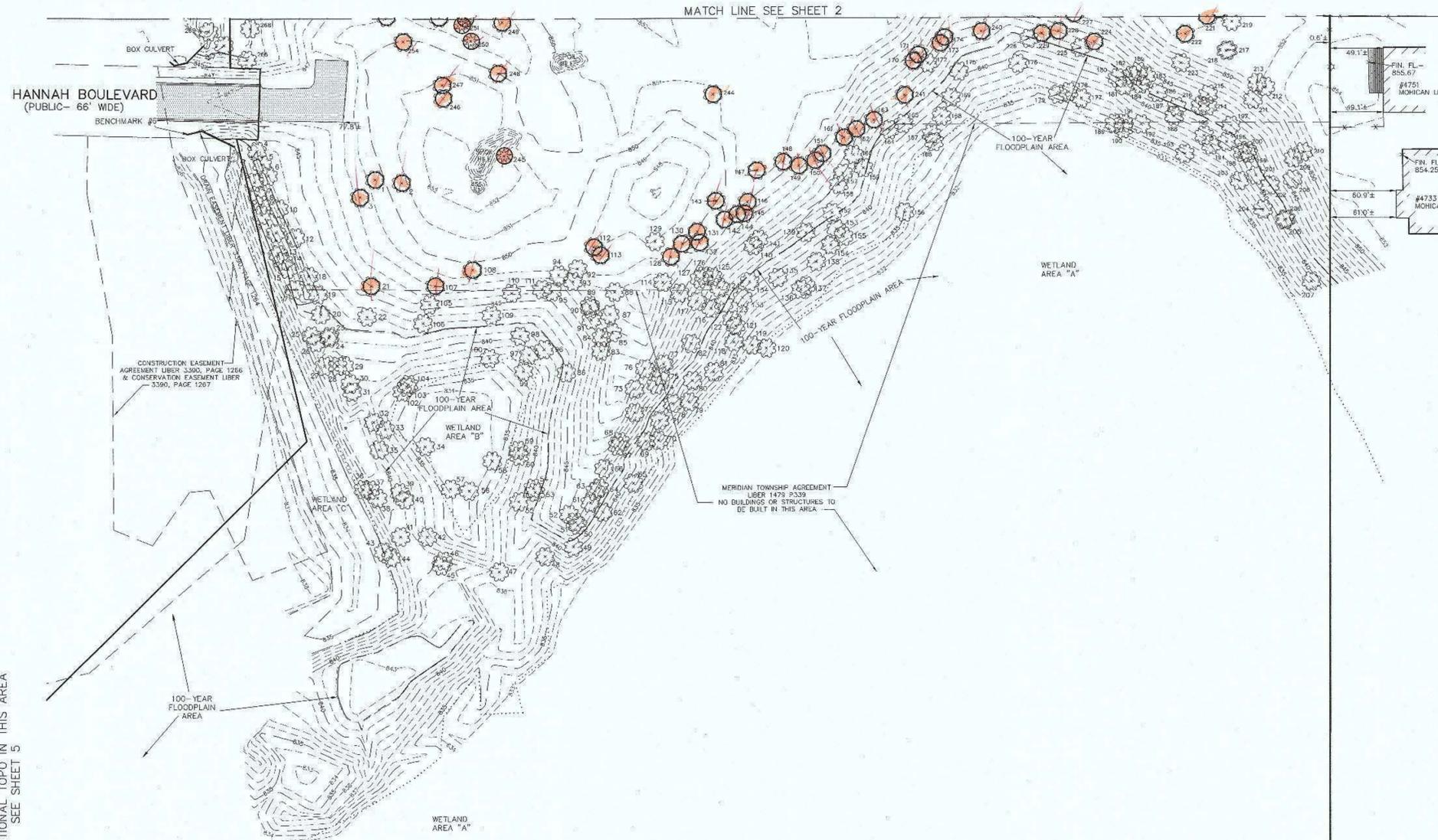
EXISTING SURVEY & TREE REMOVAL PLAN SOUTH

FOR: EYDE COMPANY

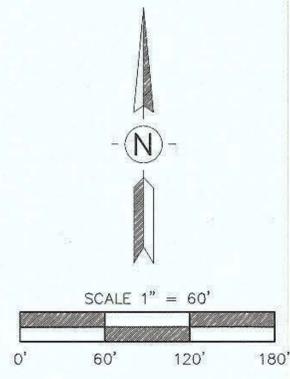
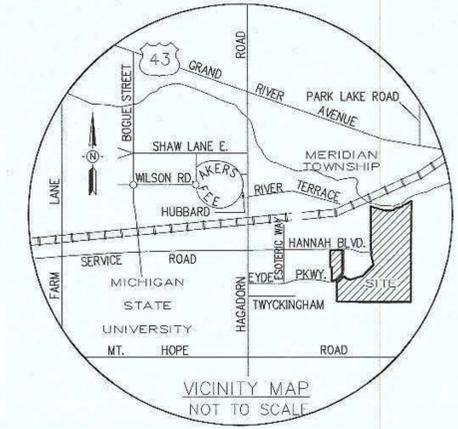
LEGEND

- = SET 1/2" BAR WITH CAP
- = FOUND IRON AS NOTED
- = DEED LINE
- = DISTANCE NOT TO SCALE
- = FENCE
- ▨ = ASPHALT
- ▨ = CONCRETE
- ▨ = DECK
- = EXISTING SPOT ELEVATION
- = EXISTING CONTOUR ELEVATION
- = SANITARY SEWER
- = STORM SEWER
- = WATER LINE
- = GAS LINE
- = UNDERGROUND TELEPHONE
- = UNDERGROUND TELEVISION
- = UNDERGROUND ELECTRIC
- = OVERHEAD WIRES
- ⊙ = DECIDUOUS TREE
- ⊙ = CONIFEROUS TREE
- ⊙ = SANITARY MANHOLE
- ⊙ = DRAINAGE MANHOLE
- ⊙ = ELECTRIC MANHOLE
- ⊙ = TELEPHONE MANHOLE
- ⊙ = CATCHBASIN
- ⊙ = SANITARY CLEANOUT
- ⊙ = FIRE HYDRANT
- ⊙ = VALVE
- ⊙ = UTILITY POLE
- ⊙ = LIGHT POLE
- ⊙ = GUY POLE
- ⊙ = GUY WIRE
- ⊙ = UTILITY PEDESTAL
- ⊙ = TRANSFORMER
- ⊙ = ELECTRIC METER
- ⊙ = GAS METER
- ⊙ = WATER METER
- ⊙ = SOIL BORING
- ⊙ = SIGN
- ⊙ = POST
- = WETLAND BOUNDARY
- ⊙ = TREE IDENTIFICATION NUMBER

FOR ADDITIONAL TOPO IN THIS AREA
SEE SHEET 5



○ DENOTES TREES TO BE REMOVED



BENCHMARKS:

- BENCHMARK #1 ELEVATION: 864.68 (N.A.V.D. 88)
NORTHWEST BOLT UNDER "E" ON FIRE HYDRANT AT NORTHWEST CORNER OF ENTRANCE TO M.A.C. (OFF-SITE)
- BENCHMARK #2 ELEVATION: 864.09 (N.A.V.D. 88)
NORTHEAST BOLT UNDER "E" ON FIRE HYDRANT AT SOUTHEAST CORNER OF M.A.C. PROPERTY ON HANNAH BOULEVARD (OFF-SITE)
- BENCHMARK #3 ELEVATION: 864.41 (N.A.V.D. 88)
BIG ARM OF FIRE HYDRANT ON THE WEST SIDE OF EYDE PARKWAY, FIRST HYDRANT SOUTH OF THE INTERSECTION OF EYDE PARKWAY AND HANNAH BOULEVARD. (SEE SHEET 4)
- BENCHMARK #4 ELEVATION: 863.87 (N.A.V.D. 88)
BIG ARM OF FIRE HYDRANT AT THE NORTHEAST CORNER OF THE LANSING COMMUNITY COLLEGE PARKING LOT ON THE WEST SIDE OF THE SOUTHWEST PARCEL. (SEE SHEET 5)
- BENCHMARK #5 ELEVATION: 853.12 (N.A.V.D. 88)
SOUTHWEST FLANGE BOLT OF FIRE HYDRANT ON THE SOUTH SIDE OF HANNAH BOULEVARD, FIRST HYDRANT EAST OF THE INTERSECTION OF EYDE PARKWAY AND HANNAH BOULEVARD. (SEE SHEET 4)
- BENCHMARK #6 ELEVATION: 846.60 (N.A.V.D. 88)
CHISELED "X" ON SOUTHWEST CORNER OF THE HEADWALL ON THE SOUTH SIDE OF HANNAH BOULEVARD ON THE WEST SIDE OF THE EASTERN PARCEL. (SEE SHEET 3)
- BENCHMARK #7 ELEVATION: 865.46 (N.A.V.D. 88)
NORTHEAST FLANGE BOLT UNDER "W" IN EJIW" ON FIRE HYDRANT AT THE NORTHEAST CORNER OF PARKING LOT FOR BUILDING #2852. (SEE SHEET 4)

89986.TOP/BNB

ERICK R. FRIESTROM DATE
PROFESSIONAL SURVEYOR NO. 53497

REVISIONS	COMMENTS	KEBS, INC. ENGINEERING AND LAND SURVEYING	
12/22/15	ORIGINAL	2116 HASLETT ROAD, HASLETT, MI 48840 PH. 517-339-1014 FAX. 517-339-8047	
12/23/15	ADDED FLOODPLAIN	Marshall Office Ph. 269-781-9800	
01/13/16	ADDED SHEETS 4&5		
2-11-20	SUP SUBMITTAL	DRAWN BY SLH	SECTION 20, T4N, R1W
		FIELD WORK BY RF	JOB NUMBER: 96034
		SHEET 5 OF 6	

APPENDIX IV

Marx Wetlands LLC Wetland Determination and Delineation Report (Dated August 28, 2018)

&

Wetland Verification Report WDV-18-15 (Fishbeck; Dated December 10, 2018)



MARX
WETLANDS
LLC

August 28, 2018

Erick Friestrom
Kebs, Inc.
2116 Haslett Road
Haslett, MI 48840

**Re: Wetland Determination & Delineation Report: Hannah Boulevard
Section 20, Meridian Township, Ingham County, Michigan**

Dear Mr. Erick Friestrom:

Pursuant to your request, Marx Wetlands LLC conducted a wetland determination and delineation for an approximately 30-acre property for the above-referenced ("Project Site"). The Site is located directly east of the dead-end of Hannah Blvd, approximately 0.10 miles east of its intersection with Eyde Parkway in Section 20 of Meridian Township (T4N, R1W), Ingham County, Michigan. The intent of this determination is to provide a report of the character of any wetland areas within the subject parcel and an opinion as to the possible jurisdiction of the Michigan Department of Environmental Quality (MDEQ) and/or local governments over wetland areas identified on-site.

The wetland determination was performed in accordance with the Michigan Department of Environmental Quality Wetland Identification Manual (2001), the Northcentral-Northeast Manual to the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. The delineation of any wetland depends on three basic parameters. These parameters are: 1) the presence of hydrophytic vegetation (plants adapted to living in saturated soils), 2) hydric soils (distinctive soil types that develop under saturated conditions), and 3) wetland hydrology (the presence of water at or near the surface for a specific period of time). The above parameters are virtually always inter-related and present in wetland systems. The wetland determination consisted of desktop review of available background documentation and mapping followed by a site visit performed on August 8, 2018. A review of the findings is provided below.

Site Characteristics

Based on review of aerial photographs and the on-site visits, the Site contains primarily undeveloped land, consisting of areas of upland open fields, scrub-shrub, forested, and wetland. Mowed paths were observed scattered throughout the Site. Upland scrub-shrub and forested areas were identified in the central portions of the Site. The Red Cedar is located along the northern boundary of the Site. The Site is within a largely commercial and residential region of Meridian Township, Michigan. The Site is bounded by undeveloped land to the north and south, and off-campus student housing to the west, and single-family residences to the east.

Cover Type Descriptions

Upland herbaceous species found in the open fields include orchard grass (*Dactylus glomerata*), common milkweed (*Asclepias syriaca*), smooth brome (*Bromus inermis*), Japanese hedge-parsley (*Torilis japonica*), common primrose

3309 Platt Road
Ann Arbor, Michigan
Mobile: 734-478-8277

e-mail

bg.marxwetlands@gmail.com

Hannah Blvd (EYDE Property)
 Meridian Township, Ingham County, Michigan
 Page 2 of 6

(*Oenothera biennis*), bluegrasses (*Poa pratensis* & *P. compressa*), Queen Anne’s lace (*Daucus carota*), big bluestem (*Andropogon gerardii*), wild-bergamot (*Monarda fistulosa*), purple coneflower (*Echinacea purpurea*), sunflowers (*Helianthus spp.*), and goldenrods (*Solidago altissima* and *S. canadensis*).

The upland, scrub-shrub and mixed deciduous forested areas contain the following species: white avens (*Geum canadense*), ebony spleenwort (*Asplenium platyneuron*), white vervain (*Verbena urticifolia*), bluestem goldenrod (*Solidago caesia*), beggar’s lice (*Hackelia virginiana*), penn sedge (*Carex pennsylvanica*), orchard grass, Virginia creeper (*Parthenocissus quinquefolia*), oaks (*Quercus alba*, *Q. macrocarpa*, and *Q. rubra*), black walnut (*Juglans nigra*), white pine (*Pinus strobus*), box-elder (*Acer negundo*), sugar maple (*Acer saccharum*), black cherry (*Prunus serotina*), cottonwood (*Populus deltoides*), scattered with basswood (*Tilia americana*), American elm (*Ulmus americana*), bitternut hickory (*Carya cordiformis*), trembling aspen (*Populus tremuloides*), Siberian elm (*Ulmus pumila*), and ash (*Fraxinus spp.*) trees. Common native and non-native shrub species include common buckthorn (*Rhamnus cathartica*), Eurasian honeysuckle (*Lonicera spp.*), staghorn sumac (*Rhus typhina*), blackberry (*Rubus allegheniensis*), and black raspberry (*Rubus occidentalis*). Refer to the enclosed *Photographic Log*.

Wetland Determination & Delineation

Eight (8) wetlands (Wetlands A, B, C, D, E, F, G, and H) and the Red Cedar River were identified within the Site and/or along the site’s perimeters. No ponds appear within the Site. Refer to the enclosed Wetland Sketch.

Feature Name	Wetland/Watercourse Type	Regulatory Status
Wetland A	Open water (ponded)/Emergent/Scrub-shrub	Likely MDEQ & Township Regulated; within 500 Feet of Red Cedar River
Wetland B	Emergent/Scrub-shrub/Forested	Likely MDEQ Regulated & Township Regulated; connected to Red Cedar River
Wetland C	Emergent/Scrub-shrub/Forested	Likely MDEQ & Township regulated; > 5 acres in size & connected to off-site watercourse
Wetland D	Forested	Likely MDEQ and Township Non-Regulated; isolated and < 0.25 ac in size
Wetland E	Forested	Likely MDEQ Non-Regulated; isolated and < 5 ac in size; Likely Township Regulated: > 0.25 acre in size
Wetland F	Forested	Likely MDEQ and Township Non-Regulated; isolated and < 0.25 ac in size
Wetland G	Open water (ponded)/Emergent/Scrub-shrub	Likely MDEQ & Township Regulated; likely connects to Wetland C off-site and would be > 5 ac in size
Wetland H	Forested	Likely MDEQ & Township Regulated; within 500 Feet of Red Cedar River
Watercourse 1/Red Cedar River	Perennial	Likely MDEQ & Township Regulated; defined bed, banks, and evidence of continuance of water/flow

Hannah Blvd (EYDE Property)
Meridian Township, Ingham County, Michigan
Page 3 of 6

Wetlands

Wetland A and G are linear multi-classified wetland containing open water, emergent, and scrub-shrub components observed along the western boundary of the Site, which extend off-site to the west and south respectively. Herbaceous vegetation within these wetlands include: reed canary grass (*Phalaris arundinacea*), rice-cut grass (*Leersia oryzoides*), cattails (*Typha angustifolia* and *T. latifolia*), grass-leaved goldenrod (*Euthamia graminifolia*), dark green bushrush (*Scirpus atrovirens*), and sedges (*Carex grayii*, *C. scoparia*, and *C. vulpinoidea*). Woody vines include riverbank grape (*Vitis riparia*) and poison-ivy (*Toxicodendron radicans*); and shrub species include: common buckthorn, and dogwoods (*Cornus amomum* and *C. racemosa*). Overhanging trees observed within Wetlands A & G include silver maple (*Acer saccharinum*), white swamp oak (*Quercus bicolor*), elm, and cottonwood. The species range in wetland indicator status from obligate (OBL) to facultative (FAC), indicating species that typically occur in wetlands. Wetland hydrology indicators observed include: standing water (~18 inches), saturation, water-stained leaves, water marks, geomorphic position, and FAC Neutral Test. These wetlands appear to receive hydrology from precipitation, runoff from adjacent developed areas, and roadways, resulting in seasonally saturated to seasonally inundated water regimes. Refer to the enclosed Wetland Sketch.

Wetlands D, E, F, and H are primarily forested wetlands. Herbaceous vegetation within these wetlands include: false nettle (*Boehmeria cylindrica*), reed canary grass, white grass (*Leersia virginica*), fowl manna grass (*Glyceria striata*), water-pepper (*Persicaria hydropiper*), and sedges (*Carex grayii*, *C. scoparia*, and *C. vulpinoidea*). Woody vines include riverbank grape and poison-ivy; and a few shrub species include: common buckthorn, and dogwoods. Eurasian honeysuckles were observed along the margins of most of these wetlands. Trees observed within Wetlands D, E, F, and H include silver maple, box-elder, white swamp oak, elm, and cottonwood. The species range in wetland indicator status from obligate (OBL) to facultative (FAC), indicating species that typically occur in wetlands. Wetland hydrology indicators observed include: saturation, water-stained leaves, water marks, geomorphic position, and FAC Neutral Test. These wetlands appear to receive hydrology from precipitation, runoff from adjacent developed areas, and roadways, resulting in seasonally saturated to seasonally inundated water regimes. Refer to the enclosed Wetland Sketch

Wetlands B and C are multi-classified wetlands containing, emergent, forested, and scrub-shrub components. Wetland B is a floodplain wetland associated with the Red Cedar River, extending off-site to the north and east. Wetland C is a large wetland system associated with Herron's Creek, extending south and west off-site. Herbaceous vegetation within these wetlands include: rice-cut grass, white grass, reed canary grass, moneywort (*Lysimachia nummularia*), bulrush (*Bolboschoenus fluviatilis*), sensitive fern (*Onoclea sensibilis*), and sedges (*Carex grayii*, *C. intumescens*, *C. scoparia*, *C. stipata*, and *C. vulpinoidea*). Shrub vegetation include dogwoods, elderberry (*Sambucus canadensis*), and common buckthorn. Trees

Hannah Blvd (EYDE Property)
Meridian Township, Ingham County, Michigan
Page 4 of 6

observe include silver maple, white swamp oak, elm, and cottonwood. Wetland C also contains the following species: leafy satin grass (*Muhlenbergia mexicana*), lady fern (*Athyrium filix-femina*), tamarack (*Larix laricina*), Louisiana iris (*Iris xvinicolor*), and sedges (*C. lacustris* and *C. stricta*).

The species range in wetland indicator status from obligate (OBL) to facultative (FAC), indicating species that typically occur in wetlands. Wetland hydrology indicators observed include saturation, water-stained leaves, water marks, geomorphic position, and FAC Neutral Test. These wetlands appear to receive hydrology from precipitation, runoff from adjacent developed areas, roadways, and overflow from adjacent watercourses/wetland areas, resulting in seasonally saturated to seasonally inundated water regimes. Refer to the enclosed Wetland Sketch for the approximate location.

Regulations

Part 301, Inland Lakes and Streams, states that a feature is considered a regulated watercourse by the MDEQ if it possesses a defined bed, bank, and evidence of continued flow or a continued occurrence of water. Additionally, Part 301 states that if a pond with a surface area larger than five (5) acres should be considered regulated. Based on the site visit, one (1) regulated watercourse (Red Cedar River) is located along the northern periphery of the Site. No ponds were observed on-site.

Part 303, Wetlands Protection, of the NREPA states that if a wetland is five acres in size or larger and/or connected to or located within 500 feet of a river, stream, lake, or pond, it is considered regulated by the MDEQ. Marx Wetlands, LLC has the professional opinion that five (5) wetlands (Wetlands A, B, C, G, and H) are likely regulated by the MDEQ, because they appear to be within 500 feet and/or connected to a regulating feature (i.e., Red Cedar River or Herron's Creek). Wetlands D, E, and F are not likely regulated by the MDEQ because they appear less than 5 acres in size and isolated (i.e., not connected to or located within 500 feet of a regulating feature). Therefore, Marx Wetlands LLC has the professional opinion that Wetlands A, B, C, G, and H do appear to meet the requirements of Part 303, Wetlands Protection, of the NREPA.

In addition, Meridian Township (Township) has its own wetland protection ordinance. The township's Wetland Protection ordinance (Chapter 22, Article IV) states that wetlands are protected if they are:

- contiguous to any inland lake stream, river, or pond.
- Partially or entirely within 500 feet of the ordinary high-water mark of any inland lake, stream, river or pond.

Hannah Blvd (EYDE Property)
Meridian Township, Ingham County, Michigan
Page 5 of 6

- Two or more areas of wetland separated only by barriers, such as dikes, roads, berms or other similar features, if any of those wetlands are contiguous to an inland lake, stream, river or pond.
- larger than two acres, even if not contiguous to an inland lake, stream, river or pond.
- not contiguous to any inland lake, stream, river or pond, if the state department of environmental quality determines the protection of the wetland is essential to the preservation of the natural resources of the state from pollution, impairment or destruction.
- wetlands, equal to or greater than one-quarter acre and equal to or less than two acres in size, which are not contiguous to any inland lake, stream, river or pond and are determined to be essential to the preservation of the natural resources of the Township as provided in township code § 22-156. Code § 22-156 provides that a wetland is essential to the preservation of the township's natural resources if it fulfills any of ten criteria.

The Red Cedar River is located along the northern boundary of the Site. Based upon proximity to this stream, Wetlands A, B, and H are likely MDEQ and Township regulated. In addition, Wetlands C and G extend south off-site and presumably connect and appear to be part of a wetland system larger than 5 acres in size, thus Wetlands C and G are also likely MDEQ and Township regulated.

Wetland E is at least one-quarter acre in size. By meeting at least one of ten Township criteria, this wetland may be found essential to the preservation of the natural resources of the Township as provided in township code § 22-156. Therefore, this feature is likely regulated by the Township.

Wetlands D and F are both non-contiguous to, and evidently not directly connected to a lake, stream, river, or pond. Furthermore, these wetlands each appear less than one-quarter acre in total size. It is Marx Wetlands' professional opinion that Wetlands D and F do not fall under MDEQ or Township jurisdiction.

Therefore, it is the professional opinion of Marx Wetlands LLC that six (6) wetlands (Wetlands A, B, C, E, G, and H) may be protected under the Meridian Township's *Chapter 22 Environment, Article IV Wetland Protection*, if it is determined that the protection of these wetland areas is important for the preservation of the local natural resources (Meridian Township- Code 1974, § 105-3; Ord. No. 2002-02, 3-19-2002; Ord. No. 2003-11, 7-6-2003; Ord. No. 2011-04, 3-15-2011).

A permit or approval is likely required by the Meridian Township for any proposed work (e.g., filling, dredging, construction, and draining and/or other development) that takes place within the boundaries of a regulated wetland. Most construction activities that take place outside of these boundaries do not require a wetland

August 28, 2018

Hannah Blvd (EYDE Property)
Meridian Township, Ingham County, Michigan
Page 6 of 6

permit from the MDEQ or Meridian Township. Please note that the MDEQ and Township have the final authority on the extent of regulated wetlands, lakes, and streams in the State of Michigan and Meridian Township, respectively.

Please be advised the information provided in this report is a professional opinion. The ultimate decision on wetland boundary locations and jurisdiction thereof rests with the MDEQ or Township and, in some cases, the Federal government. Therefore, there may be adjustments to boundaries based upon review of a regulatory agency. An agency determination can vary, depending on various factors including, but not limited to, experience of the agency representative making the determination and the season of the year. In addition, the physical characteristics of the site can change with time, depending on the weather, vegetation patterns, drainage, activities on adjacent parcels, or other events. Any of these factors can change the nature / extent of wetlands on the site.

Thank you for the opportunity to provide this wetland determination. If you have any questions, please contact me at your convenience.

Sincerely,



Marx Wetlands LLC
Bryana J. Guevara, PWS 2949
ISA Certified Arborist MI-4204A
Environmental Consultant

Enclosures: 1) Photographic Log 2) Wetland Sketch

PHOTOGRAPHIC LOG



1) An east-facing view of existing two track.



2) A view of an upland old field with scattered shrubs and trees.



3) View of existing mowed paths observed throughout the Site.



4) View of upland mixed deciduous forested areas observed throughout the Site.

PHOTOGRAPHIC LOG



5) Another view of the central portion of the Site.



6) View of upland old field areas observed in the central portion of the Site.



7) View of Wetland A, an emergent wetland, observed along the western boundary of the Site.



8) A north-facing view of Wetland B, a forested wetland observed along the northern boundary. Red Cedar River observed in the background of the Site.

PHOTOGRAPHIC LOG



9) View of Wetland C, a forested and emergent wetland, observed along the southern boundary of the Site.



10) A north-facing view of Wetland D, a forested and scrub-shrub wetland observed in the central portion of the Site.



11) View of Wetland E, a forested wetland, observed in the northeastern portion.



12) A north-facing view of Wetland F, a scrub-shrub wetland observed in the central portion of the Site.

PHOTOGRAPHIC LOG



13) View of Wetland G, an emergent wetland, observed in the western boundary of the Site.



14) A north-facing view of Wetland H, a linear scrub-shrub and forested wetland observed in the western portion of the Site.



15) An east-facing view of Red Cedar River observed along the northern boundary of the Site.



16) A west-facing view of Red Cedar River observed along the northern boundary of the Site.

WETLAND SKETCH





December 10, 2018
Project No. 1817787

Mr. Peter Menser
Charter Township of Meridian
5151 Marsh Road
Okemos, MI 48864-1198

Re: Wetland Boundary Verification – WDV 18-15
Hannah Boulevard Property, Okemos, Ingham County, Michigan

Dear Peter:

On December 5, 2018, Fishbeck, Thompson, Carr & Huber, Inc. (FTCH) staff conducted a field investigation and verified wetland boundaries on approximately 30 acres of Parcel Number 33-02-02-20-401-005 (the Site). The Site contains vacant property in Section 20 of Meridian Township (Township) (Town 4 North, Range 1 West). The Red Cedar River is located along the Site's northern boundary and a county drain (the Hannah Farm Drain) is located along its western boundary. The Hannah Farm Drain is under the jurisdiction of the Ingham County Drain Commissioner.

Wetlands were delineated with pink survey ribbon by Marx Wetlands LLC (Marx), as described in its August 28, 2018, report entitled *Wetland Determination & Delineation Report: Hannah Boulevard, Section 20, Meridian Township, Ingham County, Michigan* (Report). Wetland boundary flags were surveyed and placed on base maps by the EYDE Company (EYDE). These maps were submitted to the Township and did not contain a scale.

Site Investigation

FTCH staff met Ms. Bryana Guevara of Marx at the site on December 5th and inspected the flagged wetland boundaries for eight wetlands. FTCH made minor changes to the wetland boundaries by eliminating and moving flags as follows:

Wetland A: Moved Flags A18, A19, and A20 west, closer to the Hannah Farm Drain.

Wetland F: Deleted Flag F6; Flag F5 connects to F7. Deleted Flag F9; Flag 1 connects to F8.

Wetlands B, C, D, E, G, and H: No changes.

We recommend EYDE update its base maps to reflect these changes.

Regulatory Review

The regulatory review was based upon the Report, Google Earth aerial photographs, and site observations. Section 22-116 of the Township's Wetland Protection Ordinance defines "protected wetlands" as any of the following:

- (1) Wetlands, regardless of size, which are contiguous (i.e. within 500 feet of) to any inland lake, stream, river, or pond, whether partially or entirely within the project site.
- (2) Wetlands which are larger than two acres, whether partially or entirely contained within a lot, and which are not contiguous to any inland lake, stream, river, or pond.

(3) Wetlands, equal to or greater than one-quarter acre and equal to or less than two acres in size, which are not contiguous to any inland lake, stream, river, or pond and are determined to be essential to the preservation of the natural resources of the Township as provided in Section 22-156 of the Township’s Wetland Ordinance.

Table 1 summarizes the regulatory status of the Site’s delineated wetlands.

Table 1 – Summary of Wetland Regulatory Status

Wetland Verification WDV 18-15
 Hannah Boulevard Property, Meridian Township

Wetland	Wetland Type	Size (on Subject Property) (acres)	Corresponding Meridian Wetland	Regulated by the State of Michigan?	Regulated by Meridian?
A	Emergent/Scrub-shrub, contiguous to the Hannah Farm Drain and Red Cedar River		20-9	Yes	Yes
B	Emergent/Scrub-shrub/Forested, contiguous to the Red Cedar River	2.21	20-4	Yes	Yes
C	Emergent/Scrub-shrub/Forested	>5	20-18	Yes	Yes
D	Forested, contiguous to the Hannah Farm Drain	0.21	20-10	Yes	Yes
E	Forested	0.30	20-12	No	Yes, if determined to be essential
F	Forested	0.04	20-11	No	No
G	Emergent/Scrub-shrub, contiguous to the Hannah Farm Drain		20-9	Yes	Yes
H	Forested, contiguous to the Hannah Farm Drain	0.38	None	Yes	Yes

Because EYDE base maps containing the surveyed wetland boundaries did not contain a scale, FTCH estimated the distance from the Wetland E and F boundaries to the Red Cedar River and Hannah Farm Drain using Google Earth aerial photographs. These distances appear to exceed 600 feet. An essentiality determination is required to determine if Wetland E is regulated by the Township, because Wetland E is greater than 0.25 acre in size.

A Wetland Use Permit is required from the Township for any of the following activities within wetlands regulated by the Township:

- Placing fill or permitting the placement of fill.
- Dredging, removing, or permitting the removal of soil or minerals.
- Constructing, operating, or maintaining any use or development.
- Draining surface water.

In addition, the Township requires that all structures and grading activities during site development shall be set back 40 feet from delineated wetland boundaries and a natural vegetation strip shall be maintained within 20 feet of the wetland boundaries. Wetland mitigation will be required for wetland impacts, creating new wetland at a ratio of 1:1.5.

Mr. Peter Menser – Wetland Verification – WDV 18-15

Page 3

December 10, 2018



If you have any questions regarding this letter or any other wetland-related issues, please contact me at 616.464.3738 or ehtripp@ftch.com.

Sincerely,

FISHBECK, THOMPSON, CARR & HUBER, INC.

A handwritten signature in black ink, reading "Elise Hansen Tripp". The signature is written in a cursive, flowing style.

Elise Hansen Tripp, PWS

pmb

By email

cc: Mr. Mark Kieselbach – Charter Township of Meridian



To: Township Board

From: Frank L. Walsh, Township Manager

Date: August 28, 2020

Re: Contract Amendment-Township Manager Employment Agreement

As you are aware, for the past 23 years I have assisted Michigan cities, townships, villages and counties with their managerial recruitments. This has been, and continues to be, a passionate opportunity for me to strengthen local government in Michigan. I've truly enjoyed the opportunity to cultivate and maintain relationships with elected officials across the state of Michigan.

This year, I have assisted six communities from the Upper Peninsula to the Ann Arbor area. I've been contacted recently to potentially serve at least two other communities prior to December 31, 2020. My current employment agreement limits my personal activities to six recruitments per year. I want to make it clear that my work is produced on my own time and is handled through my home office and personal equipment. Instead of spending 12 hours a week teaching, golfing or boating, I find great pleasure in assisting communities.

I'm formally requesting that the Township Board allow me to complete up to 10 managerial searches per year. I've attached page two of my current agreement that specifies under Section 3 (B) the number of managerial searches I'm allowed to annually complete. My request is to change the six to 10.

I appreciate your consideration. Please know regardless of your decision, I'm still available evenings, weekends and holidays to serve you and our 43,000 residents.

information as they deem relevant. The Employer may extend this Agreement for a successor year with any modifications to which the parties mutually agree.

Failure to renew or extend this Agreement or any successor Agreement at the end of its term shall obligate the Employer to pay to the Township Manager a Severance Settlement as specified and defined in Section 7 of this Agreement, but shall give the Township Manager no other right or claim. Failure to renew or extend this or any successor Agreement shall not be considered a breach hereof or a termination with or without cause, nor give rise to any cause of action which may be arbitrated under the terms of this Agreement or adjudicated in any court of law, tribunal or administrative agency.

1. Extent of Services.

A. Best Efforts. Except as provided in Section 3.8., the Township Manager shall devote his entire time, attention, and energies to the Employer's business and shall not, during the term of this Agreement, be engaged in any other employment or business activity, whether or not pursued for gain, profit, or pecuniary advantage, without the express prior written consent of the Township Board. The Township Manager also shall not engage in any activity which conflicts or interferes with the performance of his duties as specified in this Agreement and as directed by the Employer or any of its agents as described in Section 1 above.

B. Other Activities. The Township Manager may, with prior written consent of the Township Board, teach, write or engage in similar or related activities which do not interfere with, but rather enhance, the Township Manager's performance of the duties and functions required under this Agreement. The Township Board acknowledges that Township Manager is authorized to conduct up to ~~six-ten~~ managerial searches per calendar year. The Township Manager shall notify the Township Supervisor of each search process.