



Van Buren Conservation District  
1035 E. Michigan Avenue  
Paw Paw, MI 49079  
(269) 657-4030 ext. 5  
(855) 790-7385 fax  
[www.vanburencd.org](http://www.vanburencd.org)

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### REQUEST FOR BIDS

Pine and Mill Creek Pollution Reduction Project  
Drain Tile Contractor

RECEIPT OF BIDS	Bids will be accepted in person or electronically to the Van Buren Conservation District, 1035 E. Michigan Ave. Paw Paw MI 49079 or <a href="mailto:colleen.forestieri@mi.nacdnet.net">colleen.forestieri@mi.nacdnet.net</a> at or before <b>9:00 a.m. on Thursday, December 15, 2016</b> , at which time the bids will be opened and read aloud.
SUBMITTAL REQUIREMENTS	Each bid proposal shall be submitted on the provided Bid Form. Both contracts and estimates on the project must be signed by the Contractor and submitted with the Bid Form.
BID INFORMATION	These bid documents will be on file and available from <b>December 5 through December 9</b> on the Van Buren Conservation District website ( <a href="http://www.vanburencd.org">www.vanburencd.org</a> ). Persons desiring paper or electronic copies of the bid documents should contact Colleen Forestieri at (269) 657-4030 x 129 or <a href="mailto:colleen.forestieri@mi.nacdnet.net">colleen.forestieri@mi.nacdnet.net</a>
BID DOCUMENTS ENCLOSED	Request for bids Instructions to Bidders Bid Form Standard Contract and Appendix A Financial Disclosure
SCOPE OF SERVICES	The project includes retrofitting an existing drain tile system (42.147, -86.196) with the addition of two water control structures (similar to the above ground inline water level control structures at <a href="http://agridrain.com">agridrain.com</a> ). See attachment for initial design.  Work Includes: Review of the site and initial design Offer feedback on initial design and edit as needed Acquiring of supplies Construction of site Attend meetings Advise farmers and Van Buren Conservation District Staff on structure use.
Other Considerations	All work must comply with current Michigan Department of Environmental Quality (MDEQ) standards unless previously waived by both the Van Buren Conservation District and MDEQ.  This project is funded by a grant through the MDEQ which requires matching funds from local sources. Bidders who are able to donate a portion of the project costs as local match will be given special consideration. Additionally, any time that can be donated through presentations at on-farm field days or additional consultation throughout the project (ending September 2019) can be used as local match.



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## INSTRUCTIONS TO BIDDER

Pine and Mill Creek Pollution Reduction Project  
Drain Tile Contractor

**Representative-** The designated representative of the Van Buren Conservation District (VBCD) is Colleen Forestieri, 1035 E. Michigan Ave., Paw Paw, MI 49079, Telephone (269) 657-4030 x 129.

**Bidding Documents-** Bidding Documents may be obtained from VBCD's website and must be used in preparing bids. VBCD does not assume responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

**Qualification of Bidders-** It is the intention of VBCD to award the contract to a Bidder who will complete all work in a very satisfactory manner. After opening of the bids, if requested by VBCD, a Bidder must give information regarding their experience with drainage water management, a statement of financial status, and business references.

**Examination of Bidding Documents-** It is the responsibility of the Bidder to examine and carefully study the Bidding Documents; become familiar and satisfied with all federal, state, and local laws and regulations that may affect cost or performance of the Standard Contract; agree at the time of submitting its bid that no further information is necessary for the determination of its bid; and promptly give VBCD written notice of all conflicts, errors, ambiguities or discrepancies in the Bidding Documents, and to confirm that the written resolution thereof by VBCD is acceptable to the Bidder. The submission of a Bid Form constitutes an incontrovertible representation by the Bidder that the Bidder has complied with every requirement of this paragraph.

**Interpretations-** All questions about the meaning or intent of the Bidding Documents are to be submitted in writing to VBCD. Interpretations or clarifications considered necessary by VBCD to such questions will be issued by addenda mailed or delivered to all parties recorded by VBCD as having received the Bidding Documents. Questions received less than seven (7) days before the bid opening may not be answered. Only questions answered by addenda will be binding. Oral and other interpretations or clarifications will be without legal effect. In addition, addenda may be issued to clarify, correct or change the Bidding Documents as deemed advisable by VBCD.

**Contract Times; Liquidated Damages-** The materials must be supplied within the time or times set forth in the Bidding Documents. The Bidder will be responsible for any liquidated damages set forth in the Bidding Documents for failure to supply the material within the requisite time.

**Preparation of Bid-** All blanks on the Bid Form shall be completed by printing in ink or by typewriter, and the Bid Form shall be signed by the Bidder. A bid by an entity shall be signed by an authorized officer or agent of the entity. The entity's address shall be shown below the signature line. A bid by an individual shall be signed by the individual and shall show the Bidder's name and address.

**Submittal of Bid.** The completed Bid Form shall be submitted no later than the date and time prescribed and at the place indicated in the Request for Bid, and shall be enclosed in an opaque sealed envelope plainly marked with the project title and the name and address of the Bidder.

**Modification and Withdrawal of Bid.** Prior to the time for opening of bids, a bid may be modified or withdrawn by an appropriate document duly executed in the same manner as a Bid Form and delivered to the place where the Bid Forms are submitted.

**Opening of Bids.** Bids will be opened at the time and place indicated in the Request for Bids and, unless obviously non-responsive, read aloud.

*VBCD, in accordance with Title VI of the Civil Rights Act of 1964, 78 Stat. 252, 42 USC 2000d to 2000d-4 and Title 49, Code of Federal Regulations, Department of Federally-assisted programs of the Department of Transportation issued pursuant to such Act, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of gender, disability, race, color, or national origin in consideration for an award.*

**Awarding of Contract.** VBCD reserves the right to (a) reject any or all Bids, including nonconforming, nonresponsive, unbalanced, or conditional bids; (b) reject the bid of any Bidder whom it deems to be non-responsible; (c) reject the bid of any Bidder that it believes would not be in the best interest of VBCD; (d) waive all informalities not involving price or time; and (e) negotiate contract terms with the successful Bidder. If the contract is to be awarded, VBCD will award the contract to the Bidder whose bid is in the best interest of VBCD, as determined in its sole discretion.

**Signing of Agreement.** The notice of award to the successful Bidder will be accompanied by unsigned counterparts of the Standard Contract. Within fifteen (15) days of receipt, the successful Bidder shall sign and deliver the counterparts of the Standard Contract. Within ten (10) days of its receipt of the signed Standard Contract, VBCD will deliver one fully signed counterpart of the Standard Contract to the successful Bidder.



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**BID FORM**

Pine and Mill Creek Pollution Reduction Project  
 Drain Tile Contractor

This Bid is submitted to: **Van Buren Conservation District**  
 1035 E. Michigan Ave.  
 Paw Paw MI 49079  
 Colleen.forestieri@mi.nacdnet.net

By submitting this Bid, the Bidder represents and agrees that:

1. Bidder accepts all of the terms and conditions set forth in the Request for Bids, the Instructions to Bidders, the Specifications, and the Standard Contract.
2. If this Bid is accepted, Bidder will enter into the Standard Contract with Van Buren Conservation District in the form (and containing the terms) included in the Bidding Documents and to supply all of the work and services specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid, and in accordance with the other terms and conditions of the Bidding Documents.
3. This Bid will remain subject to acceptance for ninety (90) days after the bid opening, or for such longer period of time that Bidder may agree to in writing upon request of the Van Buren Conservation District.
4. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity. Bidder has not directly or indirectly induced or solicited any other bidder to submit a false or sham bid. Bidder has not solicited or induced any individual or entity to refrain from bidding. Bidder has not sought by collusion to obtain for itself any advantage over any other bidder or over the Van Buren Conservation District.
5. Bidder will complete the work in accordance with the Bidding Documents for the following price:

**ITEMS FOR BID**

ITEM	AMOUNT
Pine and Mill Creek Pollution Reduction Project, Drain Tile Contractor*	\$
Portion of total project cost to be donated as local match	\$

**\*Please attach a detailed cost breakdown**

*Van Buren Conservation District reserves the right to (a) reject this Bid; (b) reject the bid of any Bidder whom it deems to be non-responsible; (c) reject the bid of any Bidder that it believes would not be in the best interest of the project; (d) waive all informalities not involving price, time, or changes in the materials; and (e) negotiate contract terms with the successful Bidder. If the contract is to be awarded, the Van Buren Conservation District will award the contract to the Bidder whose bid is in the best interest of the Van Buren Conservation District, as determined in its sole discretion.*

This bid form is signed on \_\_\_\_\_, 2016, by:

Entity Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Print Name: \_\_\_\_\_

Title: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_

Email: \_\_\_\_\_



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**STANDARD CONTRACT BETWEEN VAN BUREN CONSERVATION DISTRICT AND CONTRACTOR**

Pine and Mill Creek Pollution Reduction Project  
Drain Tile Contractor

This agreement is entered into between the Van Buren Conservation District ("Conservation District") and the undersigned contractor ("Contractor").

Services to be supplied: environmental consultation as defined in the bid documents

The Conservation District and the Contractor agree as follows:

1. **Services-** The Contractor shall fully perform and supply the services described in the Contract Documents. The "Contract Documents" include all of the Bidding Documents (including the Specifications), this agreement as fully completed and executed, any addenda, and any subsequent modifications to this agreement. In the event of any inconsistencies or ambiguities within the Contract Documents, Contractor shall (a) provide to the better quality or greater quantity of materials and services, and (b) comply with the more stringent requirement. All purchase orders, confirmations, and invoices for the materials shall be subject to the terms and conditions of this agreement.
2. **Term-** The term of this agreement shall begin within 30 days of the award of the bid and end on September 30, 2019, unless mutually extended or shortened in writing by the parties (see "Other Considerations" section on page 1 for details).
3. **Work Completion; Time-** The Conservation District's construction schedules are based upon the agreement that in-stream work will be completed before the beginning of the Michigan DNR fish window dates. Also, given farm planting schedules, on-field work shall be completed by **April 1, 2017**. Time is therefore of the essence of this agreement. If work is not completed at the time agreed upon or if the work delivered is non-conforming, the Conservation District reserves the right to terminate this agreement or to purchase elsewhere, and to hold Contractor accountable therefore.
4. **Prices; Payment-** During the term of this agreement, Contractor's price shall not be higher than the price bid in the Bidding Documents, unless otherwise agreed to in writing by the Conservation District. The price includes all taxes and any other charges. Payment for services will be due forty-five (45) days from the Contractor's invoice date. Payments not made within the forty-five (45) day period shall accrue interest at the rate of six percent (6%) per annum, calculated monthly.
5. **Services-** Work must be as previously specified unless otherwise agreed to by the Conservation District in writing.
6. **Warranties-** Contractor warrants that all services provided hereunder to be free from defect of workmanship and shall conform strictly to the specifications, drawings, or sample specified or furnished.
7. **Inspection and Rejection-** Final inspection shall be at the construction site, unless otherwise agreed to in writing. Work rejected as not conforming to this agreement, or as otherwise defective, shall be returned at Contractor's expense.
8. **Assignment-** Contractor shall not delegate any duties, nor assign any rights or claims under this agreement, or for breach thereof, without the prior written consent of the Conservation District, and any such attempted delegation or assignment shall be void.
9. **Indemnification-** To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Conservation District (or "Owner" or other designation used in the remainder of the Contract) and its agents and employees from and against all claims, damages, losses, and expenses including, but not limited to, attorneys' fees, arising out of or resulting from the performance of this Contract (or "Agreement" or other designation used in the remainder of the Contract) including claims, damages, losses, and expenses attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, but only to the extents caused by fault, negligent acts, or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage loss or expense is caused in part by the parties indemnified hereunder. This obligation does not include an obligation to indemnify the parties indemnified hereunder for their sole negligence and shall not be construed to negate or modify other rights or obligations of indemnity that otherwise exist as to the parties or persons described herein."
10. Contractor must comply with Appendix A attached hereto.
11. **Termination; Cancellation-** Upon the happening of any one or more of the following events, the Conservation District may cancel or terminate this agreement without cost or liability: (a) Contractor's insolvency or inability to meet obligations as they become due; (b) filing of voluntary or involuntary petition of bankruptcy by or against Contractor; (c) appointment of a receiver for Contractor by any court of competent jurisdiction. The acceptance of goods or performance after the occurrence of any of the events above shall not affect the right of the Conservation District to cancel its additional obligations. Furthermore, the Conservation District reserves the right at any time and from time to time without cause, to cancel all or any part of the undelivered portion of this agreement, if any amount is stated, without liability to Contractor for loss or anticipatory profits.



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This agreement is entered into between the Contractor and the Conservation District effective \_\_\_\_\_ [date]

**Contractor:** \_\_\_\_\_

By: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Conservation District: Van Buren Conservation District**

By: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



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**STANDARD CONTRACT BETWEEN VAN BUREN CONSERVATION DISTRICT AND CONTRACTOR**

Pine and Mill Creek Pollution Reduction Project

Drain Tile Contractor

**APPENDIX A**

During the performance of this contract, the contractor, for itself, its assignees and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. **Compliance with Regulations:** The contractor shall comply with the Regulations relative to non-discrimination in Federally-assisted programs of the Department of Transportation, Title 49, code of Federal Regulations, Part 21 as they may be amended from time to time, (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.
2. **Non-discrimination:** The contractor, with regard to the work performed by it during the contract, shall not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulation, including employment practices when the contractor covers a program set forth in Appendix B of the Regulations.
3. **Solicitations for Subcontracts, Including Procurements of Materials and Equipment:** In all solicitations either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or Contractor shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to non-discrimination on the grounds of race, color, or national origin.
4. **Information and Reports:** The contractor shall provide all information and reports required by the Regulations, or directives issued pursuant thereto, and shall permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Van Buren Conservation District to be pertinent to ascertain compliance with such Regulations or directives. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish this information, the contractor shall so certify to the State highway department, or the Federal Highway Administration as appropriate, and shall set forth what efforts it has made to obtain the information.
5. **Sanctions for Non-compliance:** In the event of the contractor's non-compliance with the non-discrimination provisions of this contract, the Van Buren Conservation District shall impose such contract sanctions as it or the Michigan Department of Natural Resources may determine to be appropriate, including, but not limited to:
  - (a) Withholding of payments to the contractor under the contract until the contractor complies, and/or
  - (b) Cancellation, termination or suspension of the contract, in whole or in part.
6. **Incorporation of Provisions:** The contractor shall include the provisions of paragraphs (1) through (6) in every subcontract, including procurement of materials and leases of equipment, unless exempt by the Regulations, or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the Van Buren Conservation District may direct as a means of enforcing such provisions including sanctions for non-compliance: Provided, however, that, in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or Contractor as a result of such direction, the contractor may request the Van Buren Conservation District to enter into such litigation to protect the interests of the County, and, in addition, the contractor may request the Michigan Department Of Natural Resources to enter into such litigation to protect the interests of the State and/or the United States to enter into such litigation to protect the interests of the United States.
7. **Environmental Considerations:** The Contractor agrees to acquire and abide by any permits necessary for construction. The Contractor agrees to take steps to ensure the project activities conducted do not contribute to the spread of invasive species, including implementation of DNR Forest Resources Division "High Risk" decontamination policies for employees, volunteers, and contractors for both aquatic and terrestrial invasive species.

Contractor: \_\_\_\_\_

By: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Conservation District: Van Buren Conservation District

By: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_



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**FINANCIAL DISCLOSURE STATEMENT  
FOR CONTRACTING WITH  
THE VAN BUREN CONSERVATION DISTRICT**

**I.** It is the policy of the Van Buren Conservation District to comply in all respects with the Contracts of Public Servants with Public Entities statute, Act 317 of 1968, as amended, MCL 15.321, *et seq.* In order for the Van Buren Conservation District to comply with these legal requirements, it is necessary that persons seeking to enter into contracts with the Van Buren Conservation District disclose certain information which will allow for an evaluation of compliance with the statute. Anyone seeking to enter into a contract with the Van Buren Conservation District shall supply the information requested below. Additional information may be requested based upon the responses set forth below.

**II.** Please identify the contract you are seeking to enter into with the Van Buren Conservation District:

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**III.** Please indicate whether any of the following applies to you or the person or entity seeking the contract with the Van Buren Conservation District:

- You are an official or employee of the Van Buren Conservation District.
- An official or employee of the Van Buren Conservation District is a partner, member or employee of the co-partnership or unincorporated association which seeks to enter into the contract with the Van Buren Conservation District.
- An official or employee of the Van Buren Conservation District is a stockholder of the private corporation which seeks to enter into the contract with the Van Buren Conservation District.
- An official or employee of the Van Buren Conservation District owns stock listed on a stock exchange with a present total market value in excess of \$25,000 in the corporation which seeks to enter into the contract with the Van Buren Conservation District.
- An official or employee of the Van Buren Conservation District is a director, officer or employee of the corporation which seeks to enter into the contract with the Van Buren Conservation District.
- An official or employee of the Van Buren Conservation District is a beneficiary or trustee of the trust seeking to enter into a contract with the Van Buren Conservation District.

**IV.** I certify that the information set forth above is true and accurate based upon my personal knowledge and an investigation of the records and documents available to me.

Signed: \_\_\_\_\_

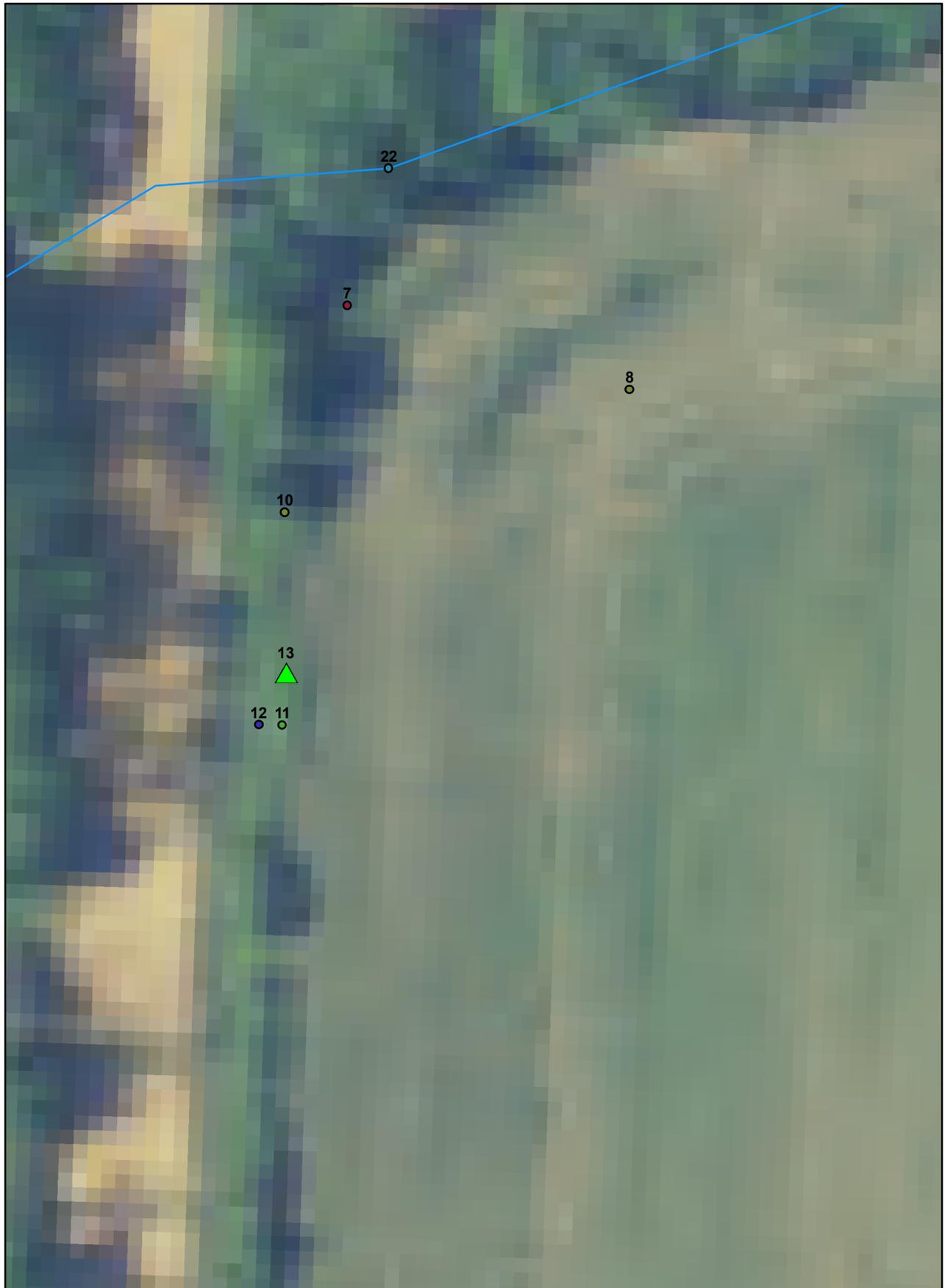
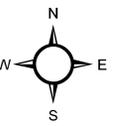
Date: \_\_\_\_\_

# Drainage Water Management elevations



0 0.05 0.1 0.2 Miles

# Drainage Water Management elevations



0 0.01 0.02 0.04 Miles

Label#	LabelName/Elevation	lat/long
1	Tile outlet for eastern field	42.1479390000001,-86.1938249999999
2	103.9	42.147479,-86.193806
3	103.4	42.147466,-86.193941
4	103.2	42.147448,-86.194322
5	103.1	42.147447,-86.19456
6	102.5	42.14742599999996,-86.1947979999999
7	101.1	42.14746299999995,-86.195653
8	101.7	42.147414,-86.195413
9	103.1: box	42.14579399999995,-86.19569
10	101.7	42.147332,-86.195702
11	102.1	42.14719799999996,-86.1957
12	98.3: ditch bottom	42.14719799999996,-86.19572
13	101.9: box	42.147231,-86.195698
15	103.9	42.146, -86.194
16	103.6	42.146, -86.195
17	103.1	42.146, -86.196
18	103.3	42.146, -86.195
19	103.3	42.146, -86.195
20	103.75	42.146, -86.195
21	103.8	42.146, -86.194
22	95.7: Bottom of tile outlet	42.148, -86.196
23	102.8	42.144, -86.196
24	102.7	42.144, -86.195

**PopupInfo**

<a href="http://maps.google.com/?q=42.14793900000001,-86.147479,-86.193806">  
<a href="http://maps.google.com/?q=42.147466,-86.193941">  
<a href="http://maps.google.com/?q=42.147448,-86.194322">  
<a href="http://maps.google.com/?q=42.147447,-86.19456">  
<a href="http://maps.google.com/?q=42.147425999999996,-86.19456">  
<a href="http://maps.google.com/?q=42.147462999999995,-86.19456">  
<a href="http://maps.google.com/?q=42.147414,-86.195413">  
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<a href="http://maps.google.com/?q=42.147332,-86.195702">  
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<a href="http://maps.google.com/?q=42.147197999999996,-86.195698">  
<a href="http://maps.google.com/?q=42.147231,-86.195698">

**Collection\_type**

phone  
manual estimate  
manual estimate

DRAINAGE WATER  
MANAGEMENT LAYOUT PLAN

Existing Main

8 inch x 6 foot tall  
Structure A

New Retro Fit Main A  
6.5 Acres

527 ft

8 inch x 6 foot tall  
Structure B

New Retro Fit Main B  
8 acres

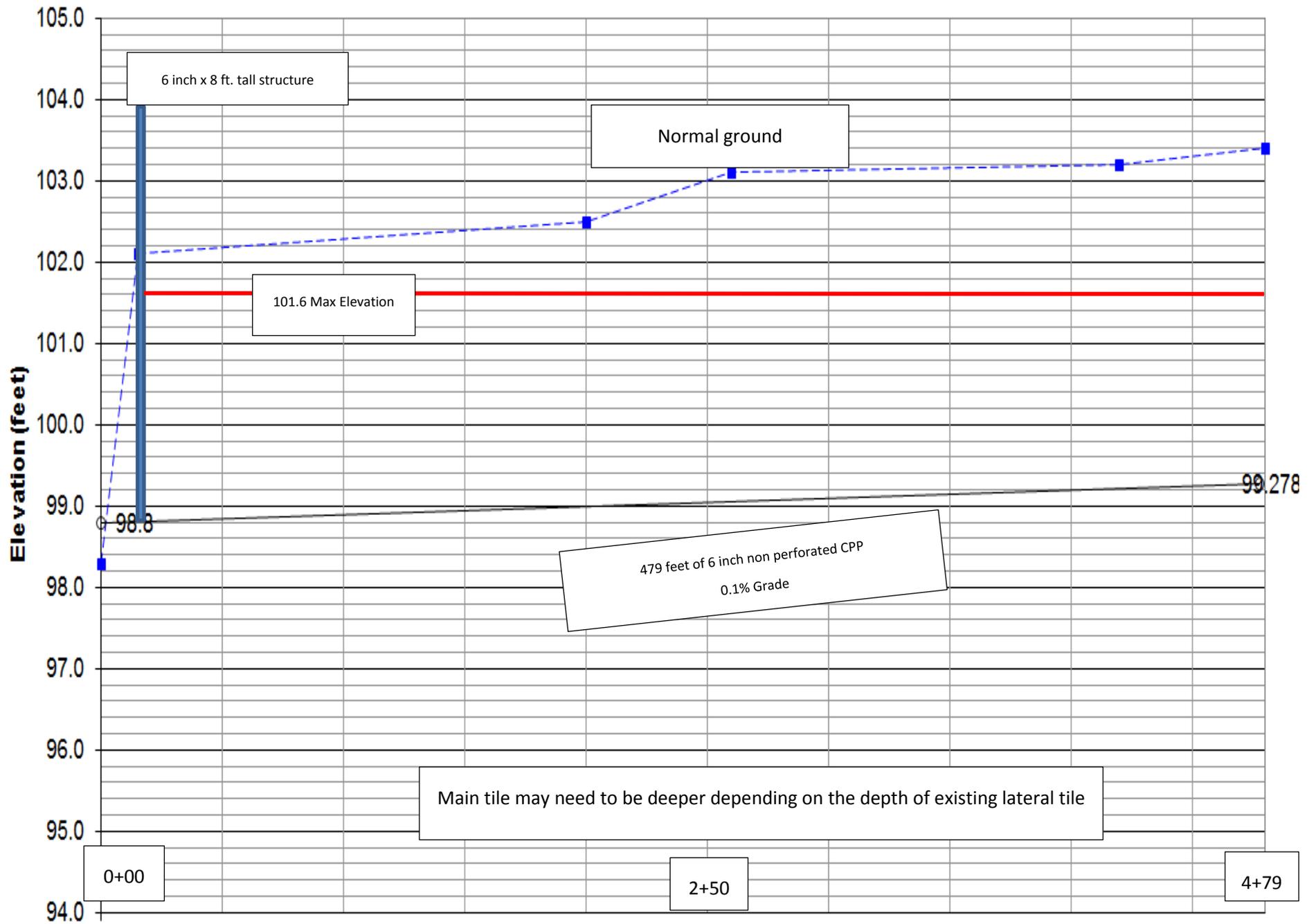
695 ft

76th

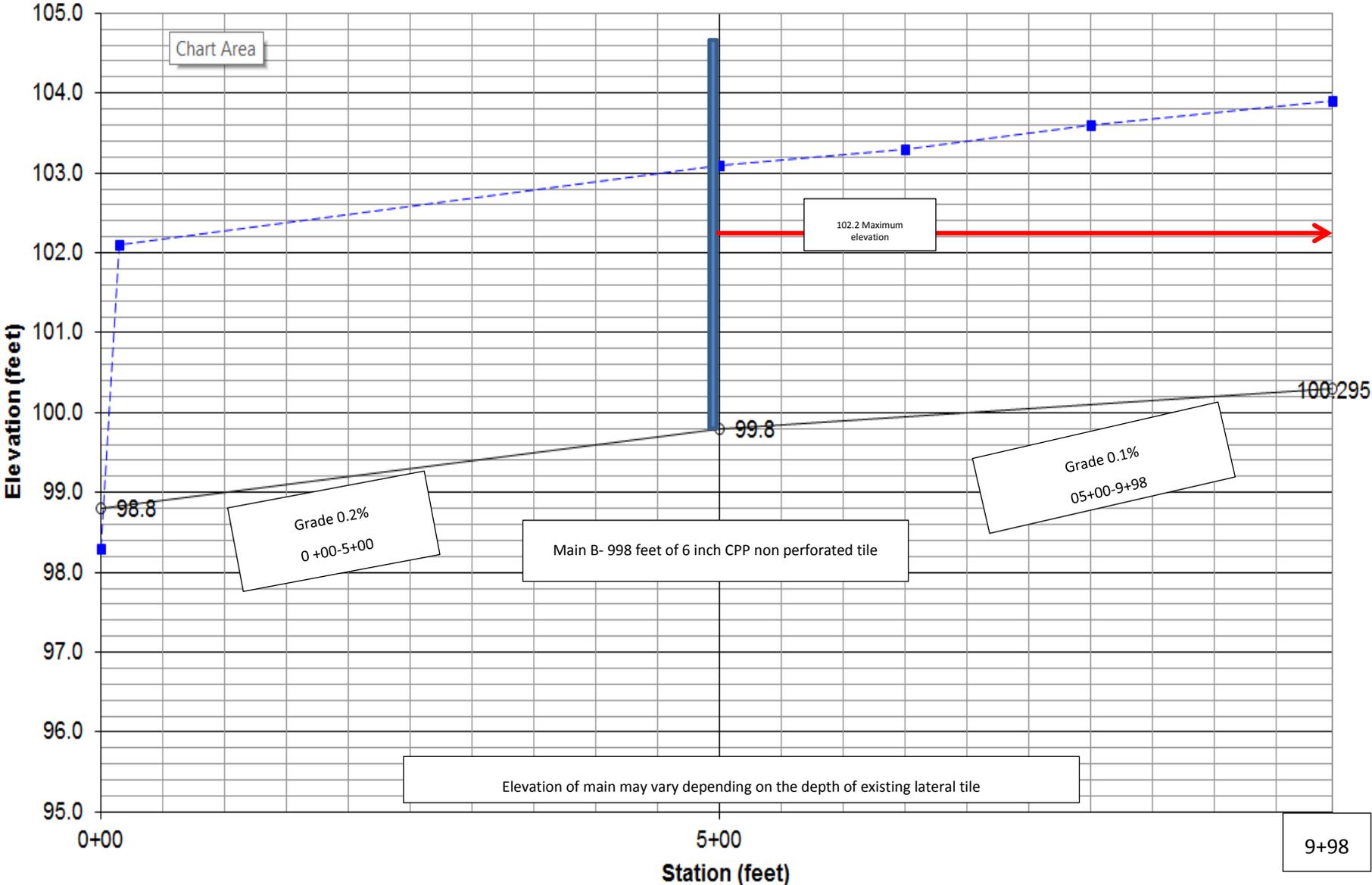
Prior to any construction call miss dig at 1-800-482-7171



# Profile Along Main A



# Profile Along Main B



--■-- Average Ground     
 —○— Planned Grade

Elevation of main may vary depending on the depth of existing lateral tile

Grade 0.2%  
0+00-5+00

Main B- 998 feet of 6 inch CPP non perforated tile

Grade 0.1%  
05+00-9+98

102.2 Maximum elevation

Chart Area

9+98

# Drainage Water Management Plan (DWM)

## Producer Information:

Name: Van Buren Conservation District  
Address: 1035 E Michigan Ave. Paw Paw, MI 49079  
Phone: 269-657-4030 (Office)

This Drainage Water Management (DWM) Plan is an important part of the conservation management system for your farm. The DWM Plan documents the planning decisions and operation and maintenance for the drainage water control structures in this field. It includes:

- maps identifying the locations of the water control structures and impacted area of each structure
- sizes and elevations for each planned water control structure
- a schedule with target timing (e.g. planting, harvest, manure application) and elevations for each water control structure and recordkeeping guidance
- maintenance, inspection and repair requirements to ensure continued performance as planned

To the best of my professional knowledge, judgment and belief, this DWM Plan is in accordance with the NRCS Drainage Water Management Standards and Specifications.

Thomas E. Van Wagner  
Lenawee Conservation District Technician/Planner

\_\_\_\_\_  
Date

I understand that this DWM Plan was developed and approved on the basis that I have disclosed to the DWM Planner to the best of my knowledge all information pertaining to the field(s) included in this plan. The DWM Planner is not responsible for data / information that I have knowingly denied or restricted information for any resource problem(s) that I have not disclosed. It is my responsibility to implement and manage my DWM Plan. If I do not follow my DWM Plan, the DWM Planner is not responsible for any damages, losses or liability.

I understand it is my responsibility to obtain any and all permits that may be required to implement my DWM Plan and to keep all necessary records. I understand that it is my responsibility to review my DWM Plan at least annually and update it as necessary as conditions change on my farm.

\_\_\_\_\_  
Producer Signature

\_\_\_\_\_  
Date

## Producer Objectives for DWM

The producer is interested in applying drainage water management to the Farm (tract \_\_\_ field 1: The drainage water management will impact all of the field acres in Zone A and B.

- Reduce nutrient, pathogen, and/or pesticide loading from drainage systems into downstream receiving waters
- Improve productivity, health, and vigor of plants
  - Maintain integrity of existing subsurface drainage systems.

### Field Name:

### Field Location:

- Lat/Long: 42.146

T4S 86R16W Legal: SW

### Field Information:

- This field will consist of two zones, similar in size, controlled by above two ground water control structures. (14.5 acres)
- The north zone will utilize a sub-main and a water control structure set and ground elevation 102.1.
- The south zone will be controlled solely by the above ground structure and a sub-main set at elevation 103.1. Please see attached maps for more details.
- Note Bench mark of the survey is top of crossing culvert at northeast corner of the field east side of road. Elevation 100.00
- 

### Soil Considerations:

The main soil is mapped as Selfridge. It has a sandy top soil with a restrictive clay layer around 3ft making this ideal for DWM.

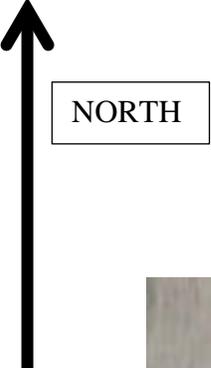
## Field Summary

Farm /Tract/#	Fld . #	Acres/Impacted	Struc. #	Primary Soils	Elev. @ structure	Impacted Elevations in Field
		6.5 acres	A	Selfridge Loam	102.1	104.1
		8.0 acres	B	Selfridge Loam	103.1	105.1

\*Str.-Manual Drainage Water Control Structure

### Summary of Water Control Structures:

- **Structure A & B are eight inch x six foot tall. Controlling water table in field elevations 102.1-105.1**
- **Note structure B could control laterals at the south end of the field which is a 102.7 elevation. Highest board elevation in structure should not exceed 102.2.**
- **After retro fit main tile are installed the low area in each zone A and B should be checked against the elevations of the gate in the structure.**



# LOCATION MAP



## ***Management Instructions***

### **Winter Management:**

Insert stop logs in the control structures to the management elevation at least 30 days after harvest. Remove all stop logs two weeks before anticipated start of spring field work. This would be the highest level of the boards utilize 6-7 boards or 3-3.5 feet from the bottom of the structures.

### **Growing Season Management**

Insert stop logs in the control structure after the last cultural practice is completed such as spreading manure, spraying and possibly top dress application of nitrogen on wheat or side-dress application of anhydrous ammonia or 28%.

After this is done we want to raise the boards to the highest level possible but not closer than 6-12 inches to the lowest elevation in the field. We are trying to raise or capture soil moisture from rain fall but stimulate crop root growth development.

We should continue lower the boards to about 30 inches below the level of the lowest elevation in the field as the crop matures. Leave one board in the structure throughout the growing season. This will allow for capture soil profile water to match up with developing roots of the growing plant.

If and wheat crop or cover crop is applied we need to start this process earlier in the year to line up with growing roots. We will want to lower the boards in late march to allow cover crop and wheat crop roots to go.

Fields with complete subsurface drainage systems that tend to pond in the winter or early spring should be watched closely when winter wheat crops are grown.

Landowner:

County:

Field See aerial maps

Tract/#	Fld. #	Acres	2017 Crop	2018 Crop	2019 Crop
4299	1	6.5			
15726	1	8.0			

CONTROL STRUCTURE OUTLET ELEVATION ADJUSTMENTS				
DATE	SEASONAL EVENT or CROP STAGE	TARGET WATER TABLE DEPTH below surface(inches)	Number of boards in place	COMMENTS
9/30-11/15	Fall Tillage after Corn harvest	36-40	1	Fallow season
11/30-4/1	Winter Mgt.	6-12	5	Gradual release
4-15	Prepare for spring tillage and planting	36-40	0	Gradual release
4-20-2014	spring tillage and planting	36-40	0	Gradual release
4/30-5/30	Planting completed	36	1	Elevate water table during beginning of growing season
5/30-6/30	Growing Season	24	4	Lower water table for root development
6/30-9/30	Growing Season	30	1	Leave one board in covering tile; drained for root development
9/30-11/15	Fall Tillage after wheat harvest	36-40	1	Fallow season
10-15-11/15	Harvest completed and manure application	30	1	Fallow season

Boards are 5" and 7" which adds to one foot in elevation. Trench depth on laterals should be 30-40 inches. Never have more than 6 boards in the structure. This will account for about 36 inches in water hold capacity in structure. If laterals dip into a main that is lower and additional board may be needed just to get water to laterals at main.

## Operation & Maintenance Plan

### Water Control Structure: A, B, Seasonal Event or Crop Stage and Target Water Table Depth

SEASONAL EVENT or CROP STAGE	TARGET WATER TABLE DEPTH (inches below control elevation)
Fallow / winter	0-12 inches
Planting	36 (open drain)
Growing season	12-36 (open drain) or less as determined by root development
Harvest	36-40 (open drain)

Inspections and maintenance are required to achieve the intended function, benefits, and life of the drainage water management system. The landowner/operator is responsible to establish and implement an inspection and maintenance program. Items to inspect and maintain include, but are not limited to, the following:

1. Inspect the system after storm events that may adversely alter the water level in the control area. The closer to the ground surface the top board is set, the sooner you need to check the water level.
2. Follow the Operation and Maintenance Plans for the water table control structures in the drainage water management system.
3. Follow the target water elevations or board settings for field operations (e.g. planting, harvest, manure application, fallow) shown above.
4. When making board setting adjustments, allow sufficient time for water level in the control area to reach the target elevation prior to performing field operations.
5. Periodically monitor water levels in the water table control structures to ensure the target elevation is achieved.
6. Maintain records of dates and elevations when adjustments are made to the outlet elevation in the control structure(s).