AGENDA

CHARTER TOWNSHIP OF MERIDIAN

ENVIRONMENTAL COMMISSION – REGULAR MEETING

November 4th 2026 6:30 PM

1. CALL MEETING TO ORDER
2. ROLL CALL
3. PRESENTATION
4. COMMENTS FROM THE PUBLIC
5. COMMUNICATIONS
6. APPROVAL OF AGENDA
7. APPROVAL OF THE MINUTES – October 7th, 2026 Regular Meeting
8. CITIZENS ADDRESS AGENDA ITEMS AND NON-AGENDA ITEMS
9. NEW BUSINESS
   A. Wetland Use Permit # 26-02 - Costigan Drain Petition Project
   B. Ordinance 2026-14 – Data Center and Battery Energy Storage Systems Regulations – Referred to the Environmental Commission by the Township Board for Review and Comments
10. UNFINSHED BUSINESS
11. REPORTS AND ANNOUNCEMENTS

A. Staff
B. Liaisons:
   a. Township Board
   b. Planning Commission
   c. Land Preservation Advisory Board
   d. Brownfield Redevelopment Authority
   e. Parks Commission
C. Teams:
   a. Energy Team
   b. Green Team
   c. Green Burial Team
D. Haslett/Okemos High School

12. OTHER MATTERS AND COMMISSIONER COMMENTS
13. ADJOURNMENT

CHARTER TOWNSHIP OF MERIDIAN
REGULAR MEETING ENVIRONMENTAL COMMISSION –DRAFT-
5151 Marsh Road, Okemos MI 48864-1198
517.853.4000, Township Hall Room
WEDNESDAY, October 7th, 2026, 6:30PM

PRESENT:	Chair Lee
	Commissioners Miksicek, Frazier, Belisle, Iyioke and Aluru
	Trustee Lentz
ABSENT:	Vice Chair McConnell, Commissioners Mortimer, Batten
STAFF:	Project Engineer Hughes

1. CALL MEETING TO ORDER

Chair Lee called the October 7th, 2026, Township Environmental Commission meeting to order at 6:30 pm.

2. ROLL CALL

Staff Engineer Hughes called the roll of the Commission.

3. PRESENTATION

Shared Grounds Community Garden (Green Grant)

4. COMMENTS FROM THE PUBLIC

Statement from resident regarding potential alternative groundskeeping methods with a focus on environmental protection. Demonstration of 'Goat-Scaping' to take place on Oct 17th at 9:30AM.

5. COMMUNICATIONS

None at this time.

6. APPROVAL OF AGENDA

Commissioner Frazier moved to approve the Agenda of the October 7th, 2026 Environmental Commission Regular meeting, Commissioner Miksicek seconded. Motion passed unanimously.

7. APPROVAL OF MINUTES

Commissioner Miksicek moved to approve the Minutes of the September 2nd, 2026 Environmental Commission Regular Meeting, Commissioner Iyioke seconded. Motion passed unanimously.

8. CITIZENS ADDRESS AGENDA ITEMS AND NON-AGENDA ITEMS

None at this time.

9. NEW BUSINESS

None at this time.

10. UNFINISHED BUSINESS

None at this time.

11. REPORTS AND ANNOUNCMENTS

A. Staff

Fall Recycling Event

Project Engineer Hughes highlighted the strong success of Meridian Township's 2026 Fall Recycling Event, held for the second consecutive year at the Meridian Mall parking lot. Organizers improved traffic flow by creating separate collection lines for consumer appliances and general electronics, which reduced congestion and made the event more efficient. The event relied on significant volunteer support, including students from Okemos High School and community members, and provided residents with information about additional recycling and hazardous waste disposal options.

Participation increased substantially, growing from 598 attendees in 2025 to 830 attendees in 2026, an increase of nearly 40%. The event collected more than 23,000 pounds of electronics, approximately 300 appliances such as mini fridges, dehumidifiers, and air conditioners, and 18 bags of clothing and boots for donation. The volume of recycled electronics exceeded the capacity of one semi-truck, requiring a second pickup. Organizers attributed the growth to improved advertising, increased community awareness, and continued partnerships with sponsors and volunteers.

Financially, the event cost nearly $9,000 to operate, with about $4,000 offset through sponsorships and community donations, leaving a net township cost of approximately $5,000. While recycling costs, especially for electronics and televisions, continue to rise, officials viewed the event as a valuable community service and discussed pursuing additional sponsorships to help cover future expenses. Overall, feedback from volunteers and participants was overwhelmingly positive, reinforcing the event's growing demand and success.

B. Liaisons

Trustee Lentz reported on recent Meridian Township Board discussions.

He highlighted several recent township initiatives and policy discussions. He noted that Meridian Township's deer management program began October 1 and will run through January 1, with authorized archers able to harvest up to 300 deer. Venison is tested and donated to local food pantries, and the program has significantly reduced deer-vehicle collisions and related costs for residents. He also encouraged participation in upcoming environmental volunteer opportunities, including a goat-scaping demonstration and conservation work organized by township staff.

Additionally, he reported that the Township Board approved the 2027 budget, which includes funding for environmental initiatives, including $20,000 for environmental grants that support Green Grants and a separate $20,000 allocation for climate sustainability programs.

Much of the discussion focused on a proposed review of Meridian Township's tall grass ordinance. Township staff have begun exploring ways to make the ordinance more environmentally friendly by allowing more natural landscapes and potentially reducing requirements for frequently mowed turf grass. Commissioners discussed how native plantings, pollinator habitat, and natural landscaping could fit within future regulations, particularly the need to distinguish between unmanaged lawns and intentionally planted native gardens. Trustee Lentz explained that the current discussion is preliminary and that staff will spend the coming months developing potential ordinance revisions before any formal public hearings occur. Commissioners expressed interest in reviewing examples from other communities and contributing expertise as the proposal evolves. Additional questions addressed whether climate sustainability funding might support wellhead protection efforts, though no formal policy direction has been established on that issue.

Vice Chair McConnell was absent and not able to report on recent Planning Commission discussions.

Chair Lee reported on recent Land Preservation Advisory Board developments.
The Land Preservation Advisory Board's September meeting focused primarily on updates to township conservation and land management efforts. Members discussed the start of the deer management program and reviewed developments at the Interurban Wetland Preserve, particularly planning for a service pathway that would allow vehicles to access the site for maintenance and operational purposes. Staff visited the preserve to evaluate potential route options and gain a better understanding of site conditions.
The board also discussed the possibility of conducting site visits related to conservation properties and potential land acquisitions. Questions were raised about how such visits have been handled in the past and whether they would need to occur as part of closed-session evaluations when considering property acquisitions. Members agreed that additional guidance from experienced commissioners and staff would be helpful to determine what is permissible and how future site visits could be organized.

Commissioner Frazier reported that the last meeting of the Brownfield Redevelopment Authority did not have quorum.

Commissioner Miksicek reported on recent Parks and Recreation Commission activity.
The Parks Commission's September 8th meeting included a review of public input gathered for the Township's Five-Year Parks and Recreation Master Plan. Survey results showed strong community support for maintaining and improving existing parks, strengthening trail and walking connections, and continuing environmental stewardship efforts, including invasive species management and wildlife habitat protection. Residents generally expressed satisfaction with the variety and

accessibility of park amenities, while also identifying concerns about aging facilities, parking capacity, trail system gaps, and limited public awareness of available park resources.
His report also noted community interest in expanded recreation opportunities, including indoor and outdoor activity spaces and the potential for an aquatic center. Public feedback indicated support for the township's deer management program as well. Consultant recommendations for the master plan emphasized ongoing maintenance of park and preserve facilities, sustainable management practices, environmental improvements, recycling opportunities, and continued investment in the park system. The finalized plan is expected to help guide township priorities and investments in parks and recreation over the next five years.

C. Teams

Commissioner Miksicek provided a report from the Energy Team.

Commissioner Frazier provided a report from the Green Team.

D. Haslett/Okemos High School

Commissioner Aluru provided a report from the High Schools.

E. Other

No reports.

12. OTHER MATTERS AND COMMISSIONER COMMENTS

Some follow-up discussion was held on the Bird City Designation and plans for improvements at the recycling center.

13. ADJOURNMENT

The meeting adjourned at 8:00 PM.

WUP – Costigan Drain

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9. Wetlands Delineation Report – Costigan North
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11. Costigan Drain Records
12. Adjacent Property Owners

Patrick E. Lindemann

Ingham County Drain Commissioner

PO Box 220
707 Buhl Avenue
Mason, MI 48854-0220

Phone: (517) 676-8395
Fax: (517) 676-8364
http://dr.ingham.org

Carla Florence Clos
Deputy Drain Commissioner

Paul C. Pratt
Deputy Drain Commissioner

Angie Cosman
Chief of Engineering and Inspection

Sheldon Lewis
Administrative Assistant

June 17, 2025

Michigan Department of Environment,
Great Lakes and Energy (EGLE)
Water Resources Division
PO Box 30458
Lansing, MI 48909-7958

RE: Letter of Authorization; Costigan Drain, Part 303 Permit Application

To Whom It May Concern:

Please be advised that Streamside Ecological Services, Inc. is authorized to submit an application and related permit materials on behalf of the Ingham County Drain Commissioner in connection with Part 303 of NREPA for the Costigan Drain

Should you have any questions, please feel free to contact me.

Sincerely,

Carla F. Clos
Ingham County Deputy Drain Commissioner

cc: Mike Nurse, StreamsidEco LLC.
Drain File

#2

Project Description

Project Summary (Purpose and Use): Provide a summary of all proposed activities including the intended use and reason for the proposed project

The Costigan Drain was legally established in 1921. A petition was filed by a group of landowners in 2019 to incorporate existing private drain tiles and to further extend the drainage network to provide public outlets to support new development at the upper reaches of the drainage district. An independent Board of Determination agreed that the work was necessary. The Ingham County Drain Commissioner (ICDC) directed that existing pipes should be upgraded to ensure long-term viability of the drainage network.

The ICDC proposes the following activities within wetland areas in furtherance of those goals:

Impact Area 1

- Most of the work in this area is an exempted maintenance activity that involves removing the existing clay tile and replacing it with perforated plastic pipe of the same diameter (12-inch). The existing clay tile is butt-jointed so that there are currently gaps between each 2-foot piece that allow subsurface water to pass in and out of the tile all along its length. The proposed perforated pipe will have an equivalent open area per unit of length, thus functioning in the same fashion and maintaining the current hydrology of the wetlands.
- Several existing structures will be removed and replaced. One of which will be relocated to a new location to facilitate a deflection angle in the route and course of the drain. This will require a new connecting pipe to tie in an offset replacement catch basin (which will remain at its original location).
- A new maintenance structure is proposed near the point of ending of the main branch of the drain. This structure is for maintenance purposes only and will have no impact on wetland hydrology.

Impact Area 2

- The existing wetland area immediately west of Newton Road functions today as a detention area. The proposed work involves installing an outlet control structure so that this function is maintained in future. The orifice outlet and weir plate elevation are designed to maintain the current storage time (approximately 60 hours) for a 10-year storm event as modeled in HEC-HMS albeit at a slightly higher elevation (850.5 versus 850.3). See below for output graphs from HEC-HMS. This work will not directly impact the wetlands as the control structure, and its inlet pipe will be installed in an upland location.

Impact Area 3

- There is an existing end section north of the proposed outlet control structure that connects to what is the Newton Road Branch of the Costigan Drain. The end section was intended to divert higher flows from that branch into the wetlands, but it sits below 10-year water surface elevation as described above under Impact Area 2. To prevent draining of the wetlands, the end section will be swapped out for an open top structure with rim set at the 10-year water surface elevation. Higher flows from either the wetland area or the parallel branch may then communicate back and forth as necessary without disturbing the existing wetland hydrology. The wetlands impact at this location will be very minor.

Impact Area 4

- As the county drain is extended to the north it will bring stormwater that originates from the BL 69 right-of-way and picks up additional flow as it passes through a landscaping supply yard. To account for the various substances that normally discharge downstream from a highway and from landscaping stockpiles, we are electing to daylight the pipe just before it enters the large wetland area north of Impact Area 2 and install a level spreader. Flow will then re-enter the drainage network through the outlet control structure described above as Impact Area 2.

Impact Area 5

- This work entails crossing a wetlands area twice and running parallel to it, in order to extend the county drain as per the original project direction.

Overall, the project is designed to address stormwater movement as it currently exists, and accommodate for areas within the drainage district that will require future stormwater management. The design is intended to mimic what is occurring today with respect to wetland hydrology and water quality – although some design features will provide some water quality improvements through overland flow discharge. Any future development(s) will be held to County water quality and detention standards, protecting water quality and wetland hydrology in the future.

Project Construction Sequence, Methods, and Equipment: Describe how the proposed project timing, methods, and equipment will minimize disturbance from the project construction, including but not limited to soil erosion and sedimentation control measures.

Work will be conducted through the wetlands during dry periods. Pipes and structures will be installed by open cut method. In general, the sequence will be as follows:

- Install temporary SESC measures – these should provide the dual function of delimiting the work area to prevent unnecessary disturbance of the wetlands.
- Tree cutting and clearing.
- Pipe and structure installation.
    - Install cofferdams for localized dewatering of wetlands/pond near the intersection of BL 69 and Newton Road.
- Backfilling and grading.
- Surface restoration – includes wetland seeding of disturbed areas.
- Remove temporary SESC measures.

Project Alternatives: Describe all options considered as alternatives to the proposed project and describe how impacts to state and federal regulated waters will be avoided and minimized. This may include other locations, materials, etc.

Impact Area 1: As stated previously, this is an exempt activity. While short sections of clay tile pipe were the norm many years ago, the Drain Commissioner would not seek to install the same type of pipe today. Solid wall pipe with soil tight joints could very well have been selected as the preferred replacement, but this would result in a significant alteration in the surrounding wetlands hydrology—likely meaning longer periods of inundation after wet weather events and subsequent floral degradation.

Impact Areas 2 and 3: Stormwater from the upstream drainage network passes through the wetlands now. Due to the rather decrepit condition of the tile (many broken sections and with frequent soil blockages), a good deal of that water feeds the wetlands today rather than passing quickly through the area as purely pipe flow. As with Area 1, a good pipe fix would be a disservice to the wetlands. Instead, this project seeks to maintain the existing hydrology of the wetland by continuing to feed it by controlling the resultant (10-year) water surface elevation.

Impact Area 4: Filtration could easily be achieved using a swirl chamber (Vortechs, for example). However, there remains the need to spread the concentrated outflow over a broader frontage – hence the level spreader that is being proposed which combines both operations. It should be noted that the overland flow area in this location does require some minor excavations to meet grades, but this impact is considered temporary since the wet meadow wetland in this area is dominated by *Phalaris arundinacea* and is expected to return to the same wetland type within one growing season.

Impact Area 5: The project team reviewed several possible alignments of the proposed drain extension north of BL 69. In each case there are severe limitations due to the presence of parallel utilities that cannot be moved (overhead electric, gas, sanitary, large diameter municipal raw water feed, treated municipal water, etc.). It should not be overlooked that this project element represents a temporary and not a permanent impact.

Project Compensation: Describe how the proposed impacts to state and federal regulated waters will be compensated, OR explain why compensatory mitigation should not be required for the proposed impacts. Include amount, location, and method of compensation (i.e., bank, on-site, preservation, etc.)

Total wetland impact, both temporary and permanent, are identified below:

Area	Location	Total	Temporary (acre)	Permanent (acre)
	Storm CB3a	0.005	0.0047	0.0003
1	Storm CB3 to CB3a pipe	0.003	0.003	0
	Storm Man Hole 4	0.0047	0.0017	0.003
3	Control Structure	0.003	0	0.003
			0	
	Outlet and Spreader	0.002	0	0.002
4	Approach cut/fill at spreader	0.0004	0	0.0004
	Overland flow area	0.08	0.08	0
5	West crossing	0.008	0.008	0
	East Crossing	0.024	0.024	0
	TOTAL	0.1301	0.1214	0.0087

Total wetland impact is just over 0.1 acre, with over 90 percent of the impact being temporary. Therefore, no mitigation is proposed.

#3

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

Location

Ingham County, Michigan

Local office

Michigan Ecological Services Field Office

(517) 351-2555
(517) 351-1443

2651 Coolidge Road Suite 101
East Lansing, MI 48823-6360

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Indiana Bat Myotis sodalis Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/5949	Endangered

Birds

NAME	STATUS
Whooping Crane Grus americana No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/758	EXPN

Reptiles

NAME	STATUS
Eastern Massasauga (=rattlesnake) Sistrurus catenatus Wherever found This species only needs to be considered if the following condition applies: • For all Projects: Project is within EMR Range No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/2202	Threatened

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Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their nests, should follow appropriate regulations and implement required avoidance and minimization measures, as described in the various links on this page.

The data in this location indicates that no eagles have been observed in this area. This does not mean eagles are not present in your project area, especially if the area is difficult to survey. Please review the 'Steps to Take When No Results Are Returned' section of the Supplemental Information on Migratory Birds and Eagles document to determine if your project is in a poorly surveyed area. If it is, you may need to rely on other resources to determine if eagles may be present (e.g. your local FWS field office, state surveys, your own surveys).

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Bald and Golden Eagle information is not available at this time

Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report
On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC

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PROBABILITY OF PRESENCE SUMMARY" at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

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Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (FWS).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Migratory bird information is not available at this time

Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

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To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Wetland information is not available at this time

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and

NOT FOR CONSULTATION

nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

#4

Digital EGLE/USACE Joint Permit Application (JPA) for Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, Environmental Areas, High Risk Erosion Areas and Critical Dune Areas

version 1.45

(Submission #: HQG-BFRQ-577CM, version 1)

Details

Submission ID	HQG-BFRQ-577CM
Status	Draft

Fees

	$500.00
Payments/Adjustments	$0.00
Balance Due	$500.00 (None)

Form Input

Instructions

Contact Information

Applicant Information (Usually the Property Owner)

First Name	Last Name
Patrick E	Lindemann

Organization Name
Ingham County Drain Commissioner

Phone Type	Number	Extension
Business	517 676-8395	

Email
drainoffice@ingham.org

Address

707 Buhl Avenue

P.O. Box 220

Mason, MI 48854

Is the Applicant the fee simple property owner (i.e., does the applicant have full and permanent ownership of the parcel, as well as any buildings on that parcel)?
Yes

Has the applicant hired an agent or cooperating agency (agency or firm assisting applicant) to complete the application process?
Yes

Agent Contact

First Name	Last Name
MICHAEL	NURSE

Organization Name
StreamsideEco LLC

Phone Type	Number	Extension
Mobile	5867649366	

Email
mnurse@streamsideeco.com

Address

3940 Timpson Ave SE

Lowell, MI 49331

Upload Attachment for Authorization from Agent

Letter of Authorization Costigan.pdf - 10/15/2025 02:16 PM

Comment
NONE PROVIDED

Are there additional property owners or other contacts you would like to add to the application?
Yes

Additional Contact Information (1 of 1)

Contact Role(s):
Consultant

Contact Information

Prefix
NONE PROVIDED

First Name	Last Name
Alan	Boyer

Title
Senior Project Manager/Engineer

Organization Name
PEA Group

Phone Type	Number	Extension
Mobile	517.202.5629	

Email
mnurse@streamsideeco.com

Address
2379 Woodlake Drive
Suite 480
Okemos, Michigan 48864

Project Location

EGLE Site Reference Number (Prepopulated):
8111256025196353530

Project Location
42.75906318594056,-84.43307305662219

Project Location Address
West of Newton Road, North of Lake Lansing Road
Meridian Township/Haslett, MI 48840

County
Ingham

Is there a Property Tax ID Number(s) for the project area?
No

Is there Subdivision/Plat and Lot Number(s)?
No

Is this project within Indian Lands?
No

Local Unit of Government (LUG):
Meridian Township/Haslett

Directions to Project Site:
West of Newton Road approximately 1500 feet north of Lake Lansing Road. Also at the southwest corner of Newton Road and Business 69. See attached site location maps.

Background Information

Has the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and/or United States Army Corps of Engineers (USACE) conducted a pre-application meeting/inspection for this project?
Yes

Provide the date of the pre-application meeting/inspection (MM/DD/YYYY):
09/29/2023

Pre-application File Number:
HPW-S5R2-0VYE6 and HPG-3CTD-CFFS5

EGLE and/or USACE staff person involved in the pre-application meeting/inspection:
Clair Watts and Carol Valor

Has the project scope or design changed since the pre-application meeting/inspection?
Yes

Please explain what has changed. Attach additional documentation, as necessary.
Minor change at north end of project - wetland crossing with enclosed drain.

Additional Documentation

> Costigan Pre-app Letter 1.pdf - 10/15/2025 03:43 PM
> Costigan Pre-app Letter 2.pdf - 10/15/2025 03:43 PM
> **Comment**
> Pre-application Letters Attached

Has the EGLE completed a Wetland Identification Program (WIP) assessment for this site?
No

Environmental Area Number (if known):
NONE PROVIDED

Has the United States Army Corps of Engineers (USACE) completed either an approved or preliminary jurisdictional determination for this site?
No

Were any regulated activities previously completed on this site under an EGLE and/or USACE permit?
No

Have any activities commenced on this project?
No

Is this an after-the-fact application?
No

Are you aware of any unresolved violations of environmental law or litigation involving the property?
No

Is there a conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property?
No

Are there any other federal, interstate, state, or local agency authorizations associated with this project?
Yes

List all other federal, interstate, state, or local agency authorizations.

Agency	Type of Approval	Number	Date Applied	Approved/Denied/Undetermined
Meridian Township	Wetland Use	NA	12/01/2025	Undetermined

Comments
NONE PROVIDED

Permit Application Category and Public Notice Information

Indicate the type of permit being applied for:
Individual Permit for all other projects

This type of permit application requires that you include contact information for the adjacent landowners to this project. If you are only entering in a small number of bordering parcel owners contact information, please select "Enter list of recipients". If there is a rather large number of affected property owners such as a project that significantly affects lake levels, please upload a spreadsheet of the property owners. Please include names and mailing addresses.
Upload a list.

Uploads/Attachments

Adj Properties.pdf - 10/15/2025 04:34 PM

Comment

NONE PROVIDED

Project Description

Project Use (select all that apply):
Public/Government/Tribal

Project Type (select all that apply):
Drain - County

Project Summary (Purpose and Use): Provide a summary of all proposed activities including the intended use and reason for the proposed project.
See attached

Project Construction Sequence, Methods, and Equipment: Describe how the proposed project timing, methods, and equipment will minimize disturbance from the project construction, including but not limited to soil erosion and sedimentation control measures.
See attached

Project Alternatives: Describe all options considered as alternatives to the proposed project, and describe how impacts to state and federal regulated waters will be avoided and minimized. This may include other locations, materials, etc.
See attached

Project Compensation: Describe how the proposed impacts to state and federal regulated waters will be compensated, OR explain why compensatory mitigation should not be required for the proposed impacts. Include amount, location, and method of compensation (i.e., bank, on-site, preservation, etc.).
Impacts are less than 0.1 acre. No Mitigation is proposed

Upload any additional information as needed to provide information applicable to your project regarding project purpose sequence, methods, alternatives, or compensation.

NONE PROVIDED

Comment

NONE PROVIDED

Resource and Activity Type

SELECT THE ACTIVITIES from the list below that are proposed in your project (check ALL that apply). If you don't see your project type listed, select "Other Project Type". These activities listed require additional information to be gathered later in the application.
Intake or Outfall Structures
Utility Crossings - Below Ground

The Proposed Project will involve the following resources (check ALL that apply).
Wetland

Major Project Fee Calculation Questions

Is filling of 10,000 cubic yards or more proposed (cumulatively) within wetlands, streams, lakes, or Great Lakes?
No

Is dredging of 10,000 cubic yards (cumulatively) or more proposed within streams, lakes, or Great Lakes? (wetlands not included)
No

Is new dredging or adjacent upland excavation in suspected contamination areas proposed by this application?
No

Is a subdivision, condominium, or new golf course proposed?
No

Wetland Project Information and Impacts

Has a professional wetland delineation been completed for this site?
Yes

Attach a copy of wetland delineation data form(s), and show all wetlands on the site plans.

> WETLANDS 212237 PTS w AERIAL.pdf - 12/10/2025 11:26 PM
> **Comment**
> *NONE PROVIDED*

Total acres of wetland affected by this project.

Category	Affected area (acres)
Permanent	0.0087
Temporary	0.1214
	Sum: 0.1301

Is filling or draining of 1 acre or more (cumulatively) of wetland proposed?
No

Select all wetland types that will be affected by this project:
Emergent
Scrub-shrub
Forested

If your project includes placing fill in wetland then select the proposed activities from the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:
None of the above
General Fill

Complete this table for projects involving Fill. Enter each activity/ location that corresponds with each activity selected in the previous question and enter the dimensions. Activities may be entered in one line of the table if they occupy the same impact footprint and cannot be broken out separately (Example: Activity - Driveway and Riprap slope). Multiple activities in different locations should be listed on different lines of the table.

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Area 3 Structure Embankment	13	10	2	130	260	10	*NONE PROVIDED*
Area 4 Overland Flow Area	18	2.6	1	46.8	46.8	2	*NONE PROVIDED*
				Sum: 176.8	Sum: 306.8	Sum: 12	Sum: NaN

Source of Fill Material:
Off-site
Please Describe
Commercial Source

Type of Fill.
Clay

Is riprap proposed?
No

Select from the following list for Excavation/Dredge Activities (if your proposed project is primarily a structure enter the impact as a structure. Only enter an impacted area in one of the impact tables in one impact section):
Excavation (wetlands)

If your project includes EXCAVATION/DREDGE IN WETLAND then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (sq. feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Area 4 Pipe Discharge and Overland Flow Area	106	32	1	3392	3392	126	*NONE PROVIDED*
Area 4 Level Spreader	35	2	3	70	210	8	*NONE PROVIDED*
Area 4 Level Spreader Approach	4	4	1	16	16	1	*NONE PROVIDED*
Area 3 Structure embankment	13	10	2	130	260	10	*NONE PROVIDED*
Area 5 West Crossing	11	30	8	330	2640	98	*NONE PROVIDED*
Area 5 East Crossing	36	30	8	1080	8640	320	*NONE PROVIDED*
				Sum: 5018	Sum: 15158	Sum: 563	Sum: NaN

Spoils Disposal

Will the excavation/dredge spoils be disposed of on site or off site?
On site

Describe any measures used to retain sediment:
Spoils placed on upland with SESC BMP's installed. Seeded and stabilized.

If your project includes STRUCTURES IN WETLAND then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:
Utility Structure
Outfall Structure
Water Control Structure

Projects involving Structures:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (Sq. feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Area 1 CB-3A	15	15	3	225	675	25	*NONE PROVIDED*
Area 1 Connection CB 3 to 3A	18	8	3	144	432	16	*NONE PROVIDED*
Area 1 MH 4	10	10	3	100	300	11	*NONE PROVIDED*
Area 2 Outlet Control Structure	0	0	0	0	0	0	*NONE PROVIDED*
Area 3 Remove/replace with Outlet CB Structure	10	10	5	100	500	19	*NONE PROVIDED*
				Sum: 569	Sum: 1907	Sum: 71	Sum: NaN

If your project includes Other Activities in WETLAND not listed in this section, then select from the proposed activities in the following list. If your activity in Wetland has not been listed in this Wetland Section, then select "Other" and enter a description of your activity. Only enter an impacted area in one of the impact tables (do not duplicate impact entries). If you selected a Fill, Excavation/Dredging, or Structure activity above in this section, but do not have an activity listed as Other, then select None of the Above for this question.
None of the above

Is Wetland Mitigation being proposed as part of this proposed project?
No
Explain why no mitigation is proposed.
Less than 0.1 acre of impact

Intake or Outfall Structures

Is the intake structure associated with an authorized outfall structure?
No

Number of intakes or outfalls:
3

Pipe Description

Unique Identifier	Pipe Diameter (inches):	Invert Elevation:
Area 3 Outlet Control Structure	48	850.4
Area 4 Level Spreader Area	18	850.1

Type of intake or outfall stabilization:
End section

Has the water been treated (outfall only)?
Yes

Utility Crossings

Select all resource types that are proposed to be crossed by this project:
Wetlands

How many total wetland crossings are proposed?
2

Enter the type and total number of acres of wetland that will be converted from one wetland type to another wetland type.

Wetland type	Acres of impact
Emergent	.008
Emergent	.024

List of Utility Crossing Impacts

Unique Identifier	Type of Crossing	Method	Utility Type	Length (feet)	Pipe diameter (inches)	Distance below surface (feet)	Trench width (feet)
Area 5 West Crossing	Wetland	Open Trench	Storm sewer	11	18	8	30
Area 5 East Crossing	Wetland	Open Trench	Storm sewer	35	18	8	30

Upload of Proposed Site Plans

Does your project include any one or more of the following: impacts to one or more acres of wetland, new construction of a breakwater or seawall with a total length more than 1,000 feet, a stream enclosure of greater than 300 feet in one or more segments, or relocation or channelization of a stream more than 1,000 feet in one or more segments? Also select "YES" for any other project that requires federal coordination.
No

If you have obtained a letter resulting from the USFWS Michigan Determination Key (DKey) tool for endangered species, please attach the letter below.

USFWS Information and Planning and Consultation (IPaC) system can be found online at ipac.ecosphere.fws.gov.

Upload the Michigan DKey Output Letter

IPaC-D-Key.pdf - 12/10/2025 06:52 PM

Comment

NONE PROVIDED

Required on all Site Plan uploads. Please identify that all of the following items are included on your plans that you upload with this application.

Site Plan Features	Existing and Proposed Plan Set
Scale, Compass North, and Property Lines	Yes
Fill and Excavation areas with associated amounts in cubic yards	Yes
Any rivers, lakes, or ponds and associated Ordinary High Water Mark (OHWM)	Yes
Exterior dimensions of Structures, Fill and Excavation areas associated with the proposed project	Yes

Site Plan Features	Existing and Proposed Plan Set
Dimensions to other Structures and Lot Lines associated with the project	Yes
Topographic Contour Lines from licensed surveyor or engineer when applicable	Yes

Upload Site Plans and Cross Section Drawings for your Proposed Project

20250919_EGLE EXHIBITS.pdf - 12/10/2025 08:16 PM

Comment

NONE PROVIDED

Additional Required and Supplementary Documents

Costigan Drain Records.pdf - 12/10/2025 09:31 PM

Supplemental Information - Costigan.docx - 12/10/2025 11:20 PM

Comment

NONE PROVIDED

Fees

Individual Permit Fee:
+$500.00

Total Fee Amount:

$500.00

Is the applicant or landowner a State of Michigan Agency?

No

Attachments

Date	Attachment Name	Context	User
12/10/2025 11:26 PM	WETLANDS 212237 PTS w AERIAL.pdf	Attachment	Michael Nurse
12/10/2025 11:20 PM	Supplemental Information - Costigan.docx	Attachment	Michael Nurse
12/10/2025 9:31 PM	Costigan Drain Records.pdf	Attachment	Michael Nurse
12/10/2025 8:16 PM	20250919_EGLE EXHIBITS.pdf	Attachment	Michael Nurse

Date	Attachment Name	Context	User
12/10/2025 6:52 PM	IPaC-D-Key.pdf	Attachment	Michael Nurse
10/15/2025 4:34 PM	Adj Properties.pdf	Attachment	Michael Nurse
10/15/2025 3:43 PM	Costigan Pre-app Letter 2.pdf	Attachment	Michael Nurse
10/15/2025 3:43 PM	Costigan Pre-app Letter 1.pdf	Attachment	Michael Nurse
10/15/2025 2:16 PM	Letter of Authorization Costigan.pdf	Attachment	Michael Nurse

#5

NOTICE OF AUTHORIZATION

Permit Number: WRP050112 v. 1 **Date Issued: August 25, 2026**
Site Name: 33-Newton Road-Haslett- Costigan Drain **Expiration Date: August 25, 2031**

The Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division, P.O. Box 30458, Lansing, Michigan 48909-7958, under provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; specifically:

☐ Part 31, Floodplain Regulatory Authority of the Water Resources Protection.

☐ Part 301, Inland Lakes and Streams.

☒ Part 303, Wetlands Protection.

Authorized activity:

The applicant proposes to replace segments of an existing county drain and create new segments of county drain. Work will take place across 5 impact areas.

Impact Area 1:
Excavate a 15-foot-long by 15-foot-wide and 3-foot-deep area in wetland and install a 5-foot-long by 15-foot-wide manhole CB-3A.
Excavate an area 10-foot-long by 10-foot-wide by 3 feet deep and install a 10-foot-long by 10-foot-wide manhole CB- 4.
Install 18 feet of 1-foot diameter stormwater line within an 18-foot-long by 1-foot-wide by 3-foot-deep trench by open trench excavation methods in wetland.

Impact Area 3:
Remove existing outlet structure by excavating an area 10 feet long by 10 feet wide to a depth of 5 feet **and install a** 10-foot-long by 10-foot-wide outlet structure .

Impact Area 4:
Excavate a 3306 square foot area and remove 122 cubic yards from wetland to create

This notice must be displayed at the site of work.
Laminating this notice or utilizing sheet protectors is recommended.
Please refer to the above permit number with any questions or concerns.

EGLE
WRP050112 v1.0
Approved
Issued On:08/25/2026
Expires On:08/25/2031

overflow for the level spreader. Excavate an 86-square-foot area to a maximum depth of 3 feet to create a level spreader, and backfill with 11 cubic yards of clay.

Impact Area 5:
Install 11 feet of 1.5-foot-diameter stormwater pipe within 11-foot-long-by 30-foot-wide and 8 feet deep trench by open trench excavation methods in west wetland.
Install 35 feet of 1.5-foot diameter stormwater pipe within a 35-foot-long by 30-foot-wide and 8-foot-deep trench by open trench excavation methods in east wetland.
Approximately 409 cubic yards of wetland soil will temporarily be stockpiled in wetland and backfilled in reverse order once installation is complete.

The project will temporarily impact a total of 0.03 acre of emergent wetland and permanently impact a total of 0.09 acre of emergent wetland.

To be conducted at property located in: Ingham County, Waterbody: Costigan Drain, Unnamed Wetland, Section 04, Town 04N, Range 01W, Meridian Township

Permittee:
Patrick E. Lindemann
707 Buhl Avenue
P.O. Box 220
Mason, Michigan 48854

Claire Watts
Lansing District Office
Water Resources Division
517-388-6686

This notice must be displayed at the site of work.
Laminating this notice or utilizing sheet protectors is recommended.
Please refer to the above permit number with any questions or concerns.

EGLE
WRP050112 v1.0
Approved
Issued On:08/25/2026
Expires On:08/25/2031

#6

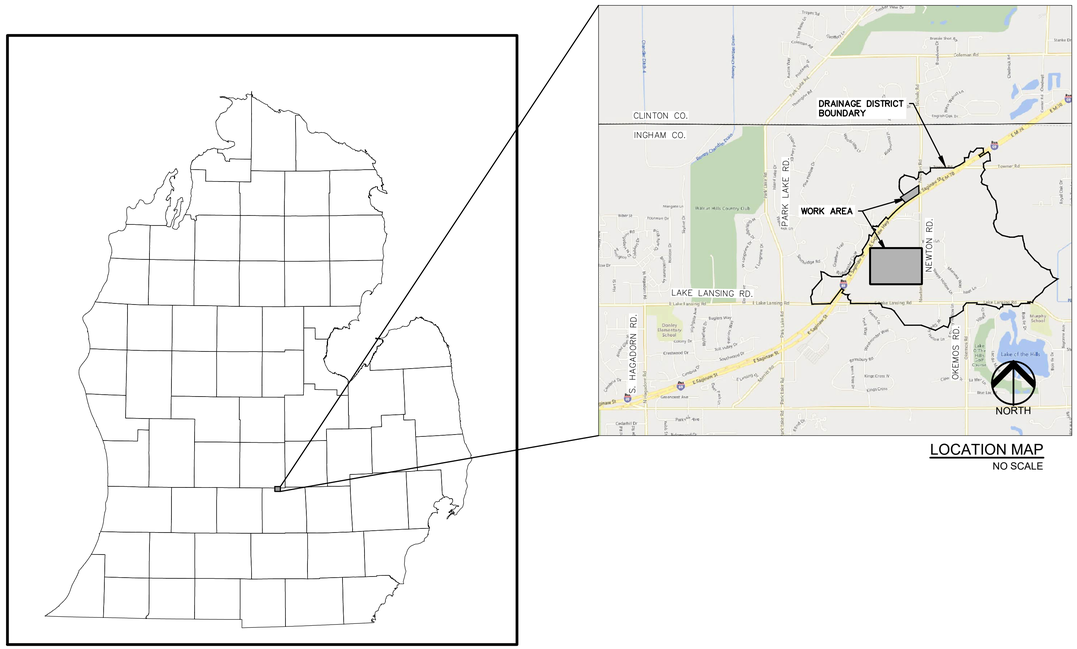
EGLE EXHIBITS

COSTIGAN DRAIN

SECTIONS 3, 4, 5 AND 9, T4N, R1W

MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

INGHAM COUNTY CLEAN WATER DRAIN COMMISSIONER PATRICK F. LINDEMANN



LOCATION MAP
NO SCALE

INDEX OF DRAWINGS	
NUMBER	TITLE
C	COVER SHEET
C-1.0	DISTRICT MAP AND IMPACT AREAS
C-2.0	IMPACT AREA 1 - MAIN DRAIN - STA 47+30 TO 52+50
C-2.1	IMPACT AREA 1 - MAIN DRAIN - STA 52+50 TO 67+80
C-2.2	IMPACT AREAS 2, 3 & 4
C-2.3	IMPACT AREA 5
C-3.0	DETAILS

DESIGN TEAM

OWNER

INGHAM COUNTY DRAIN COMMISIONER
707 BUHL AVENUE
MASON, MICHIGAN 48854
CONTACT: ANGIE COSMAN
PHONE: 517.719.4913

CIVIL ENGINEER

PEA GROUP
2379 WOODLAKE DRIVE, SUITE 480
OKEMOS, MI 48864
CONTACT: GREGORY LAMKIN, PE
PHONE: 844.813.2949
EMAIL: GLAMKIN@PEAGROUP.COM

ENVIRONMENTAL

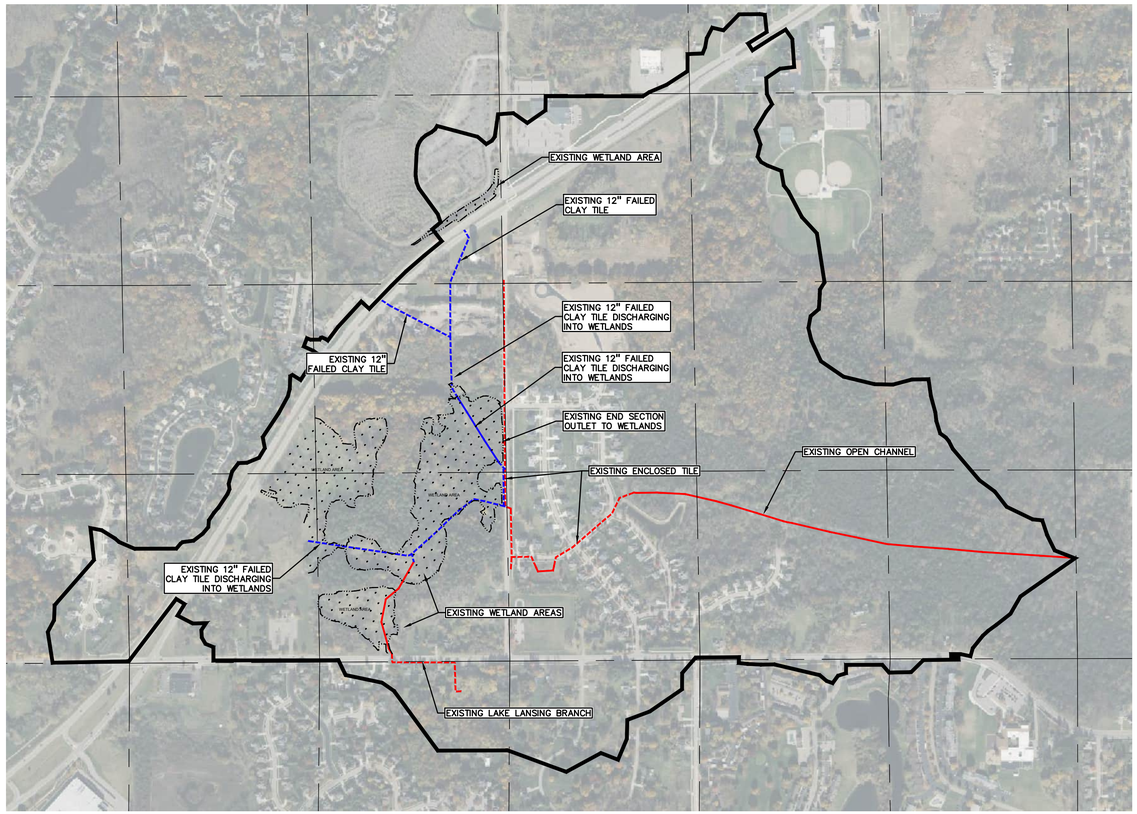
STREAMSIDE ECOLOGICAL SERVICES
CONTACT: MIKE NURSE, PWS
PHONE: 586.764.9366
EMAIL: MNURSE@STREAMSIDEECO.COM

PEA GROUP

REVISIONS	
DESCRIPTION	DATE
ORIGINAL ISSUE DATE	2025.09.19

NOT FOR CONSTRUCTION

EGLE
WRP050112 v1.0
Approved
Issued On:08/25/2026
Expires On:08/25/2031



EXISTING CONDITIONS

0 125 250 500

SCALE: 1" = 500'

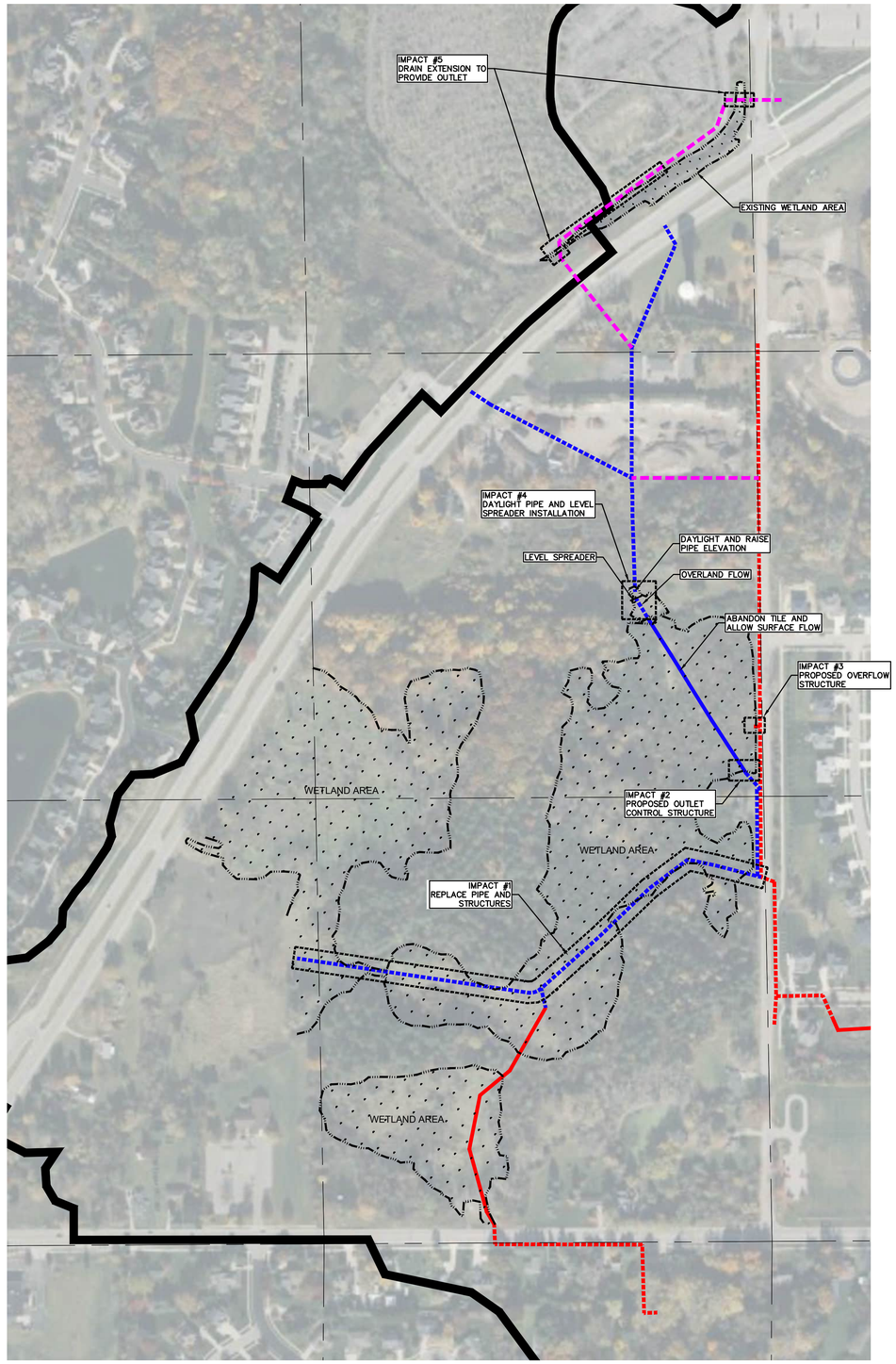
LEGEND

OPEN CHANNEL

- NO CHANGE
- SURFACE FLOW

ENCLOSED CHANNEL

- NO CHANGE
- REMOVE AND REPLACE
- CONSTRUCT NEW EXTENSION



PROPOSED IMPACT AREAS

0 100 200 400

SCALE: 1" = 200'

NOT FOR CONSTRUCTION

PEA GROUP
t: 844.813.2949
www.peagroup.com

NORTH

811 Know what's below. Call before you dig.

CAUTION!!
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INGHAM COUNTY CLEAN WATER
DRAIN COMMISSIONER
PATRICK E. LINDEMANN

CLIENT

PATRICK E. LINDEMANN INGHAM COUNTY DRAIN COMMISSIONER
707 BUHL AVENUE, P.O. BOX 220
MASON, MICHIGAN

PROJECT TITLE

COSTIGAN DRAIN
SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS
- -

ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

DRAWING TITLE

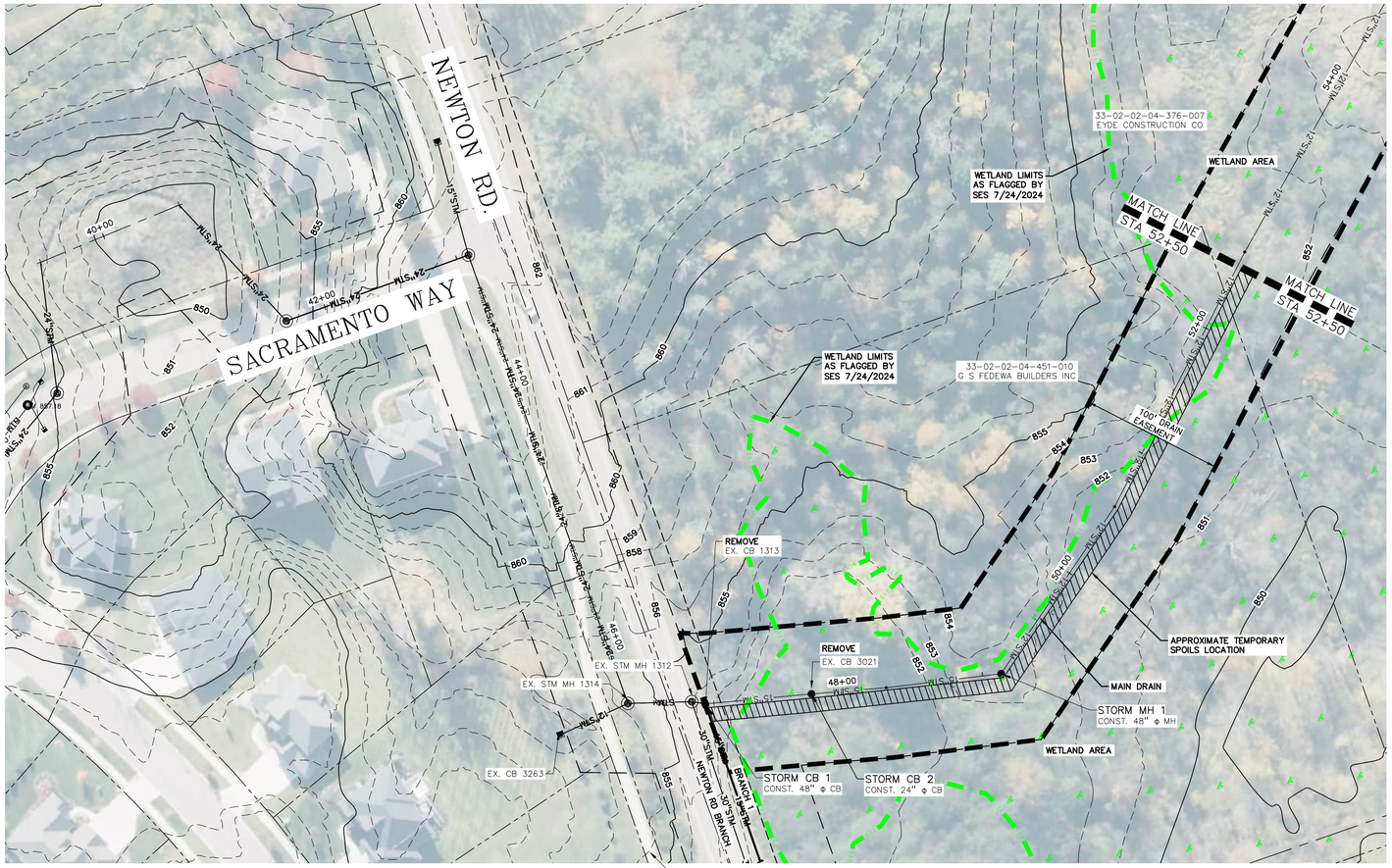
DISTRICT MAP AND IMPACT AREAS

PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:
C-1.0

EGLE
WRP050112 v1.0
Approved
Issued On:08/25/2026
Expires On:08/25/2031

S:\PROJECTS\2021\2021-2237 HDC COSTIGAN DRAIN\CIVIL Plans\EGLE Exhibits\[C-1.0] EX AND PR-21-2237.dwg, PLOT DATE: 2/10/2026 BY: Drew DuMars



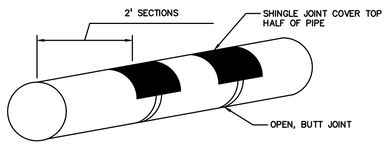
WETLAND IMPACT

IMPACT #1

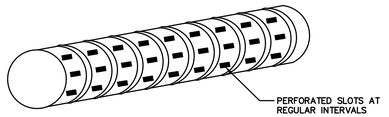
EXEMPT ACTIVITY – REPLACEMENT OF EXISTING PIPES AND STRUCTURES

INFILTRATION CHARACTERISTICS OF EXISTING AND PROPOSED PIPE

PIPE DESCRIPTION	OPENINGS PER FT.
EX. 12" CLAY TILE*	1.55 SQ. IN.
PR. 12" SLCPP (PERFORATED)	1.50 SQ. IN.

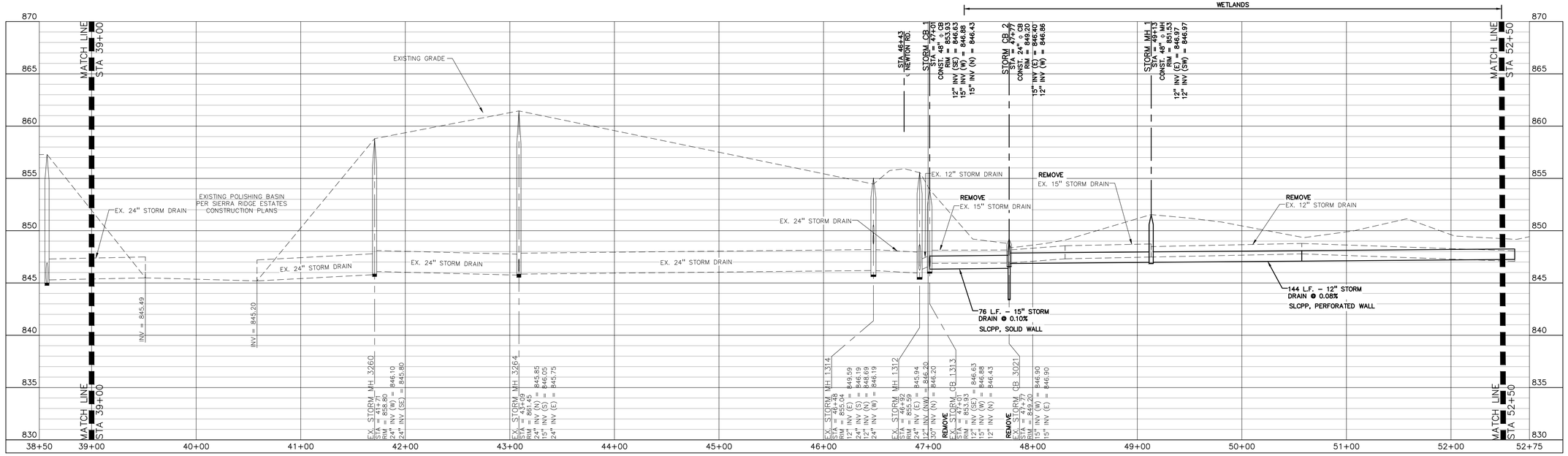


EXISITING CLAY TILE



PROPOSED SLCPP

HORIZ: 1" = 50'
VERT: 1"= 5'



S:\PROJECTS\2021\2021-2237 ICDC COSTIGAN DRAIN\CIVIL Plans\LEGAL Exhibits\(C-2.0).dwg PLOT DATE: 2/10/2026 BY: Chase Dubois

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EGLE
WRP050112 v1.0
Approved
Issued On:08/25/2026
Expires On:08/25/2031

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NORTH

0 25 50 100
SCALE: 1" = 50'

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INGHAM COUNTY CLEAN WATER DRAIN COMMISSIONER PATRICK E. LINDEMANN

CLIENT
PATRICK E. LINDEMANN
INGHAM COUNTY DRAIN COMMISSIONER
707 BUHL AVENUE, P.O. BOX 220
MASON, MICHIGAN

PROJECT TITLE
COSTIGAN DRAIN
SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS
- -

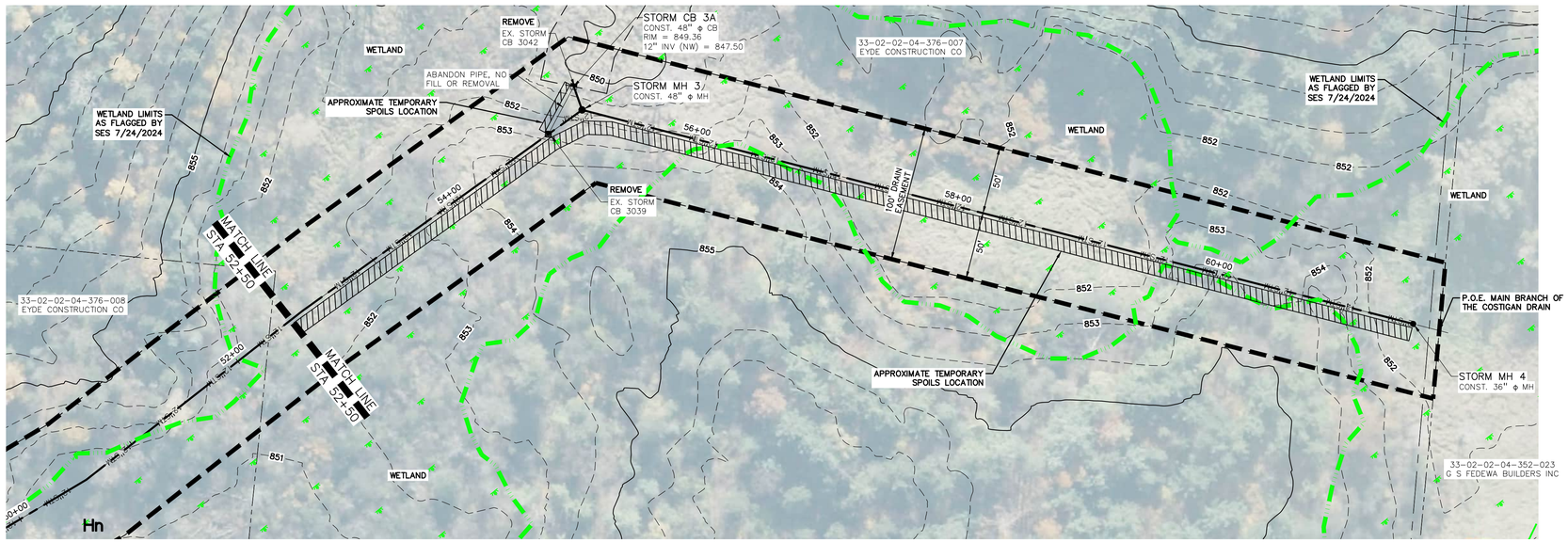
ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

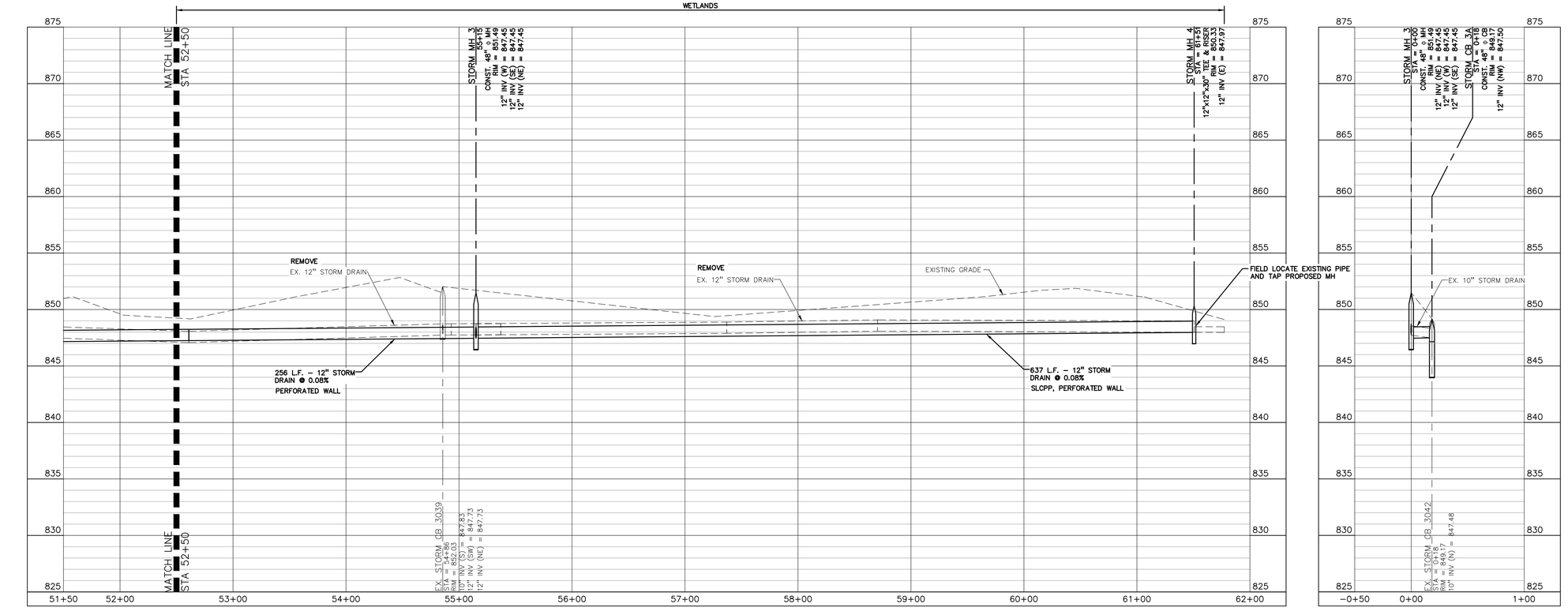
DRAWING TITLE
IMPACT AREA #1
MAIN DRAIN

STA 47+30 - 52+50

PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:
C-2.0





VOLUME

WETLAND EXCAVATION

EXEMPT ACTIVITY – REPLACEMENT OF EXISTING PIPE AND STORM CB 3

STORM CB 3A

15 FT (L) X 15 FT (W) X 3 FT (D) = 260 CFT = 9.6 CYD

STORM CB 3 TO STORM CB 3A CONNECTING PIPE

18 FT (L) X 8 FT (W) X 3 FT (D) = 432 CFT = 16 CYD

STORM MH 4

10 FT (L) X 10 FT (W) X 3 FT (D) = 300 CFT = 1.7 CYD

AREA

EXEMPT ACTIVITY – REPLACEMENT OF EXISTING PIPE AND STORM CB 3

STORM CB 3A

15 FT (L) X 15 FT (W) = 225 SFT = 0.005 AC

STORM CB 3 TO STORM CB 3A CONNECTING PIPE

18 FT (L) X 8 FT (W) = 144 SFT = 0.003 AC

STORM MH 4

10 FT (L) X 10 FT (W) X = 100 SFT = 0.002 AC

NOT FOR CONSTRUCTION

PEA GROUP
t: 844.813.2949
www.peagroup.com

NORTH

0 25 50 100
SCALE: 1" = 50'

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INGHAM COUNTY CLEAN WATER
DRAIN COMMISSIONER
PATRICK E. LINDEMANN

CLIENT
PATRICK E. LINDEMANN INGHAM COUNTY DRAIN COMMISSIONER
707 BUHL AVENUE, P.O. BOX 220
MASON, MICHIGAN

PROJECT TITLE
COSTIGAN DRAIN
SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS
- -

ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

DRAWING TITLE
IMPACT AREA #1
MAIN DRAIN

STA 52+50 - 61+80

PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:
C-2.1

EGLE
WRP050112 v1.0
Approved
Issued On:08/25/2026
Expires On:08/25/2031

S:\PROJECTS\2021\2021-2237 IDC COSTIGAN DRAIN\CIVIL Plans\EGLE Exhibits\[C-2.1].dwg PLOT DATE: 2/10/2026 BY: Drew DuBois

VOLUME

WETLAND EXCAVATION

IMPACT #2 – NO WETLAND EXCAVATION

IMPACT #3 – STRUCTURE INSTALLATION

10 FT (L) X 10 FT (W) X 5 FT (D) = 500 CFT = 18.5 CYD

IMPACT #4 – PIPE DISCHARGE AND OVERLAND FLOW AREA

106 FT (L) X 32 FT (W) X 1 FT (D) = 3,392 CFT = 125.6 CYD

IMPACT #4 – LEVEL SPREADER

35 FT (L) X 2 FT (W) X 3 FT (D) = 210 CFT = 7.8 CYD

IMPACT #4 – LEVEL SPREADER APPROACH

4 FT (L) X 4 FT (W) X 1 FT (D) = 16 CFT = 0.6 CYD

WETLAND FILL

IMPACT #2 – NO WETLAND FILL

IMPACT #3 – STRUCTURE EMBANKMENT

13 FT (L) X 10 FT (W) X 2 FT (D) = 260 CFT = 9.6 CYD

IMPACT #4 – OVERLAND FLOW AREA

18 FT (L) X 2.6 FT (W) X 1 FT (D) = 47 CFT = 1.7 CYD

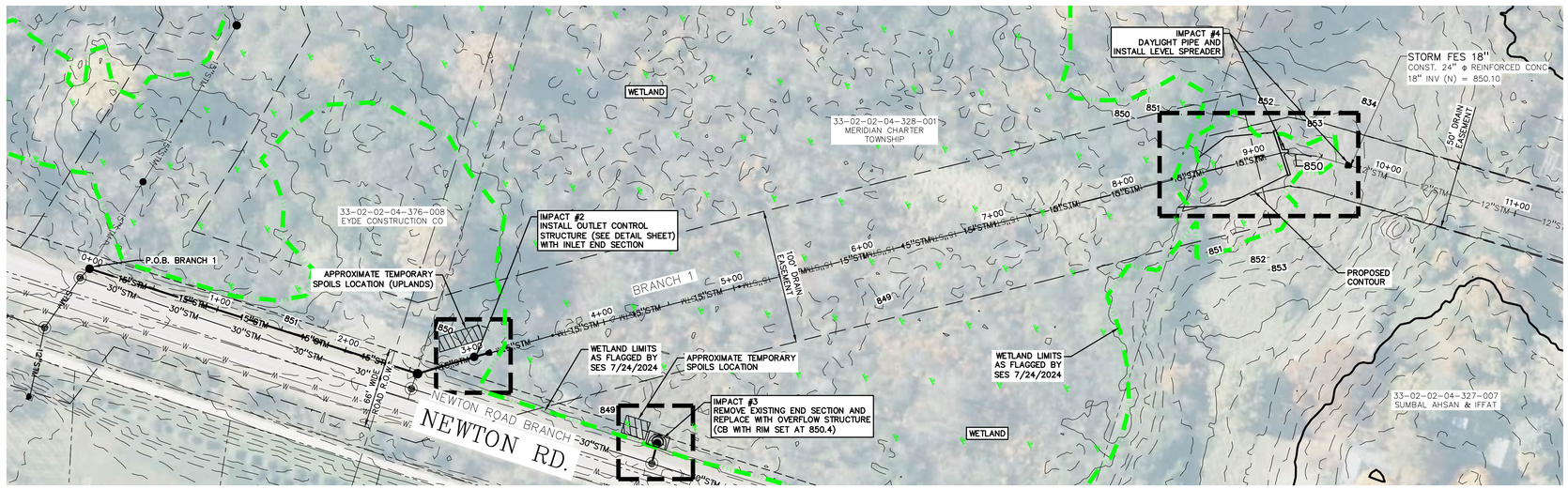
AREA

IMPACT #3 – STRUCTURE EMBANKMENT

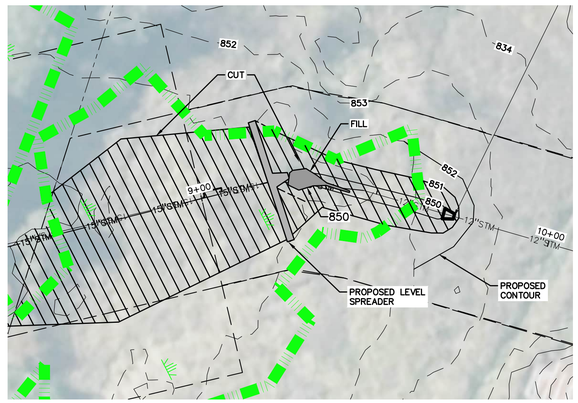
13 FT (L) X 10 FT (W) = 130 SFT = 0.003 AC

IMPACT #4 – PIPE DISCHARGE AND OVERLAND FLOW AREA

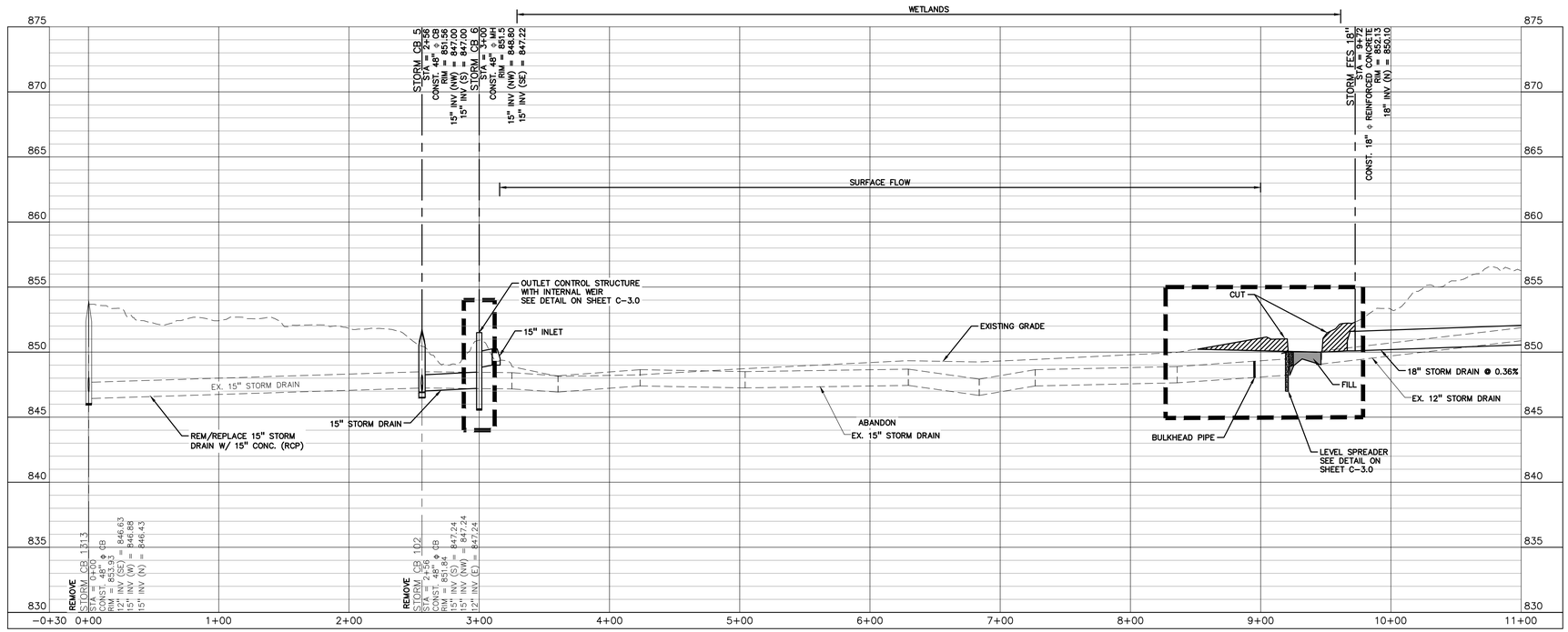
106 FT (L) X 32 FT (W) = 3,392 SFT = 0.078 AC



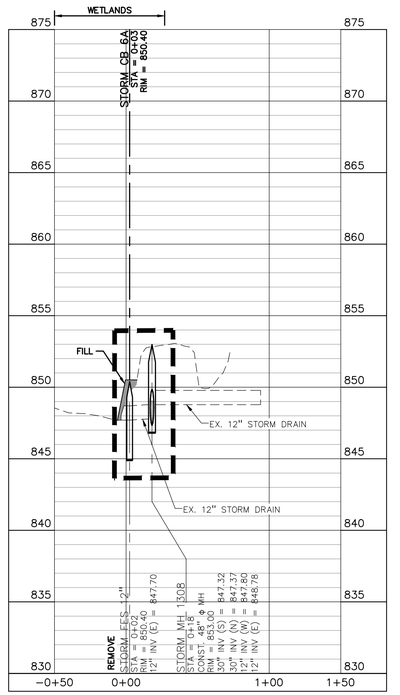
ENHANCED DETAIL OF IMPACT #4 – OVERLAND FLOW AREA



SCALE: 1" = 20'



IMPACT #3 PROFILE



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t: 844.813.2949
www.peagroup.com

NORTH

0 25 50 100

SCALE: 1" = 50'

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INGHAM COUNTY DRAIN COMMISSIONER PATRICK E. LINDEMANN

CLIENT

PATRICK E. LINDEMANN INGHAM COUNTY DRAIN COMMISSIONER
707 BUHL AVENUE, P.O. BOX 220
MASON, MICHIGAN

PROJECT TITLE

COSTIGAN DRAIN
SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS
- -

ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

DRAWING TITLE
IMPACT AREAS #2, #3 AND #4

PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:
C-2.2

EGLE
WRP056112 v1.0
Approved
Issued On:08/25/2026
Expires On:08/25/2031

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VOLUME

WETLAND EXCAVATION

WEST – CROSSING

11 FT (L) X 30 FT (W) X 8 FT (D) = 2,640 CFT = 97.8 CYD

WEST – PARALLEL TRENCH

376 FT (L) X 5 FT (W) X 5 FT (D) = 9,400 CFT = 348 CYD

EAST – CROSSING

35 FT (L) X 30 FT (W) X 8 FT (D) = 8,400 CFT = 311 CYD

AREA

WEST – CROSSING

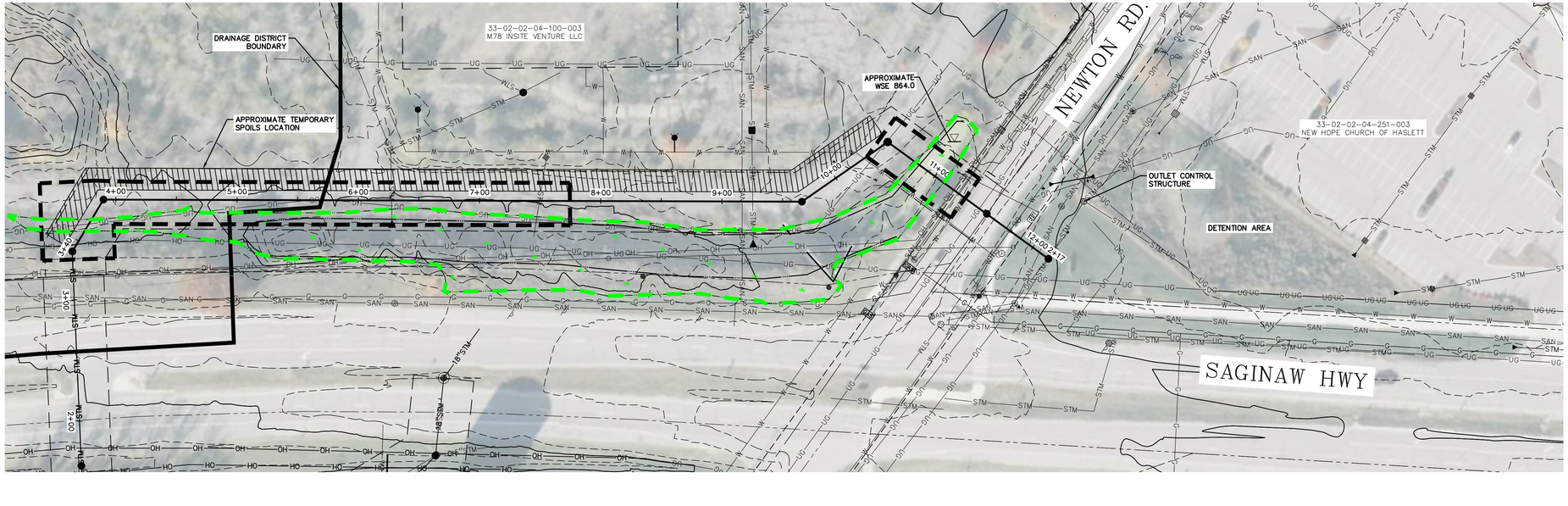
11 FT (L) X 30 FT (W) = 330 SFT = 0.008 AC

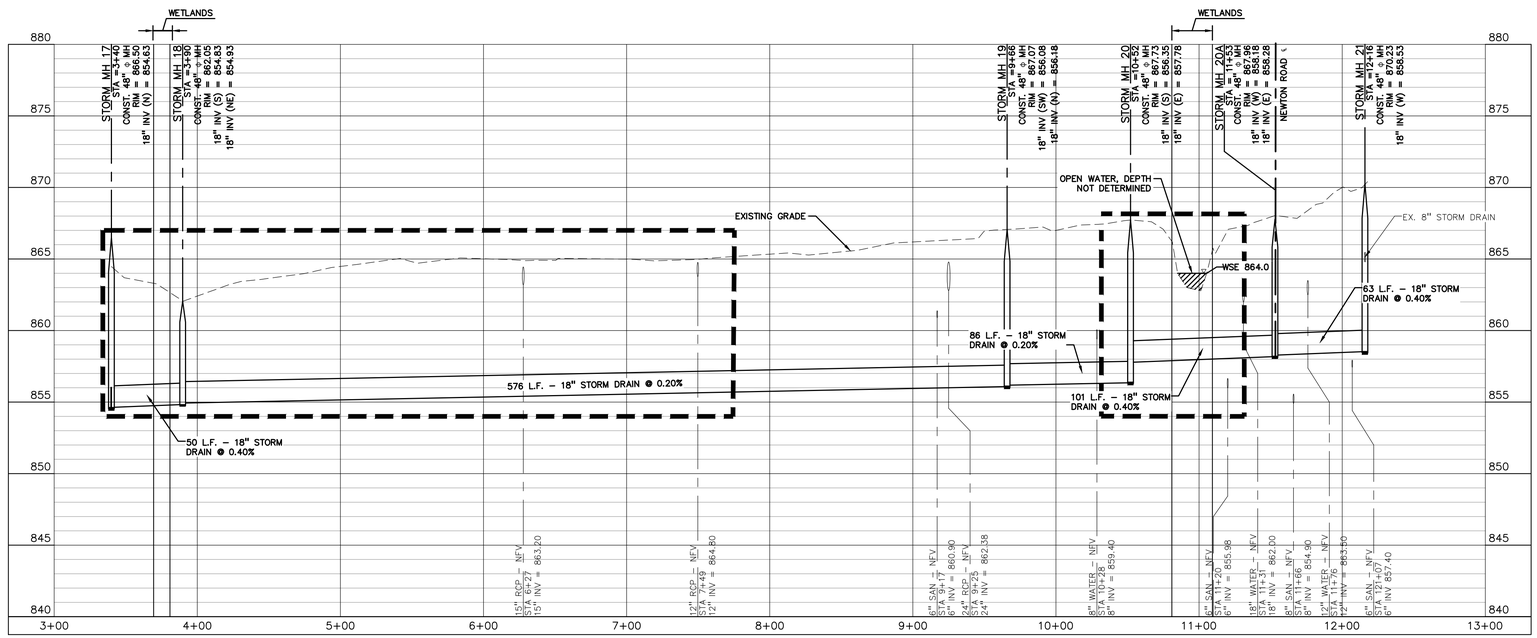
PARALLEL TRENCH

376 FT (L) X 5 FT (W) = 1,880 SFT = 0.043 AC

EAST – CROSSING

35 FT (L) X 30 FT (W) = 1,050 SFT = 0.024 AC





HORIZ: 1" = 50'
VERT: 1"= 5'

NFV = NOT FIELD VERIFIED

NOT FOR CONSTRUCTION

PEA GROUP
t: 844.813.2949
www.peagroup.com

NORTH

0 25 50 100
SCALE: 1" = 50'

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INGHAM COUNTY CLEAN WATER DRAIN COMMISSIONER PATRICK E. LINDEMANN

CLIENT

PATRICK E. LINDEMANN
INGHAM COUNTY DRAIN COMMISSIONER
707 BUHL AVENUE, P.O. BOX 220
MASON, MICHIGAN

PROJECT TITLE

COSTIGAN DRAIN
SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS

- -

ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

DRAWING TITLE

IMPACT AREA #5

PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:

C-2.3

EGLE
WRP038112 v1.0
Approved
Issued On:08/25/2026
Expires On:08/25/2031

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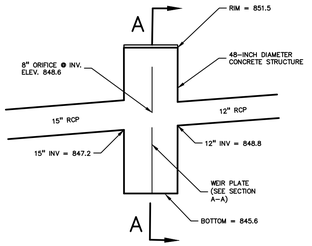
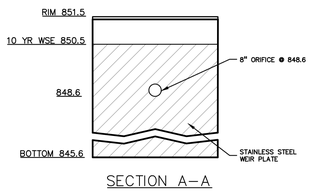


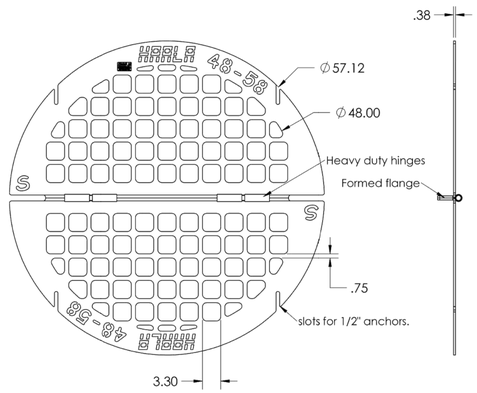
SIDE VIEW



SECTION A–A

OUTLET CONTROL STRUCTURE DETAIL

NOT TO SCALE



Notes:
1. Unit is made from A36 steel and is hot dip galvanized after fabrication per ASTM A123.
2. Open area: 7.01 sq ft

HAALA INDUSTRIES SLEEPY EYE, MN 507-794-6681

PROPRIETARY AND CONFIDENTIAL
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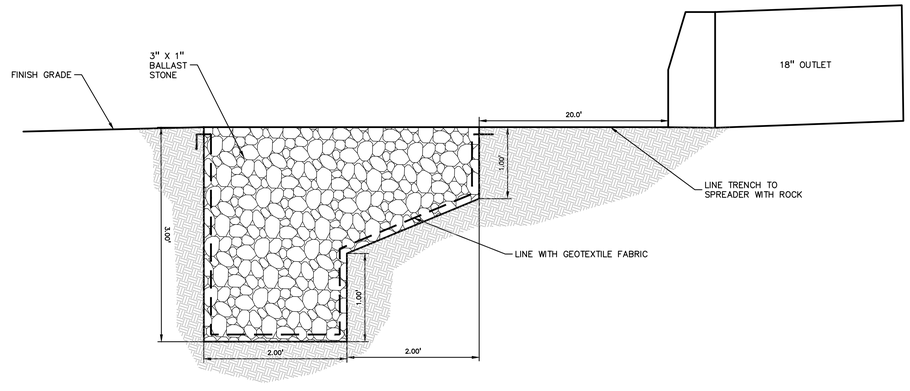
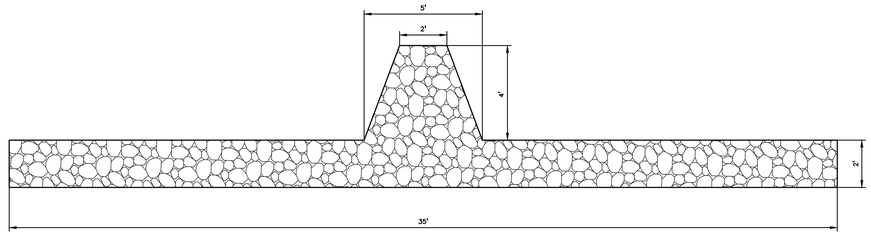
MATERIAL:	ASTM A36 Steel	DIMENSIONS ARE IN INCHES	
WEIGHT:	189.47		
FINISH:	Galvanized	DRAWN BY: Cosey S.	10/26/2010
		REVISED: gabriel	6/29/2022

Part # PS48-58SWH
Desc. Pond Skimmer 48-58 Std With Hinge
Configuration: Default
Title: PS48-58SWH

REV: A "DO NOT SCALE DRAWING" SHEET 3 OF 3



SIDE VIEW



TOP VIEW

LEVEL SPREADER DETAIL

NOT TO SCALE

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INGHAM COUNTY DRAIN COMMISSIONER PATRICK E. LINDEMANN

CLIENT
PATRICK E. LINDEMANN INGHAM COUNTY DRAIN COMMISSIONER
707 BUHL AVENUE, P.O. BOX 220
MASON, MICHIGAN

PROJECT TITLE
COSTIGAN DRAIN
SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS
- -

ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

DRAWING TITLE
DETAILS

PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:
C-3.0

NOT FOR CONSTRUCTION

EGLE
WRP058112 v1.0
Approved
Issued On:08/25/2026
Expires On:08/25/2031

S:\PROJECTS\2021\2021-2237 (GC COSTIGAN DRAIN)\C 6 Plans\EGLE Exhibits\[C-3.0 DETAILS-21-2237.dwg Plot
DATE: 2/10/2026 BY: Dave DuBois

#7

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY
WATER RESOURCES DIVISION
PERMIT

Issued To:

Patrick E. Lindemann
707 Buhl Avenue
P.O. Box 220
Mason, Michigan 48854

Permit No:	**WRP050112 v.1**
Submission No.:	**HQG-BFRQ-577CM**
Site Name:	**33-Newton Road-Haslett- Costigan Drain**
Issued:	**August 25, 2026**
Revised:	
Expires:	**August 25, 2031**

This permit is being issued by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division, under the provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); specifically:

- ☐ **Part 301, Inland Lakes and Streams**
- ☒ **Part 303, Wetlands Protection**
- ☐ **Part 315, Dam Safety**
- ☐ **Part 323, Shorelands Protection and Management**
- ☐ **Part 325, Great Lakes Submerged Lands**
- ☐ **Part 353, Sand Dunes Protection and Management**
- ☐ **Part 31, Water Resources Protection (Floodplain Regulatory Authority)**

EGLE certifies that the activities authorized under this permit are in compliance with the State Coastal Zone Management Program and certifies without conditions under the Federal Clean Water Act, Section 401 that the discharge from the activities authorized under this permit will comply with Michigan's water quality requirements in Part 31, Water Resources Protection, of the NREPA and associated administrative rules, where applicable.

Permission is hereby granted, based on permittee assurance of adherence to State of Michigan requirements and permit conditions, to:

EGLE
WRP050112 v1.0
Approved
Issued On:08/25/2026
Expires On:08/25/2031

Authorized Activity:

The applicant proposes to replace segments of an existing county drain and create new segments of county drain. Work will take place across 5 impact areas.

Impact Area 1:
Excavate a 15-foot-long by 15-foot-wide and 3-foot-deep area in wetland and install a 5-foot-long by 15-foot-wide manhole CB-3A.
Excavate an area 10-foot-long by 10-foot-wide by 3 feet deep and install a 10-foot-long by 10-foot-wide manhole CB- 4.
Install 18 feet of 1-foot diameter stormwater line within an 18-foot-long by 1-foot-wide by 3-foot-deep trench by open trench excavation methods in wetland.

Impact Area 3:
Remove existing outlet structure by excavating an area 10 feet long by 10 feet wide to a depth of 5 feet **and install a** 10-foot-long by 10-foot-wide outlet structure .

Impact Area 4:
Excavate a 3306 square foot area and remove 122 cubic yards from wetland to create overflow for the level spreader. Excavate an 86-square-foot area to a maximum depth of 3 feet to create a level spreader, and backfill with 11 cubic yards of clay.

Impact Area 5:
Install 11 feet of 1.5-foot-diameter stormwater pipe within 11-foot-long-by 30-foot-wide and 8 feet deep trench by open trench excavation methods in west wetland.
Install 35 feet of 1.5-foot diameter stormwater pipe within a 35-foot-long by 30-foot-wide and 8-foot-deep trench by open trench excavation methods in east wetland.
Approximately 409 cubic yards of wetland soil will temporarily be stockpiled in wetland and backfilled in reverse order once installation is complete.

The project will temporarily impact a total of 0.03 acre of emergent wetland and permanently impact a total of 0.09 acre of emergent wetland.

Waterbody Affected: Costigan Drain, Unnamed Wetland
Property Location: Ingham County, Meridian Township, Town/Range/Section 04N01W04,

Authority granted by this permit is subject to the following limitations:

A. Initiation of any work on the permitted project confirms the permittee's acceptance and agreement to comply with all terms and conditions of this permit.

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B. The permittee, in exercising the authority granted by this permit, shall not cause unlawful pollution as defined by Part 31 of the NREPA.
C. This permit shall be kept at the site of the work and available for inspection at all times during the duration of the project or until its date of expiration.
D. All work shall be completed in accordance with the approved plans and specifications submitted with the application and/or plans and specifications attached to this permit.
E. No attempt shall be made by the permittee to forbid the full and free use by the public of public waters at or adjacent to the structure or work approved.
F. It is made a requirement of this permit that the permittee give notice to public utilities in accordance with 2013 PA 174 (Act 174) and comply with each of the requirements of Act 174.
G. This permit does not convey property rights in either real estate or material, nor does it authorize any injury to private property or invasion of public or private rights, nor does it waive the necessity of seeking federal assent, all local permits, or complying with other state statutes.
H. This permit does not prejudice or limit the right of a riparian owner or other person to institute proceedings in any circuit court of this state when necessary to protect his rights.
I. Permittee shall notify EGLE within one week after the completion of the activity authorized by this permit.
J. This permit shall not be assigned or transferred without the written approval of EGLE.
K. Failure to comply with conditions of this permit may subject the permittee to revocation of permit and criminal and/or civil action as cited by the specific state act, federal act, and/or rule under which this permit is granted.
L. All dredged or excavated materials shall be disposed of in an upland site (outside of floodplains, unless exempt under Part 31 of the NREPA, and wetlands).
M. In issuing this permit, EGLE has relied on the information and data that the permittee has provided in connection with the submitted application for permit. If, subsequent to the issuance of a permit, such information and data prove to be false, incomplete, or inaccurate, EGLE may modify, revoke, or suspend the permit, in whole or in part, in accordance with the new information.
N. The permittee shall indemnify and hold harmless the State of Michigan and its departments, agencies, officials, employees, agents, and representatives for any and all claims or causes of action arising from acts or omissions of the permittee, or employees, agents, or representative of the permittee, undertaken in connection with this permit. The permittee's obligation to indemnify the State of Michigan applies only if the state: (1) provides the permittee or its designated representative written notice of the claim or cause of action within 30 days after it is received by the state, and (2) consents to the permittee's participation in the proceeding on the claim or cause of action. It does not apply to contested case proceedings under the Administrative Procedures Act, 1969 PA 306, as amended, challenging the permit. This permit shall not be construed as an indemnity by the State of Michigan for the benefit of the permittee or any other person.
O. Noncompliance with these terms and conditions and/or the initiation of other regulated activities not specifically authorized shall be cause for the modification, suspension, or revocation of this permit, in whole or in part. Further, EGLE may initiate criminal and/or civil proceedings as may be

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deemed necessary to correct project deficiencies, protect natural resource values, and secure compliance with statutes.

P. If any change or deviation from the permitted activity becomes necessary, the permittee shall request, in writing, a revision of the permitted activity from EGLE. Such revision request shall include complete documentation supporting the modification and revised plans detailing the proposed modification. Proposed modifications must be approved, in writing, by EGLE prior to being implemented.

Q. This permit may be transferred to another person upon written approval of EGLE. The permittee must submit a written request to EGLE to transfer the permit to the new owner. The new owner must also submit a written request to EGLE to accept transfer. The new owner must agree, in writing, to accept all conditions of the permit. A single letter signed by both parties that includes all the above information may be provided to EGLE. EGLE will review the request and, if approved, will provide written notification to the new owner.

R. Prior to initiating permitted construction, the permittee is required to provide a copy of the permit to the contractor(s) for review. The property owner, contractor(s), and any agent involved in exercising the permit are held responsible to ensure that the project is constructed in accordance with all drawings and specifications. The contractor is required to provide a copy of the permit to all subcontractors doing work authorized by the permit.

S. Construction must be undertaken and completed during the dry period of the wetland. If the area does not dry out, construction shall be done on equipment mats to prevent compaction of the soil.

T. Authority granted by this permit does not waive permit requirements under Part 91, Soil Erosion and Sedimentation Control, of the NREPA, or the need to acquire applicable permits from the County Enforcing Agent (CEA).

U. Authority granted by this permit does not waive permit requirements under the authority of Part 305, Natural Rivers, of the NREPA. A Natural Rivers Zoning Permit may be required for construction, land alteration, streambank stabilization, or vegetation removal along or near a natural river.

V. The permittee is cautioned that grade changes resulting in increased runoff onto adjacent property is subject to civil damage litigation.

W. Unless specifically stated in this permit, construction pads, haul roads, temporary structures, or other structural appurtenances to be placed in a wetland or on bottomland of the water body are not authorized and shall not be constructed unless authorized by a separate permit or permit revision granted in accordance with the applicable law.

X. For projects with potential impacts to fish spawning or migration, no work shall occur within fish spawning or migration timelines (i.e., windows) unless otherwise approved in writing by the Michigan Department of Natural Resources, Fisheries Division.

Y. Work to be done under authority of this permit is further subject to the following special instructions and specifications:

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1. Prior to the initiation of any permitted construction activities, a sedimentation barrier shall be constructed immediately down gradient of the construction site. Sedimentation barriers shall be specifically designed to handle the sediment type, load, water depth, and flow conditions of each construction site throughout the anticipated time of construction and unstable site conditions. The sedimentation barrier shall be maintained in good working order throughout the duration of the project. Upon project completion, the accumulated materials shall be removed and disposed of at an upland (non-wetland, non-floodplain) site and stabilized with seed and mulch. The sedimentation barrier shall then be removed in its entirety and the area restored to its original configuration and cover.

2. Prior to the start of construction, all adjacent non-work wetland areas shall be protected by properly trenched sedimentation barrier to prevent sediment from entering the wetland. Orange construction fencing may be installed as needed to prohibit construction personnel from entering or performing work in these areas. Sedimentation barrier shall be maintained daily throughout the construction process. Upon project completion, the accumulated materials shall be removed and disposed of at an upland site. The sedimentation barrier shall then be removed in its entirety and the area restored to its original configuration and cover.

3. Prior to the initiation of any permitted construction activity, a sedimentation barrier shall be installed along the entire route of the disturbed wetland area and maintained in good working order until permanent stabilization and re-vegetation of all disturbed areas has occurred. The sedimentation barrier shall be removed after re-vegetation.

4. All raw areas in uplands resulting from the permitted construction activity shall be effectively stabilized with sod and/or seed and mulch (or other technology specified by this permit or project plans) in a sufficient quantity and manner to prevent erosion and any potential siltation to surface waters or wetlands. Temporary stabilization measures shall be installed before or upon commencement of the permitted activity, and shall be maintained until permanent measures are in place. Permanent measures shall be in place within five (5) days of achieving final grade.

5. All raw earth within 100 feet of a lake, stream, or wetland that is not brought to final stabilization by the end of the active growing season shall be temporarily stabilized with mulch blankets in accordance with the following dates: September 20th for the Upper Peninsula, October 1st for the Lower Peninsula north of US-10, and October 10th for the Lower Peninsula south of US-10.

6. All equipment and vehicles shall be thoroughly cleaned and washed prior to entering the work site to prevent contamination by invasive plant and animal species. The permittee and contractors shall take steps to minimize the risk of spreading terrestrial

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and aquatic invasive species during this project and will take measures to prevent spread, where feasible. Specific prevention measures include the following:

a. Visually inspecting and removing any plants or mud from footwear (boots, hip-boots, and waders).
b. Visually inspecting and removing and properly disposing of any plants and mud from field equipment (nets, shovels, rakes, etc.) and vehicles.
c. Draining all water from vehicles and equipment, prior to leaving the site and before entering a new waterbody.
d. Thoroughly drying equipment (5-7 days, if possible) between sites, when possible.
e. Disinfecting vehicles and equipment between sites (e.g., diluted bleach solution, heated pressure washer), when possible. Disinfection should be conducted away from surface waters, where the disinfecting solution will not enter any storm sewers and/or surface waters.
f. Typical diluted bleach solution treatment is $^1/_2$ cup (four fluid ounces) bleach to five gallons of water, applied by spraying or sponge so surface is thoroughly exposed to bleach solution for 10 minutes.
g. Typical heated pressure wash is 140^0 water temperature, sprayed for 5-10 seconds.
h. Thoroughly washing vehicles and boats between sites (e.g., drive-through car wash).
i. Using only native plants and seed for restorations and best management practices.
j. If invasive aquatic or terrestrial plants are removed from a site, the permittee will take steps to minimize the spread of these species. Dispose of invasive plant material by bagging and transporting to a landfill, composting, or burning, as appropriate and in compliance with local and state laws.
k. A “Watch List” of Michigan’s high priority aquatic invasive species along with how to report sightings can be found at https://www.michigan.gov/invasives.

7. Construction must be undertaken and completed during the dry period of the wetland, or when frozen.

8. If the area does not dry out or freeze, construction shall be done on temporary equipment mats to prevent compaction of the soil. Matting shall not be stacked or placed in areas with significant standing water unless specifically authorized by this permit, its plans, and specifications. Matting shall be placed at the narrowest points of the wetland to minimize resource disturbance.

9. During removal or repair of the existing structure, every precaution shall be taken to prevent debris from entering any watercourse. Any debris reaching the watercourse during the removal and/or reconstruction of the structure shall be immediately retrieved from the water. All material shall be disposed of in an acceptable manner consistent with local, state, and federal regulations.

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10. All dredge/excavated spoils including organic and inorganic soils, vegetation, and other material removed shall be placed on upland (non-wetland, non-floodplain), prepared for stabilization, and stabilized with sod and/or seed and mulch in such a manner to prevent and ensure against erosion of any material into any waterbody, wetland, or floodplain.

11. The permittee shall take necessary precautions, through project design features, which will assure that this authorized pipeline, conduit or utility installation using gravel backfill does not result in drainage of the associated wetlands. If said pipeline, conduit, or utility installation causes such drainage to occur, the permittee remains liable and responsible for project modifications as approved by the EGLE to halt the resultant drainage and to prevent future drainage of the wetland.

12. Any backfill used in the excavated trench shall not result in the drainage of wetlands. Clay plugs shall be shown in the construction plans and shall be placed at the wetland/upland boundary in all instances and as needed throughout the trench system.

13. Excavated materials shall be stockpiled and used to backfill the trench area with the top 12 inches of topsoil being stockpiled separately to backfill the top portion of the trench. Trench excavation shall be restored to pre-existing grade by backfilling the trench so native soils are replaced in reverse order of excavation, replacing the topsoil at the surface.

14. All slurry resulting from any dewatering operation shall be discharged through a filter bag or pumped to a sump located away from wetlands and surface waters and allowed to filter through natural upland vegetation, gravel filters, or other engineered devices for a sufficient distance and/or period of time necessary to remove sediment or suspended particles.

15. All fill/backfill shall consist of clean inert material that will not cause siltation nor contain soluble chemicals, organic matter, pollutants, or contaminants. All fill shall be contained in such a manner so as not to erode into any surface water, floodplain, or wetland. All raw areas associated with the permitted activity shall be stabilized with sod and/or seed and mulch, riprap, or other technically effective methods as necessary to prevent erosion.

16. All fill shall consist of clean, washed rock or stone that is free of fines, other soil materials, any contaminants, or pollutants.

17. No fill, excess soil, or other material shall be placed in the 100-year floodplain, any wetland or surface water area not specifically authorized by this permit, its plans, and specifications.

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18. The placement of riprap at the outlets shall be limited to the minimum necessary to ensure proper stabilization. Riprap shall consist of natural field stone or rock (broken concrete is not allowed).

19. **No discharge is authorized from any storm water basin(s) until the contributing drainage area is properly stabilized, or proper soil erosion measures are in place, to avoid uncontrolled sediment discharges.**

20. Upon completion of the project, any disturbed wetland areas shall be restored to the original contour elevation, revegetated and reseeded with species native to Michigan appropriate to the site, and mulched to prevent erosion. Excessive rutting and/or soil disturbance shall be reported in writing to EGLE. Monitoring and additional corrective measures may be required. The property owner, contractor(s), and any agent involved in obtaining or exercising this permit, are held responsible to ensure the project is constructed in accordance with all drawings and specifications contained in this permit. The contractor is required to provide a copy of the permit to any and all subcontractors doing work authorized by this permit.

21. In issuing this permit, EGLE has relied on the information and data, which the permittee has provided in connection with the permit application. If, subsequent to the issuance of this permit, such information and data prove to be false, incomplete or inaccurate, or additional information demonstrates that the spoils are causing environmental contamination, or that new State or Federal regulations are promulgated which cause this disposal to be inappropriate, EGLE may modify, revoke, or suspend the permit, in whole or in part, in accordance with the new information

22. Authority granted by this permit does not waive permit or program requirements under Part 91 of the NREPA or the need to acquire applicable permits from the CEA. To locate the Soil Erosion Program Administrator for your county, visit https://www.michigan.gov/egle/about/organization/water-resources/soil-erosion/sesc-overview and select “Soil Erosion and Sedimentation Control Agencies”.

23. The authority to conduct the activity as authorized by this permit is granted solely under the provisions of the governing act as identified above. This permit does not convey, provide, or otherwise imply approval of any other governing act, ordinance, or regulation, nor does it waive the permittee's obligation to acquire any local, county, state, or federal approval or authorization necessary to conduct the activity.

24. This permit does not authorize or sanction work that has been completed in violation of applicable federal, state, or local statutes.

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25. The permit placard shall be kept posted at the work site in a prominent location at all times for the duration of the project or until permit expiration.

26. This permit is being issued for the maximum time allowed and no extensions of this permit will be granted. Initiation of the construction work authorized by this permit indicates the permittee's acceptance of this condition. The permit, when signed by EGLE, will be for a five-year period beginning on the date of issuance. If the project is not completed by the expiration date, a new permit must be sought.

Issued By: _____

Claire Watts
Lansing District Office
Water Resources Division
517-388-6686

THIS PERMIT MUST BE SIGNED BY THE PERMITTEE TO BE VALID.

I hereby assure that I have read, am familiar with, and agree to adhere to the terms and conditions of this permit.

_____ _____

Permittee Signature Date

cc: Meridian Township Clerk
Ingham County Drain Commissioner
Ingham County CEA

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Expires On:08/25/2031

#8

EGLE CR for Costigan Drain Permit Application

Project Purpose

1. *Please provide more information on why the petition was filed and include the landowner concerns that raised the need for this petition. Clarify what type of land use the "new development" at the upper reaches of the drainage district is for. It's not clear whether this project helps the commercial or residential landowners of the area, and it's not clear the type of land use the new development is for. Please include a description or depiction of the drainage area that the project is aimed to address.*

    a. Landowner concerns included inadequate drainage capacity of the system (portions of the existing system date from 1921), deterioration of the existing drainage system due to age and the need for its repair/replacement, and the lack of a drainage system (public outlet) extending to the outer reaches of the watershed.

- The petition and the project do not necessarily address a specific development that is currently proposed. It addresses existing developed residential and commercial lands, many of which are developed and some, particularly the upper reaches, which are vacant and have the potential for future development. Essentially, the project (and as part of the petition for the project), addresses drainage needs within the drainage district as is required of the Drain Commissioner.

Construction Sequence

2. *Please include the following in your construction sequence:*
    a. Discuss whether timber matting will be used.

        The contractor for this project will be expected to perform the work in the dry or while the ground is frozen. Timber matting is not proposed.

    b. More detail is needed for what you mean by surface restoration, can you describe how restoration will occur? Will there be any modification of the existing grade or change in wetland use?

        Wetland soils will be excavated, stockpiled, and replaced in reverse order as excavated with wetland soils. Soils will be replaced to original grade and the wetland seed source within the soils is expected to revegetate within less than one growing season. A native wetland seed mix will be placed once the construction is complete. Except for those areas where cut and fill are shown, there is no expectation that there will be modification of the existing grade or change in wetland use.

    c. Describe where discharge from dewatering will be sent to. Also detail how long dewatering will take place.

        As stated above, the contractor is expected to work in dry or frozen conditions. Significant dewatering is not proposed or expected. Should a situation arise where dewatering is

necessary, it is expected to be for as little as two hours with the discharge sent by hose(s) to access points in the downstream storm sewer system. There is no plan to install well points for draining of the wetlands in order to conduct work.

d. Describe overall project timeline. Also include the amount of time it will take to complete and restore open trenching.

The project is expected to take place over two to three months. Open trenches will be backfilled and the surface graded to match existing ground the same day that the pipe is installed. The Ingham County Drain Commissioner requires that temporary seeds be cast over disturbed earth at the end of each workday. Seeding of native plant species will occur once all work is completed in an impact area.

Project Alternatives

3. *Can you expand on other low impact development options considered to treat stormwater entering the wetland complex? It appears that the existing and proposed lines that flow into the current level spreader area are urbanized and still under construction.*

Future development within the drainage district will be required to comply with the stormwater management and water quality standards of the Ingham County Drain Commissioner. There are existing developed parcels within the drainage district that already comply with those same standards. Those standards include the following from the ***Rules of the Ingham County Drain Commissioner 2005 Edition Supplemented September 28, 2021***

- Water Quality Standard - Detention of the first flush runoff volume from a 1-inch storm captured and detained for at least 24 hours or within a permanent pool.
- Bankfull/Channel Protection/Storage Control Standard – Detention of the 2-year/24-hour storm runoff for not more than 48 hours.
- Flood Control Standard – Detention of the 100-year/24-hour storm with a restricted release rate of 0.15 cfs per acre.
- SESC Standard – Turbidity of the site discharge during construction shall not exceed 100 NTU (CEA standard under the authority of Part 91)

Wetland Impact

Please review the table and include any missed impacts from previous tables. Please also note that any permanent removal or wetland spoils is counted as permanent impact, even if it grows back. This is due to the grade change of the existing wetland.

The tables in MiEnviro have been reviewed and include all proposed impacts.

4. *Please include parallel trench impacts for Impact area 5. Please also review values as some of them do not match the provided impact tables in the plans.*

Plans have been revised and submitted in MiEnviro and values have been adjusted.

5. *Other Activities Table – Please include the proposed dewatering in this table. Additionally, if timber matting or other structures are used, please include them in this table.*

   As stated above, dewatering is minimal if necessary and timber matting is not proposed.

Plans

6. Please include the following in your overhead plans:
   a. Call out the following for dewatering: the specific wetland area that will be dewatered, where cofferdams will be placed, where pumps will be placed, and where water will be discharged to. If dewatering area will require cut and fill of different materials, call out dimensions and quantities in plans.

      If dewatering is necessary in installation trenches, there will be no cut or fill of material outside the proposed trench. As stated above, the contractor is expected to work in dry or frozen conditions. Therefore, if dewatering were necessary, it may be for as little as two hours with the discharge sent by hose(s) to access points in the downstream storm sewer system. There is no plan to install well points for draining of the wetlands in order to conduct work.

   b. *If timber matting will be used, please show this on overhead plans.*
   As discussed above, timber matting is not expected to be used on this project.

   c. *Show where spoils for open trenching will be placed for new line installation*.
   Plans were revised to indicate location of temporary spoils adjacent to new pipe installation.

7. Please include the following on the cross-section plans:
   a. Include detail on plan for overflow structure.

      The overflow structure is simply a catch basin performing a regulating function
      Show connection between Storm MH 3 and new Storm CB 3A in cross-section.
      Storm MH 3 and Storm CB 3A are now shown in cross-section on sheet C-2.1.

   b. *For each of the manhole cross-sections please either show in an enlarged separate image or existing image shading for proposed cut and fills in wetland.*

      Storm CB 6A is the only structure involving cut or fill in wetland; the exhibit was revised to indicate fill (solid hatching) in this particular case. All other structures in wetland either match existing rim elevations or existing grade.

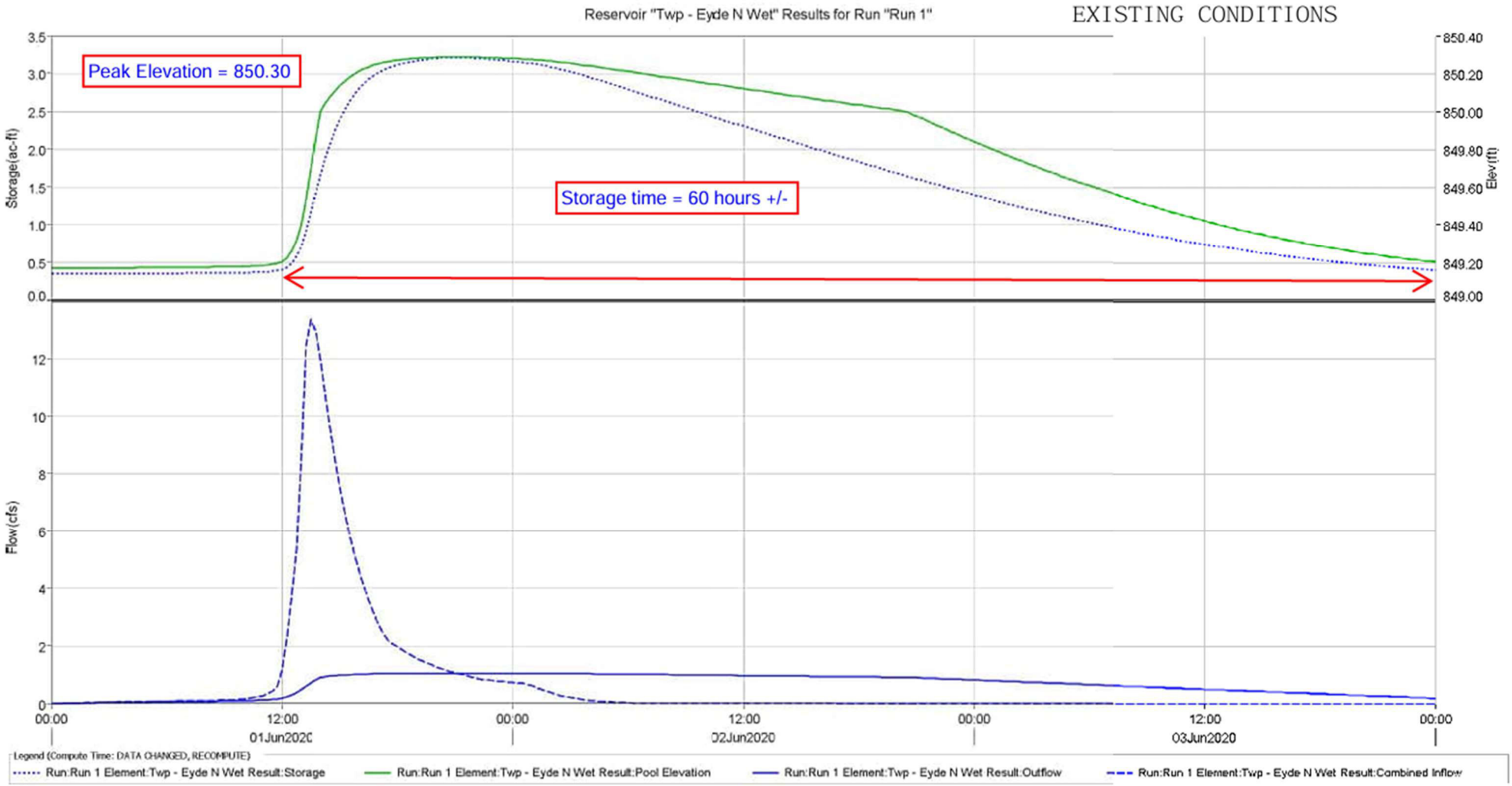
   c. *If timber matting is used, please show this in cross-section plans.*

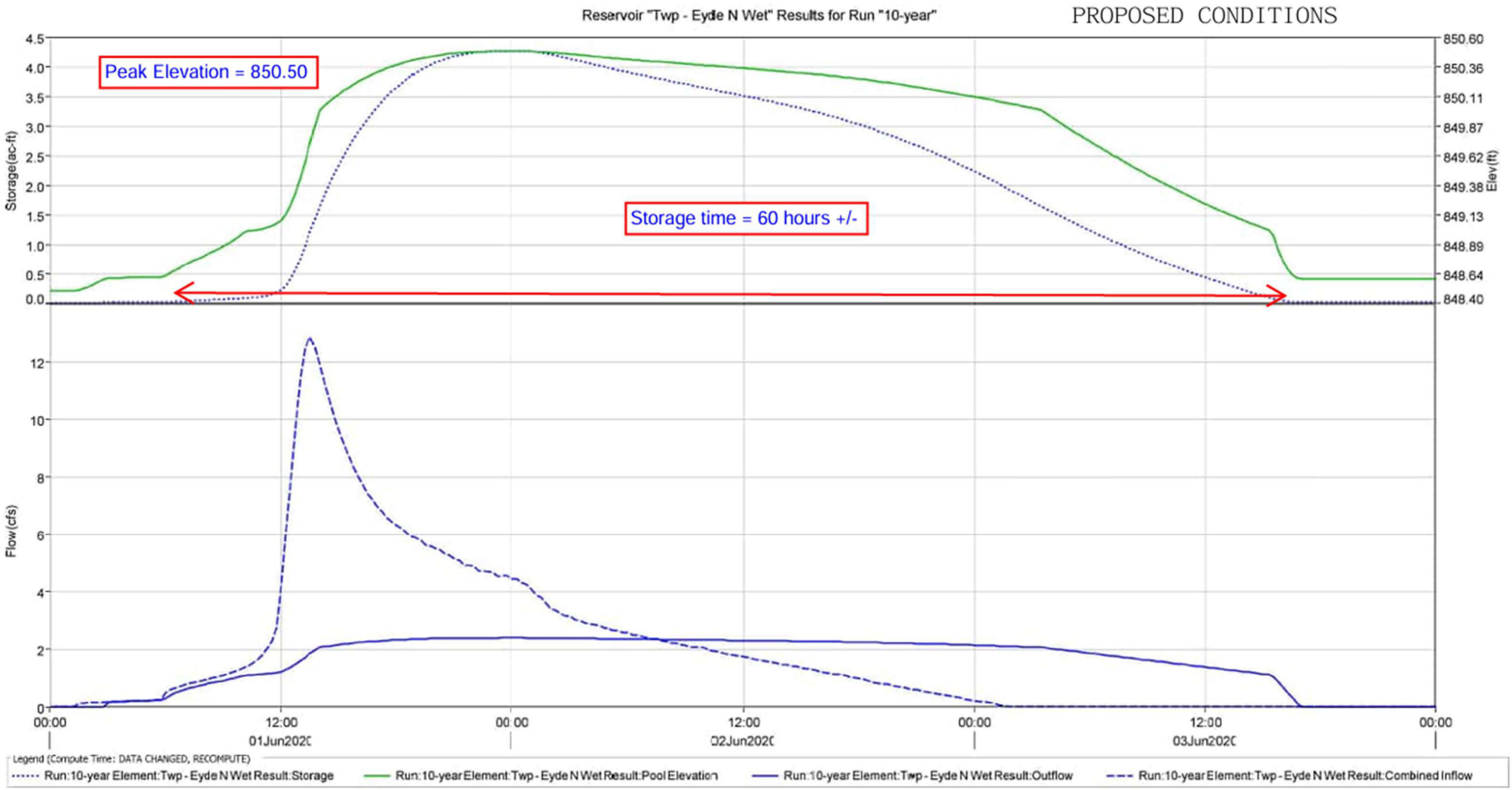
      Timber matting will not be used per previous response.

Water Budget

8. *Please provide a water budget/hydrology analysis for the wetlands that are in and around this project.*

As described in the original submittal, the existing wetland area immediately west of Newton Road functions today as a detention area. The proposed work involves installing an outlet control structure so that this function is maintained in future. The orifice outlet and weir plate elevation are designed to maintain the current storage time (approximately 60 hours) for a 10-year storm event as modeled in HEC-HMS at nearly the same elevation (850.5 versus 850.3). See below for output graphs from HEC-HMS for existing and proposed conditions.


Reservoir "Twp - Eyde N Wet" Results for Run "Run 1"
EXISTING CONDITIONS
Peak Elevation = 850.30
Storage time = 60 hours +/-
Storage(ac-ft)
Elev(ft)
Flow(cfs)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
850.40
850.20
850.00
849.80
849.60
849.40
849.20
849.00
12
10
8
6
4
2
0
00:00
12:00
00:00
12:00
00:00
12:00
00:00
01Jun2020
02Jun2020
03Jun2020
Legend (Compute Time: DATA CHANGED, RECOMPUTE)
Run:Run 1 Element:Twp - Eyde N Wet Result:Storage
Run:Run 1 Element:Twp - Eyde N Wet Result:Pool Elevation
Run:Run 1 Element:Twp - Eyde N Wet Result:Outflow
Run:Run 1 Element:Twp - Eyde N Wet Result:Combined Inflow


Reservoir "Twp - Eyde N Wet" Results for Run "10-year"
PROPOSED CONDITIONS
Peak Elevation = 850.50
Storage time = 60 hours +/-
Storage(ac-ft)
Elev(ft)
Flow(cfs)
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
850.60
850.36
850.11
849.87
849.62
849.38
849.13
848.89
848.64
848.40
12
10
8
6
4
2
0
00:00
12:00
01Jun2020
00:00
12:00
02Jun2020
00:00
12:00
03Jun2020
00:00
Legend (Compute Time: DATA CHANGED, RECOMPUTE)
Run:10-year Element:Twp - Eyde N Wet Result:Storage
Run:10-year Element:Twp - Eyde N Wet Result:Pool Elevation
Run:10-year Element:Twp - Eyde N Wet Result:Outflow
Run:10-year Element:Twp - Eyde N Wet Result:Combined Inflow

Digital EGLE/USACE Joint Permit Application (JPA) for Inland Lakes and Streams, Great Lakes, Wetlands, Floodplains, Dams, Environmental Areas, High Risk Erosion Areas and Critical Dune Areas

version 1.45

(Submission #: HQG-BFRQ-577CM, version 2)

Details

Submission ID	HQG-BFRQ-577CM
Status	Draft

Fees

	$500.00
Payments/Adjustments	($500.00)
Balance Due	$0.00 (Paid)

Form Input

Instructions

Contact Information

Applicant Information (Usually the Property Owner)

First Name	Last Name
Patrick E	Lindemann

Organization Name
Ingham County Drain Commissioner

Phone Type	Number	Extension
Business	517 676-8395	

Email
drainoffice@ingham.org

Address

707 Buhl Avenue

P.O. Box 220

Mason, MI 48854

Is the Applicant the fee simple property owner (i.e., does the applicant have full and permanent ownership of the parcel, as well as any buildings on that parcel)?
Yes

Has the applicant hired an agent or cooperating agency (agency or firm assisting applicant) to complete the application process?
Yes

Agent Contact

First Name	Last Name
MICHAEL	NURSE

Organization Name
StreamsideEco LLC

Phone Type	Number	Extension
Mobile	5867649366	

Email
mnurse@streamsideeco.com

Address

3940 Timpson Ave SE

Lowell, MI 49331

Upload Attachment for Authorization from Agent

Letter of Authorization Costigan.pdf - 10/15/2025 02:16 PM

Comment
NONE PROVIDED

Are there additional property owners or other contacts you would like to add to the application?
Yes

Additional Contact Information (1 of 1)

Contact Role(s):
Consultant

Contact Information

Prefix
NONE PROVIDED

First Name	Last Name
Alan	Boyer

Title
Senior Project Manager/Engineer

Organization Name
PEA Group

Phone Type	Number	Extension
Mobile	517.202.5629	

Email
mnurse@streamsideeco.com

Address
2379 Woodlake Drive
Suite 480
Okemos, Michigan 48864

Project Location

EGLE Site Reference Number (Prepopulated):
8111256025196353530

Project Location
42.75906318594056,-84.43307305662219

Project Location Address
West of Newton Road, North of Lake Lansing Road
Meridian Township/Haslett, MI 48840

County
Ingham

Is there a Property Tax ID Number(s) for the project area?
No

Is there Subdivision/Plat and Lot Number(s)?
No

Is this project within Indian Lands?
No

Local Unit of Government (LUG):
Meridian Township/Haslett

Directions to Project Site:
West of Newton Road approximately 1500 feet north of Lake Lansing Road. Also at the southwest corner of Newton Road and Business 69. See attached site location maps.

Background Information

Has the Michigan Department of Environment, Great Lakes, and Energy (EGLE) and/or United States Army Corps of Engineers (USACE) conducted a pre-application meeting/inspection for this project?
Yes

Provide the date of the pre-application meeting/inspection (MM/DD/YYYY):
09/29/2023

Pre-application File Number:
HPW-S5R2-0VYE6 and HPG-3CTD-CFFS5

EGLE and/or USACE staff person involved in the pre-application meeting/inspection:
Clair Watts and Carol Valor

Has the project scope or design changed since the pre-application meeting/inspection?
Yes

Please explain what has changed. Attach additional documentation, as necessary.
Minor change at north end of project - wetland crossing with enclosed drain.

Additional Documentation

> Costigan Pre-app Letter 1.pdf - 10/15/2025 03:43 PM
> Costigan Pre-app Letter 2.pdf - 10/15/2025 03:43 PM
> **Comment**
> Pre-application Letters Attached

Has the EGLE completed a Wetland Identification Program (WIP) assessment for this site?
No

Environmental Area Number (if known):
NONE PROVIDED

Has the United States Army Corps of Engineers (USACE) completed either an approved or preliminary jurisdictional determination for this site?
No

Were any regulated activities previously completed on this site under an EGLE and/or USACE permit?
No

Have any activities commenced on this project?
No

Is this an after-the-fact application?
No

Are you aware of any unresolved violations of environmental law or litigation involving the property?
No

Is there a conservation easement or other easement, deed restriction, lease, or other encumbrance upon the property?
No

Are there any other federal, interstate, state, or local agency authorizations associated with this project?
Yes

List all other federal, interstate, state, or local agency authorizations.

Agency	Type of Approval	Number	Date Applied	Approved/Denied/Undetermined
Meridian Township	Wetland Use	NA	12/01/2025	Undetermined

Comments
NONE PROVIDED

Permit Application Category and Public Notice Information

Indicate the type of permit being applied for:
Individual Permit for all other projects

This type of permit application requires that you include contact information for the adjacent landowners to this project. If you are only entering in a small number of bordering parcel owners contact information, please select "Enter list of recipients". If there is a rather large number of affected property owners such as a project that significantly affects lake levels, please upload a spreadsheet of the property owners. Please include names and mailing addresses.
Upload a list.

Uploads/Attachments
Adj Properties.pdf - 10/15/2025 04:34 PM
Comment
NONE PROVIDED

Project Description

Project Use (select all that apply):
Public/Government/Tribal

Project Type (select all that apply):
Drain - County

Project Summary (Purpose and Use): Provide a summary of all proposed activities including the intended use and reason for the proposed project.
See attached

Project Construction Sequence, Methods, and Equipment: Describe how the proposed project timing, methods, and equipment will minimize disturbance from the project construction, including but not limited to soil erosion and sedimentation control measures.
See attached

Project Alternatives: Describe all options considered as alternatives to the proposed project, and describe how impacts to state and federal regulated waters will be avoided and minimized. This may include other locations, materials, etc.
See attached

Project Compensation: Describe how the proposed impacts to state and federal regulated waters will be compensated, OR explain why compensatory mitigation should not be required for the proposed impacts. Include amount, location, and method of compensation (i.e., bank, on-site, preservation, etc.).
Impacts are less than 0.1 acre. No Mitigation is proposed

Upload any additional information as needed to provide information applicable to your project regarding project purpose sequence, methods, alternatives, or compensation.
Response to EGLE CR_Costigan.pdf - 03/23/2026 10:00 AM
Comment
NONE PROVIDED

Resource and Activity Type

SELECT THE ACTIVITIES from the list below that are proposed in your project (check ALL that apply). If you don't see your project type listed, select "Other Project Type". These activities listed require additional information to be gathered later in the application.
Intake or Outfall Structures
Utility Crossings - Below Ground

The Proposed Project will involve the following resources (check ALL that apply).
Wetland

Major Project Fee Calculation Questions

Is filling of 10,000 cubic yards or more proposed (cumulatively) within wetlands, streams, lakes, or Great Lakes?
No

Is dredging of 10,000 cubic yards (cumulatively) or more proposed within streams, lakes, or Great Lakes? (wetlands not included)
No

Is new dredging or adjacent upland excavation in suspected contamination areas proposed by this application?
No

Is a subdivision, condominium, or new golf course proposed?
No

Wetland Project Information and Impacts

Has a professional wetland delineation been completed for this site?
Yes

Attach a copy of wetland delineation data form(s), and show all wetlands on the site plans.

> WETLANDS 212237 PTS w AERIAL.pdf - 12/10/2025 11:26 PM
> Wetland Delineation Report Costigan North.pdf - 03/23/2026 10:03 AM
> Wetland Delineation Report Costigan_South.pdf - 03/23/2026 10:04 AM
> **Comment**
> *NONE PROVIDED*

Total acres of wetland affected by this project.

Category	Affected area (acres)
Permanent	0.0087

Category	Affected area (acres)
Temporary	0.042
	Sum: 0.0507

Is filling or draining of 1 acre or more (cumulatively) of wetland proposed?
No

Select all wetland types that will be affected by this project:
Emergent
Scrub-shrub
Forested

If your project includes placing fill in wetland then select the proposed activities from the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:
None of the above
General Fill

Complete this table for projects involving Fill. Enter each activity/ location that corresponds with each activity selected in the previous question and enter the dimensions. Activities may be entered in one line of the table if they occupy the same impact footprint and cannot be broken out separately (Example: Activity - Driveway and Riprap slope). Multiple activities in different locations should be listed on different lines of the table.

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (square feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Area 3 Structure Embankment	13	10	2	130	260	10	*NONE PROVIDED*
Area 4 Overland Flow Area	18	2.6	1	46.8	46.8	2	*NONE PROVIDED*
				Sum: 176.8	Sum: 306.8	Sum: 12	Sum: NaN

Source of Fill Material:
Off-site
Please Describe
Commercial Source

Type of Fill.
Clay

Is riprap proposed?
No

Select from the following list for Excavation/Dredge Activities (if your proposed project is primarily a structure enter the impact as a structure. Only enter an impacted area in one of the impact tables in one impact section):
Excavation (wetlands)

If your project includes EXCAVATION/DREDGE IN WETLAND then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (sq. feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Area 4 Pipe Discharge and Overland Flow Area	106	32	1	3392	3392	126	*NONE PROVIDED*
Area 4 Level Spreader	35	2	3	70	210	8	*NONE PROVIDED*
Area 4 Level Spreader Approach	4	4	1	16	16	1	*NONE PROVIDED*
Area 3 Structure embankment Installation	10	10	5	100	500	19	*NONE PROVIDED*
Area 5 West Crossing	11	30	8	330	2640	98	*NONE PROVIDED*
Area 5 East Crossing	36	30	8	1080	8640	320	*NONE PROVIDED*
Storm CB 3A	15	15	3	225	675	25	*NONE PROVIDED*
Storm CB 3 to CB 3A	18	8	3	144	432	16	*NONE PROVIDED*
Storm Manhole 4	10	10	3	100	300	11	*NONE PROVIDED*

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (sq. feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
				Sum: 5457	Sum: 16805	Sum: 624	Sum: NaN

Spoils Disposal

Will the excavation/dredge spoils be disposed of on site or off site?
On site

Describe any measures used to retain sediment:
Spoils placed on upland with SESC BMP's installed. Seeded and stabilized.

If your project includes STRUCTURES IN WETLAND then select all of the proposed activities in the following list. If your activity is not shown, then select "None of the Above" and move to the next question. Only enter an impacted area in one of the impact tables (do not duplicate impact entries).:
Utility Structure
Outfall Structure
Water Control Structure

Projects involving Structures:

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (Sq. feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Area 1 CB-3A	15	15	3	225	675	25	*NONE PROVIDED*
Area 1 Connection CB 3 to 3A	18	8	3	144	432	16	*NONE PROVIDED*
Area 1 MH 4	10	10	3	100	300	11	*NONE PROVIDED*
Area 2 Outlet Control Structure	0	0	0	0	0	0	*NONE PROVIDED*

Activity	Length (feet)	Width (feet)	Depth (feet)	Area (Sq. feet)	Volume (cubic feet)	Volume (cubic yards)	Corrected value for complex impact AREAS (square feet)
Area 3 Remove/replace with Outlet CB Structure	10	10	5	100	500	19	*NONE PROVIDED*
				Sum: 569	Sum: 1907	Sum: 71	Sum: NaN

If your project includes Other Activities in WETLAND not listed in this section, then select from the proposed activities in the following list. If your activity in Wetland has not been listed in this Wetland Section, then select "Other" and enter a description of your activity. Only enter an impacted area in one of the impact tables (do not duplicate impact entries). If you selected a Fill, Excavation/Dredging, or Structure activity above in this section, but do not have an activity listed as Other, then select None of the Above for this question.
None of the above
Structure Removal (except dam removal)

Is Wetland Mitigation being proposed as part of this proposed project?
No
Explain why no mitigation is proposed.
Less than 0.1 acre of impact

Intake or Outfall Structures

Is the intake structure associated with an authorized outfall structure?
No

Number of intakes or outfalls:
3

Pipe Description

Unique Identifier	Pipe Diameter (inches):	Invert Elevation:
Area 3 Outlet Control Structure	48	850.4
Area 4 Level Spreader Area	18	850.1

Type of intake or outfall stabilization:
End section

Has the water been treated (outfall only)?
Yes

Utility Crossings

Select all resource types that are proposed to be crossed by this project:
Wetlands

How many total wetland crossings are proposed?
2

Enter the type and total number of acres of wetland that will be converted from one wetland type to another wetland type.

Wetland type	Acres of impact
Emergent	.008
Emergent	.024

List of Utility Crossing Impacts

Unique Identifier	Type of Crossing	Method	Utility Type	Length (feet)	Pipe diameter (inches)	Distance below surface (feet)	Trench width (feet)
Area 5 West Crossing	Wetland	Open Trench	Storm sewer	11	30	8	30
Area 5 East Crossing	Wetland	Open Trench	Storm sewer	36	30	8	30

Upload of Proposed Site Plans

Does your project include any one or more of the following: impacts to one or more acres of wetland, new construction of a breakwater or seawall with a total length more than 1,000 feet, a stream enclosure of greater than 300 feet in one or more segments, or relocation or channelization of a stream more than 1,000 feet in one or more segments? Also select "YES" for any other project that requires federal coordination.
No

If you have obtained a letter resulting from the USFWS Michigan Determination Key (DKey) tool for endangered species, please attach the letter below.

USFWS Information and Planning and Consultation (IPaC) system can be found online at ipac.ecosphere.fws.gov.

Upload the Michigan DKey Output Letter

IPaC-D-Key.pdf - 12/10/2025 06:52 PM

Comment

NONE PROVIDED

Required on all Site Plan uploads. Please identify that all of the following items are included on your plans that you upload with this application.

Site Plan Features	Existing and Proposed Plan Set
Scale, Compass North, and Property Lines	Yes
Fill and Excavation areas with associated amounts in cubic yards	Yes
Any rivers, lakes, or ponds and associated Ordinary High Water Mark (OHWM)	Yes
Exterior dimensions of Structures, Fill and Excavation areas associated with the proposed project	Yes
Dimensions to other Structures and Lot Lines associated with the project	Yes
Topographic Contour Lines from licensed surveyor or engineer when applicable	Yes

Upload Site Plans and Cross Section Drawings for your Proposed Project

20250919_EGLE EXHIBITS.pdf - 12/10/2025 08:16 PM

20260210_EGLE EXHIBITS_212237.pdf - 03/23/2026 10:05 AM

Comment

NONE PROVIDED

Additional Required and Supplementary Documents

Costigan Drain Records.pdf - 12/10/2025 09:31 PM

Supplemental Information - Costigan.docx - 12/10/2025 11:20 PM

Response to EGLE CR_Costigan.pdf - 03/23/2026 10:06 AM

Comment

NONE PROVIDED

Fees

Individual Permit Fee:
+$500.00

Total Fee Amount:

$500.00

Is the applicant or landowner a State of Michigan Agency?
No

Attachments

Date	Attachment Name	Context	User
3/23/2026 10:06 AM	Response to EGLE CR_Costigan.pdf	Attachment	Michael Nurse
3/23/2026 10:05 AM	20260210_EGLE EXHIBITS_212237.pdf	Attachment	Michael Nurse
3/23/2026 10:04 AM	Wetland Delineation Report Costigan_South.pdf	Attachment	Michael Nurse
3/23/2026 10:03 AM	Wetland Delineation Report Costigan North.pdf	Attachment	Michael Nurse
3/23/2026 10:00 AM	Response to EGLE CR_Costigan.pdf	Attachment	Michael Nurse
12/10/2025 11:26 PM	WETLANDS 212237 PTS w AERIAL.pdf	Attachment	Michael Nurse
12/10/2025 11:20 PM	Supplemental Information - Costigan.docx	Attachment	Michael Nurse
12/10/2025 9:31 PM	Costigan Drain Records.pdf	Attachment	Michael Nurse
12/10/2025 8:16 PM	20250919_EGLE EXHIBITS.pdf	Attachment	Michael Nurse
12/10/2025 6:52 PM	IPaC-D-Key.pdf	Attachment	Michael Nurse
10/15/2025 4:34 PM	Adj Properties.pdf	Attachment	Michael Nurse
10/15/2025 3:43 PM	Costigan Pre-app Letter 2.pdf	Attachment	Michael Nurse
10/15/2025 3:43 PM	Costigan Pre-app Letter 1.pdf	Attachment	Michael Nurse
10/15/2025 2:16 PM	Letter of Authorization Costigan.pdf	Attachment	Michael Nurse

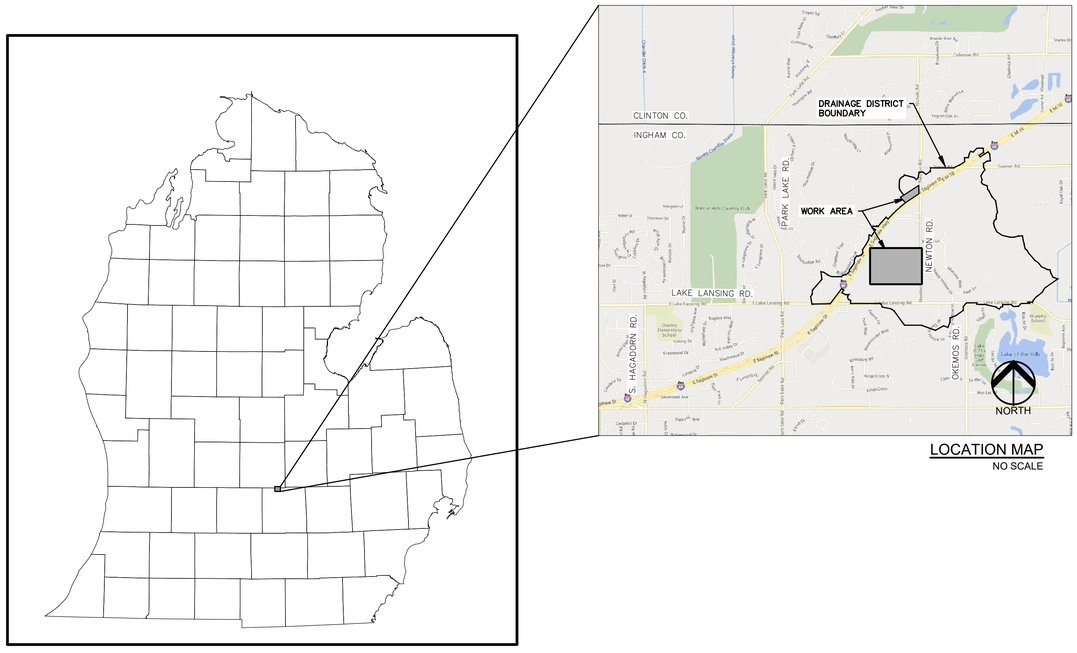
EGLE EXHIBITS

COSTIGAN DRAIN

SECTIONS 3, 4, 5 AND 9, T4N, R1W

MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

Redundant to #6



LOCATION MAP
NO SCALE

INDEX OF DRAWINGS	
NUMBER	TITLE
C	COVER SHEET
C-1.0	DISTRICT MAP AND IMPACT AREAS
C-2.0	IMPACT AREA 1 - MAIN DRAIN - STA 47+30 TO 52+50
C-2.1	IMPACT AREA 1 - MAIN DRAIN - STA 52+50 TO 67+80
C-2.2	IMPACT AREAS 2, 3 & 4
C-2.3	IMPACT AREA 5
C-3.0	DETAILS

DESIGN TEAM

OWNER

INGHAM COUNTY DRAIN COMMISIONER
707 BUHL AVENUE
MASON, MICHIGAN 48854
CONTACT: ANGIE COSMAN
PHONE: 517.719.4913

CIVIL ENGINEER

PEA GROUP
2379 WOODLAKE DRIVE, SUITE 480
OKEMOS, MI 48864
CONTACT: GREGORY LAMKIN, PE
PHONE: 844.813.2949
EMAIL: GLAMKIN@PEAGROUP.COM

ENVIRONMENTAL

STREAMSIDE ECOLOGICAL SERVICES
CONTACT: MIKE NURSE, PWS
PHONE: 586.764.9366
EMAIL: MNURSE@STREAMSIDEECO.COM

PEA GROUP

REVISIONS	
DESCRIPTION	DATE
ORIGINAL ISSUE DATE	2025.09.19

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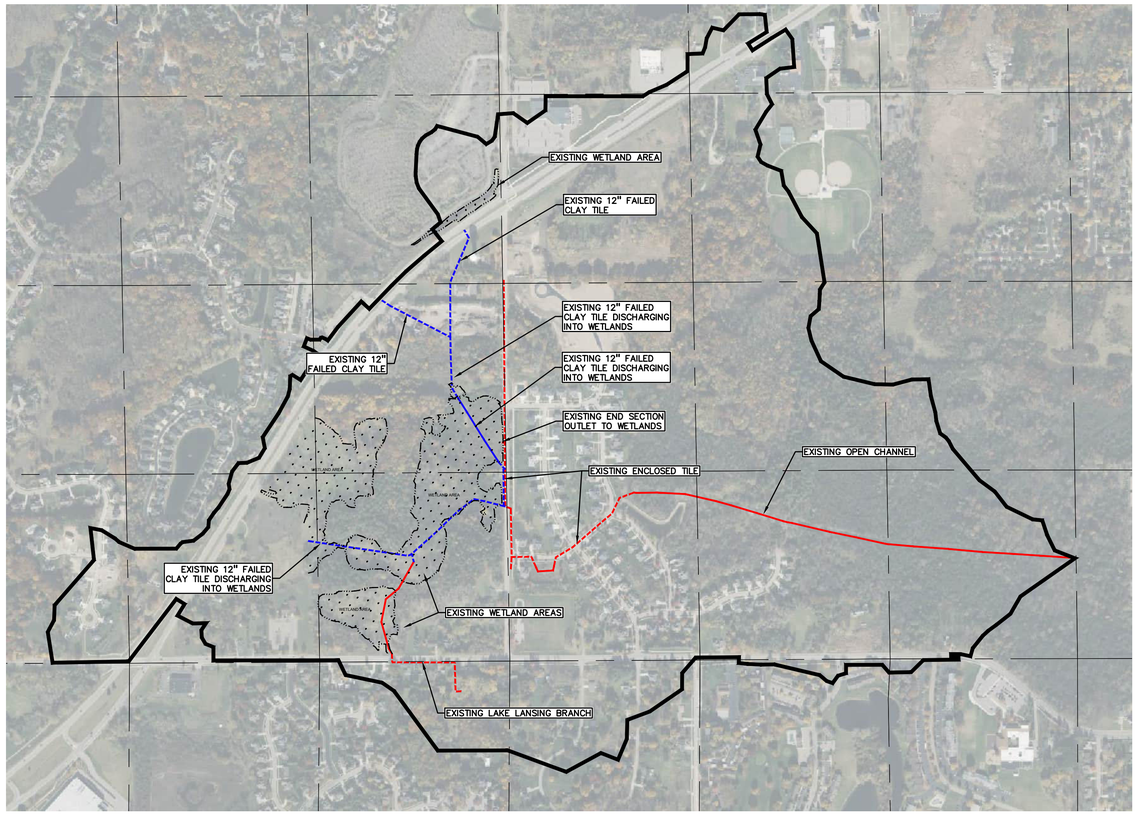


EXISTING CONDITIONS

0 125 250 500

SCALE: 1" = 500'

LEGEND

OPEN CHANNEL

NO CHANGE

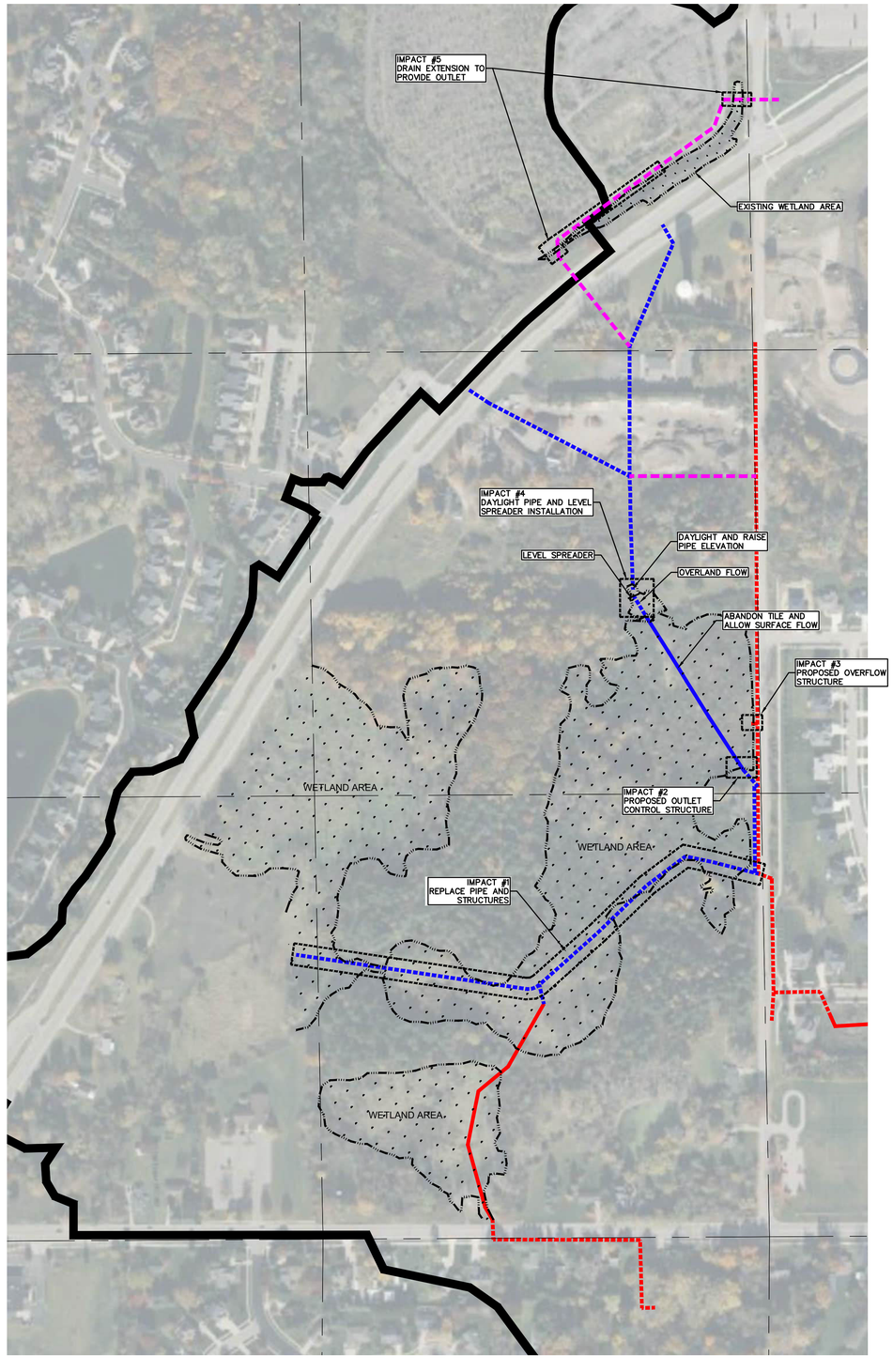
SURFACE FLOW

ENCLOSED CHANNEL

NO CHANGE

REMOVE AND REPLACE

CONSTRUCT NEW EXTENSION



PROPOSED IMPACT AREAS

0 100 200 400

SCALE: 1" = 200'

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www.peagroup.com

NORTH

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE LOCATIONS AND ARE NOT WARRANTEED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

INGHAM COUNTY CLEAN WATER
DRAIN COMMISSIONER
PATRICK E. LINDEMANN

CLIENT
PATRICK E. LINDEMANN INGHAM COUNTY DRAIN COMMISSIONER
707 BUHL AVENUE, P.O. BOX 220
MASON, MICHIGAN

PROJECT TITLE
COSTIGAN DRAIN
SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS
- -

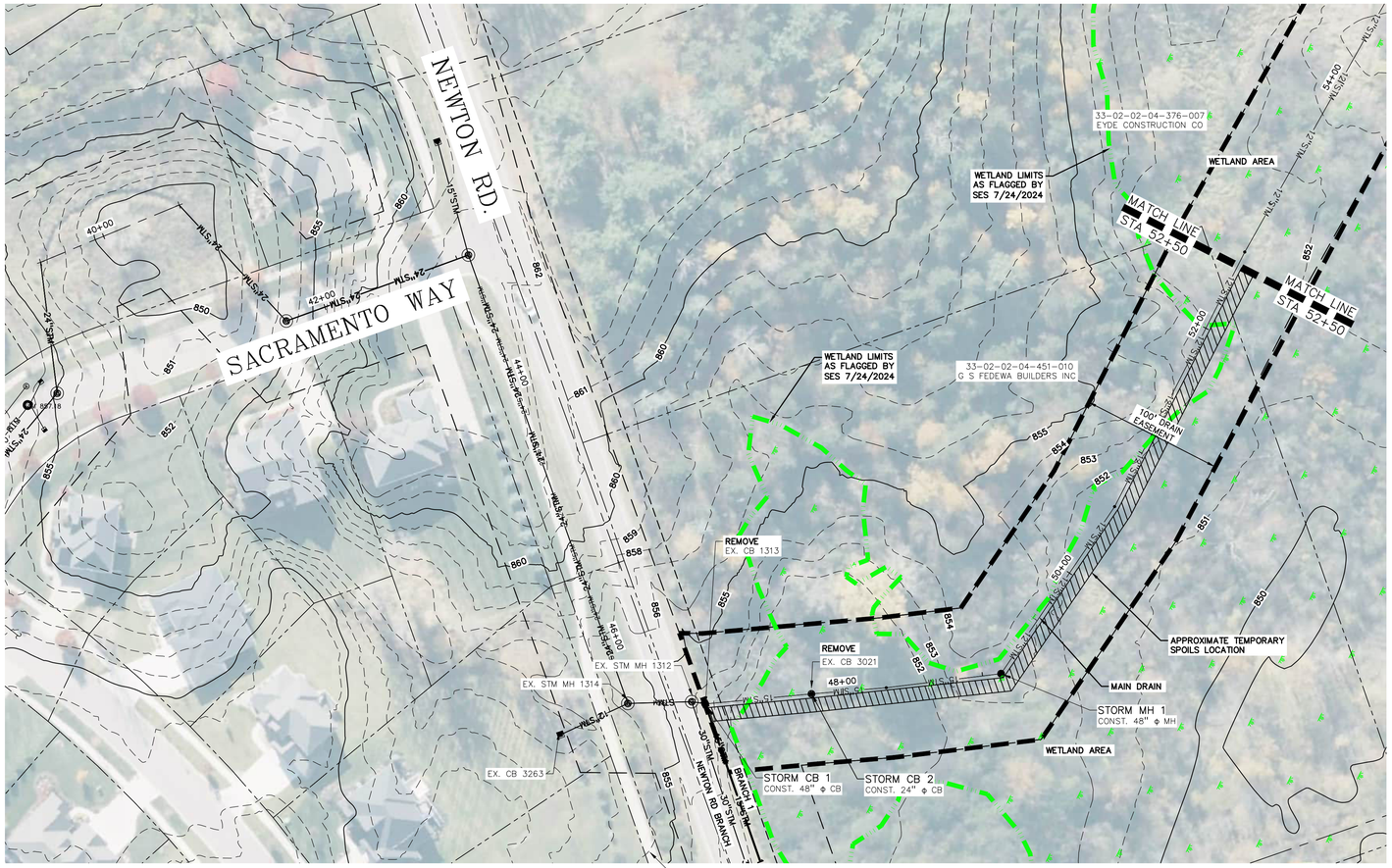
ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

DRAWING TITLE
DISTRICT MAP AND IMPACT AREAS

PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:
C-1.0

S:\PROJECTS\2021\2021-2237 (DC COSTIGAN DRAIN)\CIVIL Plans\LEGAL Exhibits\[C-1.0] EX AND PR-21-2237.dwg, PLOT DATE: 2/10/2026 BY: Drew DuMars



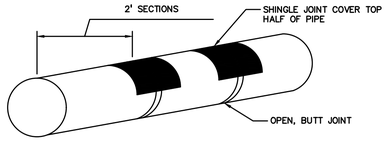
WETLAND IMPACT

IMPACT #1

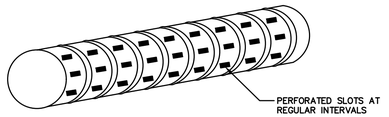
EXEMPT ACTIVITY – REPLACEMENT OF EXISTING PIPES AND STRUCTURES

INFILTRATION CHARACTERISTICS OF EXISTING AND PROPOSED PIPE

PIPE DESCRIPTION	OPENINGS PER FT.
EX. 12" CLAY TILE*	1.55 SQ. IN.
PR. 12" SLCPP (PERFORATED)	1.50 SQ. IN.

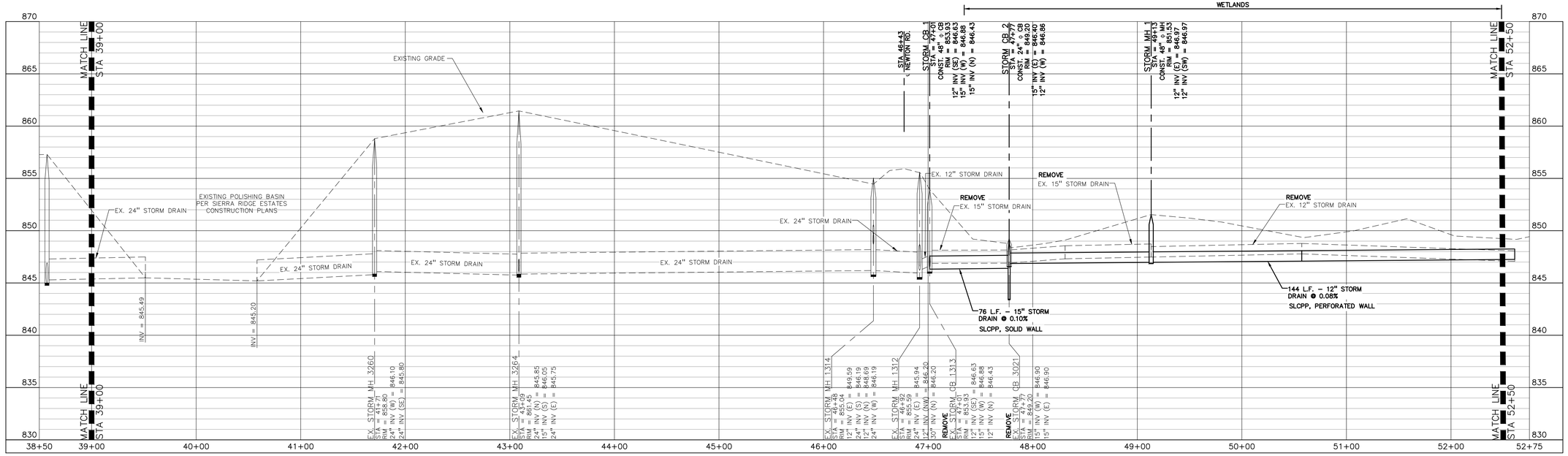


EXISITING CLAY TILE



PROPOSED SLCPP

HORIZ: 1" = 50'
VERT: 1"= 5'



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NORTH

0 25 50 100
SCALE: 1" = 50'

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INGHAM COUNTY CLEAN WATER DRAIN COMMISSIONER PATRICK E. LINDEMANN

CLIENT

PATRICK E. LINDEMANN INGHAM COUNTY DRAIN COMMISSIONER

707 BUHL AVENUE, P.O. BOX 220
MASON, MICHIGAN

PROJECT TITLE

COSTIGAN DRAIN

SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS

-	-

ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

DRAWING TITLE

IMPACT AREA #1
MAIN DRAIN

STA 47+30 - 52+50

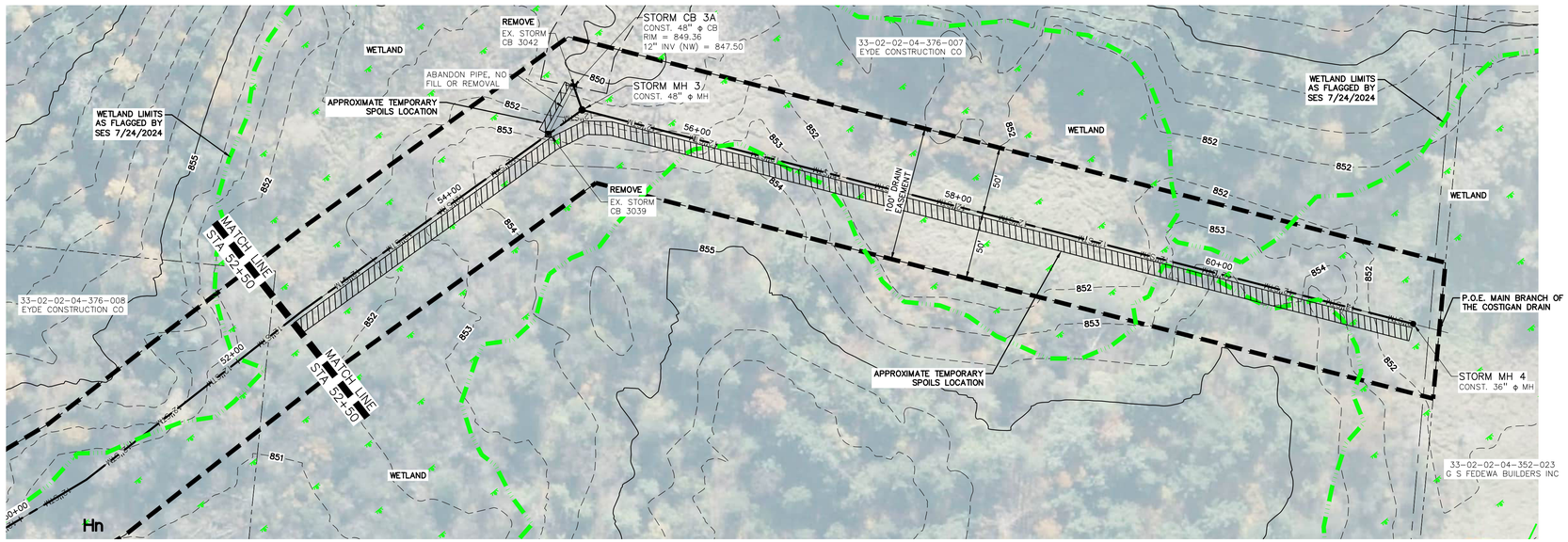
PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

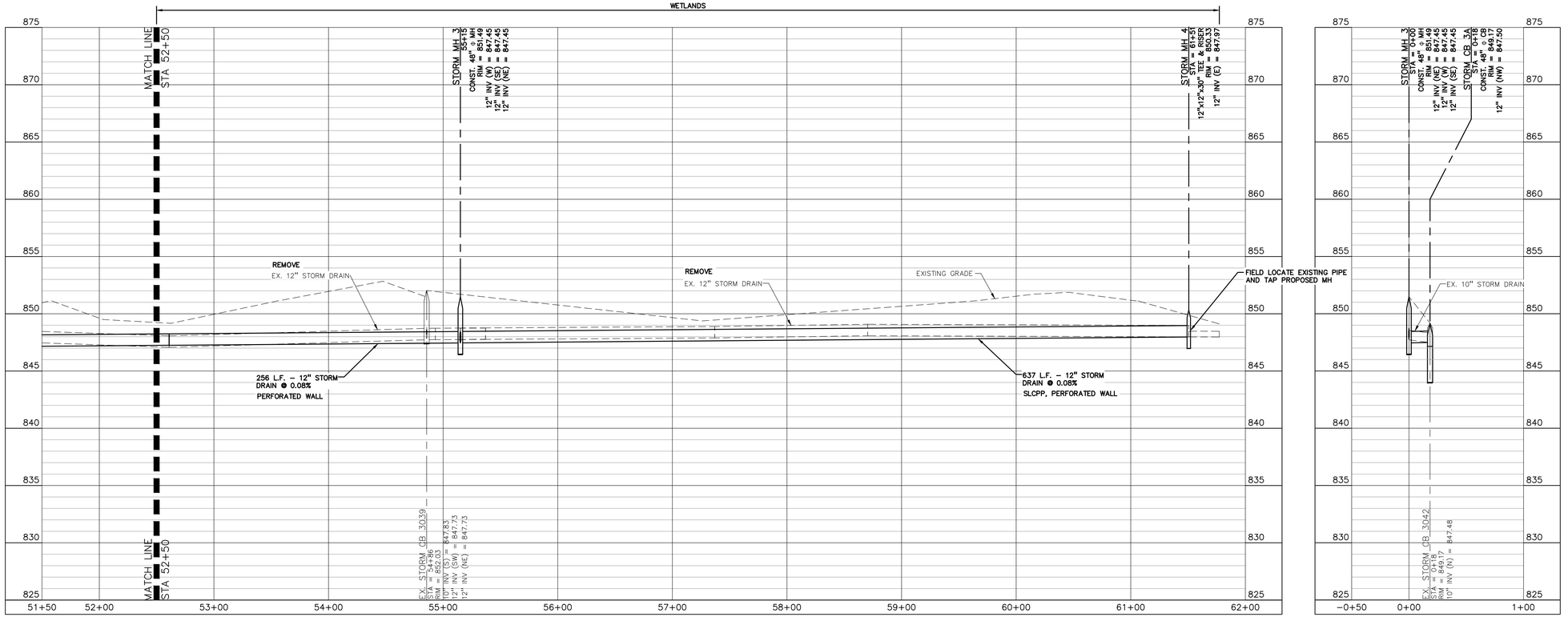
DRAWING NUMBER:

C-2.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2021\2237-2237 ICDC COSTIGAN DRAIN\CAD Plans\LEGAL Exhibits\(C-2.0).dwg PLOT DATE: 2/10/2026 BY: Chase Dubois





VOLUME

WETLAND EXCAVATION

EXEMPT ACTIVITY – REPLACEMENT OF EXISTING PIPE AND STORM CB 3

STORM CB 3A

15 FT (L) X 15 FT (W) X 3 FT (D) = 260 CFT = 9.6 CYD

STORM CB 3 TO STORM CB 3A CONNECTING PIPE

18 FT (L) X 8 FT (W) X 3 FT (D) = 432 CFT = 16 CYD

STORM MH 4

10 FT (L) X 10 FT (W) X 3 FT (D) = 300 CFT = 1.7 CYD

AREA

EXEMPT ACTIVITY – REPLACEMENT OF EXISTING PIPE AND STORM CB 3

STORM CB 3A

15 FT (L) X 15 FT (W) = 225 SFT = 0.005 AC

STORM CB 3 TO STORM CB 3A CONNECTING PIPE

18 FT (L) X 8 FT (W) = 144 SFT = 0.003 AC

STORM MH 4

10 FT (L) X 10 FT (W) X = 100 SFT = 0.002 AC

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NORTH

0 25 50 100
SCALE: 1" = 50'

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INGHAM COUNTY CLEAN WATER
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PROJECT TITLE
COSTIGAN DRAIN
SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS
- -

ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

DRAWING TITLE
IMPACT AREA #1
MAIN DRAIN

STA 52+50 - 61+80

PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:
C-2.1

S:\PROJECTS\2021\2021-2237 ICDC COSTIGAN DRAIN\CIVIL Plans\LEGAL Exhibits\[C-2.1].dwg PLOT DATE: 2/10/2026 BY: Chow Dulles

VOLUME

WETLAND EXCAVATION

IMPACT #2 – NO WETLAND EXCAVATION

IMPACT #3 – STRUCTURE INSTALLATION

10 FT (L) X 10 FT (W) X 5 FT (D) = 500 CFT = 18.5 CYD

IMPACT #4 – PIPE DISCHARGE AND OVERLAND FLOW AREA

106 FT (L) X 32 FT (W) X 1 FT (D) = 3,392 CFT = 125.6 CYD

IMPACT #4 – LEVEL SPREADER

35 FT (L) X 2 FT (W) X 3 FT (D) = 210 CFT = 7.8 CYD

IMPACT #4 – LEVEL SPREADER APPROACH

4 FT (L) X 4 FT (W) X 1 FT (D) = 16 CFT = 0.6 CYD

WETLAND FILL

IMPACT #2 – NO WETLAND FILL

IMPACT #3 – STRUCTURE EMBANKMENT

13 FT (L) X 10 FT (W) X 2 FT (D) = 260 CFT = 9.6 CYD

IMPACT #4 – OVERLAND FLOW AREA

18 FT (L) X 2.6 FT (W) X 1 FT (D) = 47 CFT = 1.7 CYD

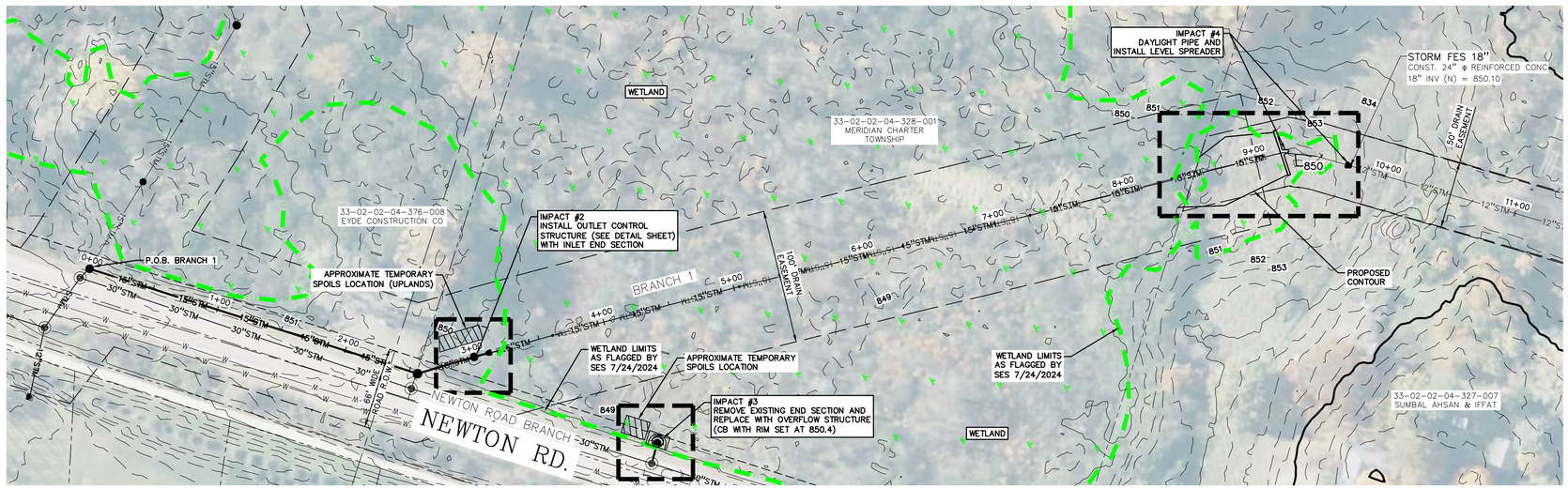
AREA

IMPACT #3 – STRUCTURE EMBANKMENT

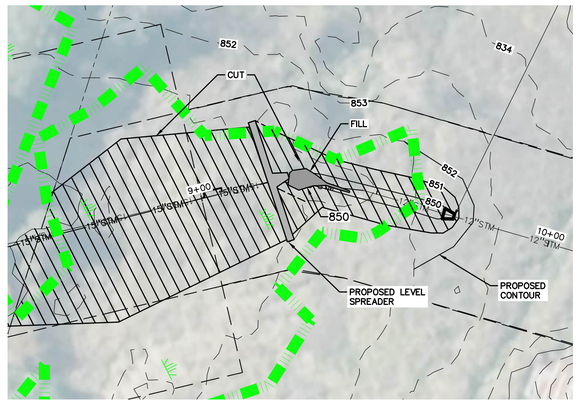
13 FT (L) X 10 FT (W) = 130 SFT = 0.003 AC

IMPACT #4 – PIPE DISCHARGE AND OVERLAND FLOW AREA

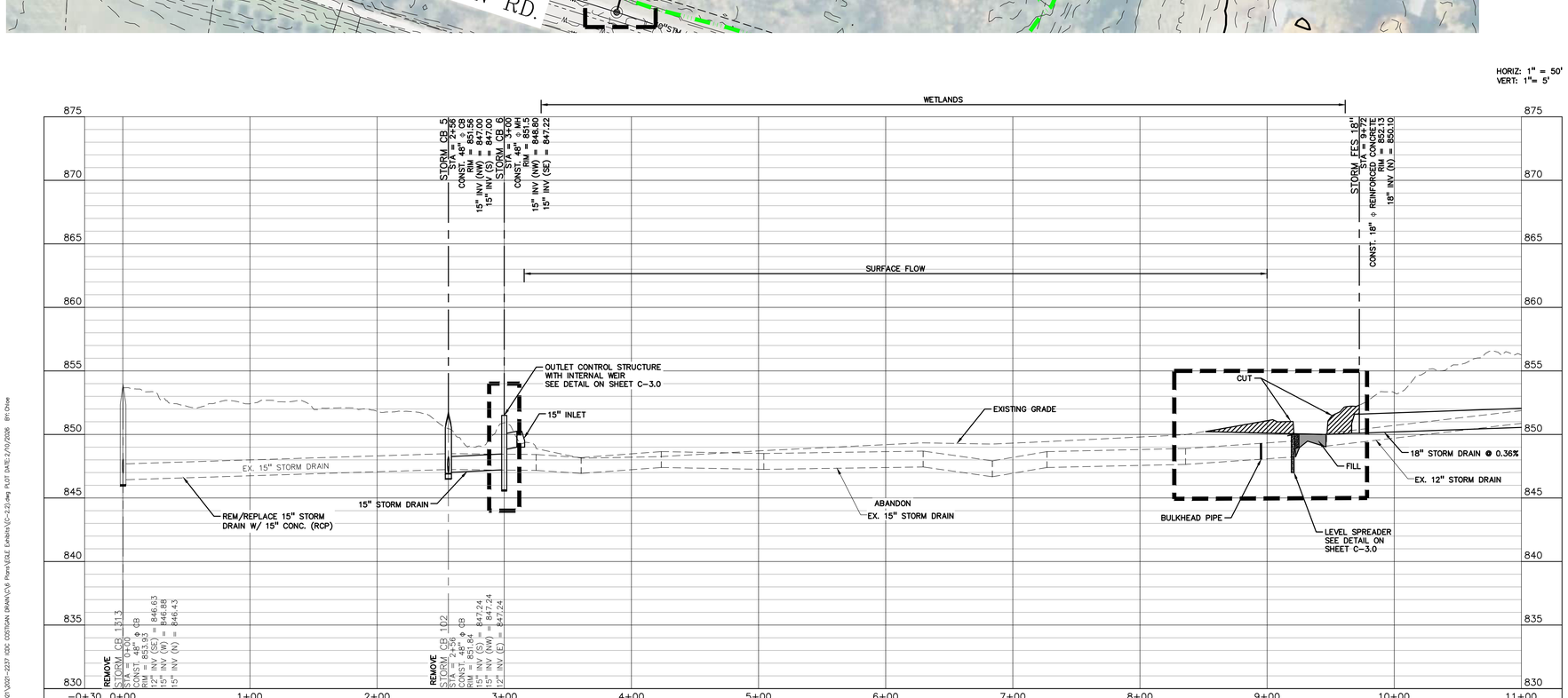
106 FT (L) X 32 FT (W) = 3,392 SFT = 0.078 AC



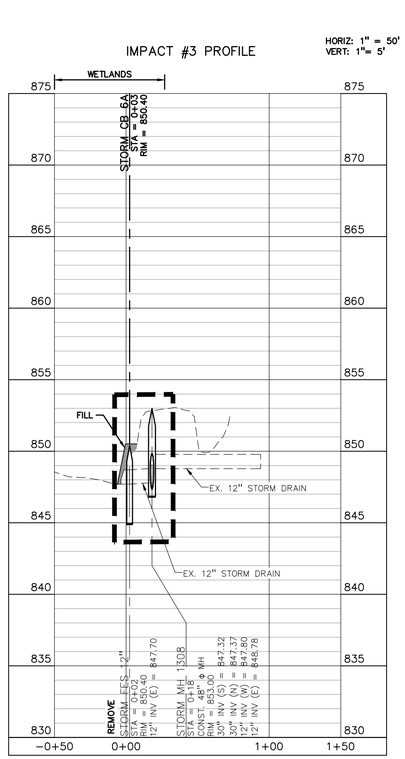
ENHANCED DETAIL OF IMPACT #4 – OVERLAND FLOW AREA



SCALE: 1" = 20'



IMPACT #3 PROFILE



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PEA GROUP
t: 844.813.2949
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NORTH

0 25 50 100

SCALE: 1" = 50'

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INGHAM COUNTY DRAIN COMMISSIONER PATRICK E. LINDEMANN

CLIENT

PATRICK E. LINDEMANN INGHAM COUNTY DRAIN COMMISSIONER
707 BUHL AVENUE, P.O. BOX 220
MASON, MICHIGAN

PROJECT TITLE

COSTIGAN DRAIN
SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS

-	-

ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

DRAWING TITLE

IMPACT AREAS #2, #3 AND #4

PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:

C-2.2

S:\PROJECTS\2021\2021-2237 ICDC COSTIGAN DRAIN\C\6 Plans\CAD\ Exhibits\C-2.2.dwg PLOT DATE: 2/10/2026 BY: Chloe Dubois

VOLUME

WETLAND EXCAVATION

WEST – CROSSING

11 FT (L) X 30 FT (W) X 8 FT (D) = 2,640 CFT = 97.8 CYD

WEST – PARALLEL TRENCH

376 FT (L) X 5 FT (W) X 5 FT (D) = 9,400 CFT = 348 CYD

EAST – CROSSING

35 FT (L) X 30 FT (W) X 8 FT (D) = 8,400 CFT = 311 CYD

AREA

WEST – CROSSING

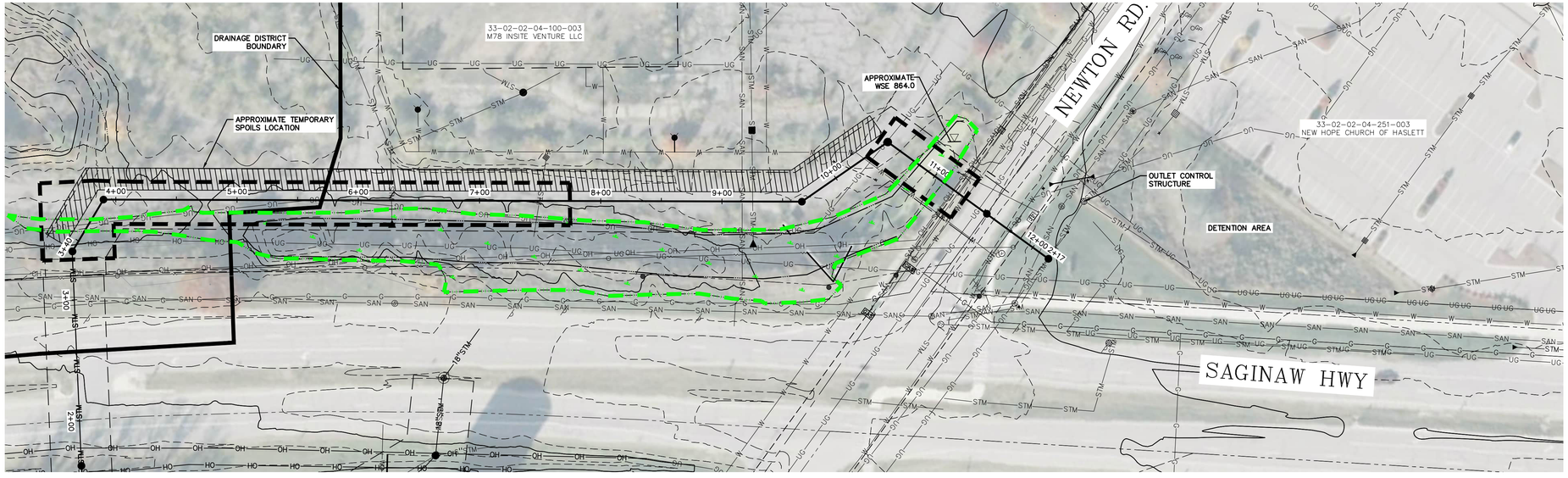
11 FT (L) X 30 FT (W) = 330 SFT = 0.008 AC

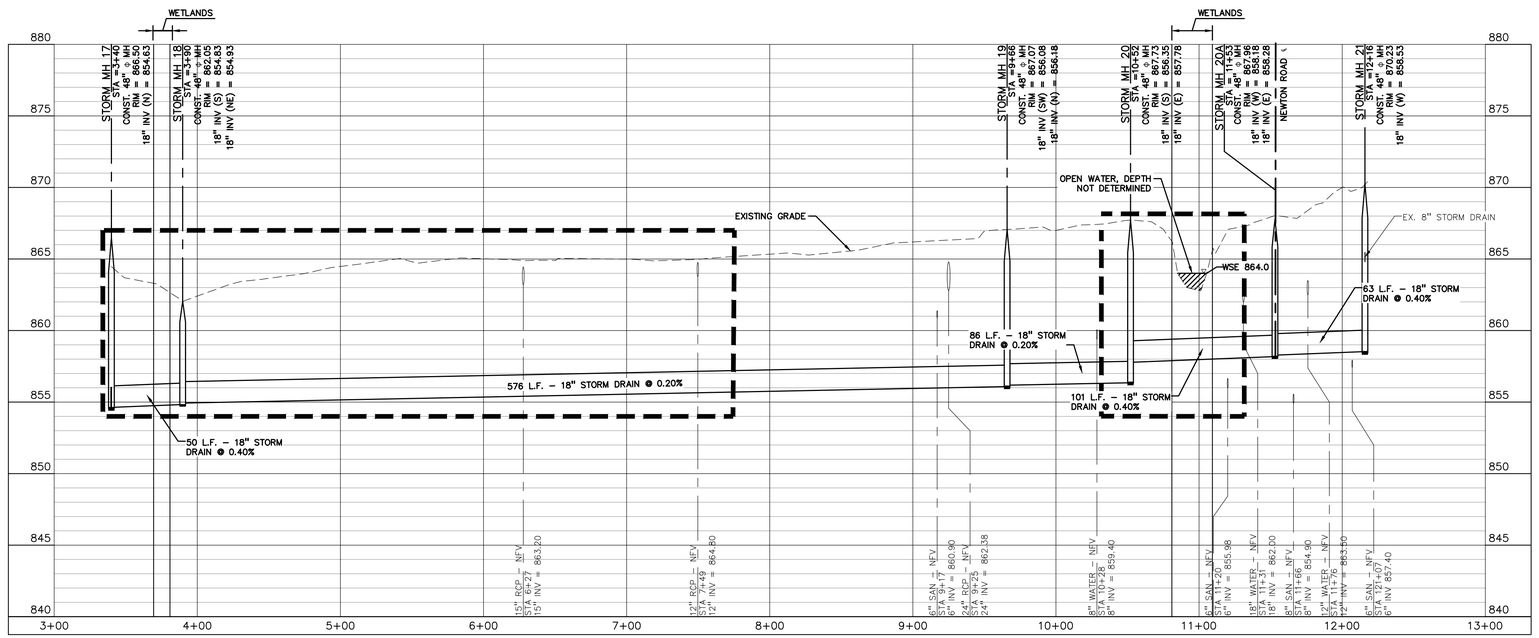
PARALLEL TRENCH

376 FT (L) X 5 FT (W) = 1,880 SFT = 0.043 AC

EAST – CROSSING

35 FT (L) X 30 FT (W) = 1,050 SFT = 0.024 AC





HORIZ: 1" = 50'
VERT: 1"= 5'

NFV = NOT FIELD VERIFIED

NOT FOR CONSTRUCTION

S:\PROJECTS\2021\2021-2237 ICDC COSTIGAN DRAIN\CAD\Plans\EGLE Exhibits\(C-2.3).dwg PLOT DATE: 2/10/2026 BY: Chloe Dubois

PEA GROUP
t: 844.813.2949
www.peagroup.com

NORTH

0 25 50 100

SCALE: 1" = 50'

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INGHAM COUNTY CLEAN WATER DRAIN COMMISSIONER PATRICK E. LINDEMANN

CLIENT

PATRICK E. LINDEMANN
INGHAM COUNTY DRAIN COMMISSIONER
707 BUHL AVENUE, P.O. BOX 220
MASON, MICHIGAN

PROJECT TITLE

COSTIGAN DRAIN
SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS

- -

ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

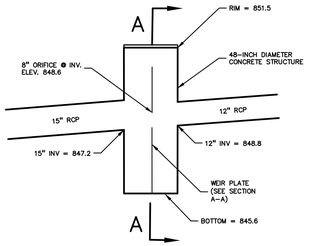
DRAWING TITLE

IMPACT AREA #5

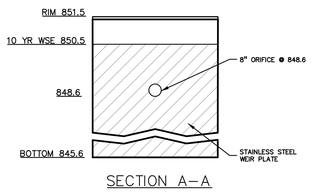
PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:

C-2.3



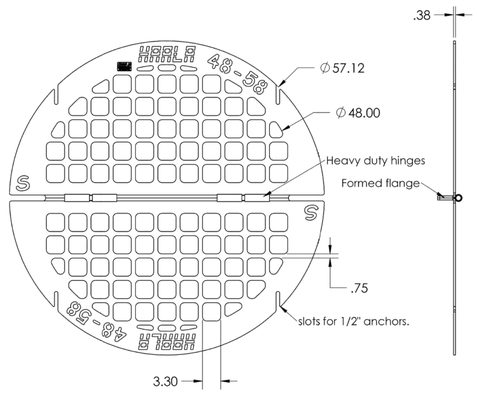
SIDE VIEW



SECTION A–A

OUTLET CONTROL STRUCTURE DETAIL

NOT TO SCALE



Notes:
1. Unit is made from A36 steel and is hot dip galvanized after fabrication per ASTM A123.
2. Open area: 7.01 sq ft

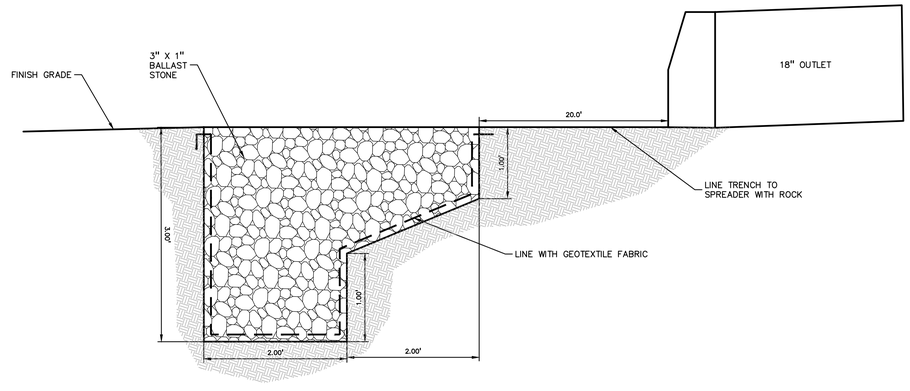
HAALA INDUSTRIES SLEEPY EYE, MN 507-794-6681

PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF HAALA INDUSTRIES. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF HAALA INDUSTRIES IS PROHIBITED.

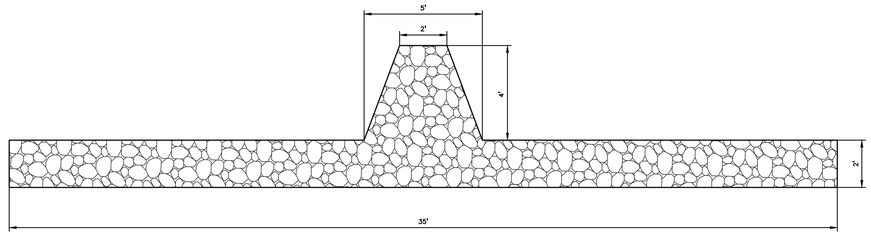
MATERIAL:	ASTM A36 Steel		
WEIGHT:	189.47	DIMENSIONS ARE IN INCHES	
FINISH:	Galvanized	DRAWN BY: Cosey S.	10/26/2010
		REVISED: gabriel	6/29/2022

Part # PS48-58SWH
Desc. Pond Skimmer 48-58 Std With Hinge
Configuration: Default
Title: PS48-58SWH

REV: A "DO NOT SCALE DRAWING" SHEET 3 OF 3



SIDE VIEW



TOP VIEW

LEVEL SPREADER DETAIL

NOT TO SCALE

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INGHAM COUNTY CLEAN WATER DRAIN COMMISSIONER PATRICK E. LINDEMANN

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MASON, MICHIGAN

PROJECT TITLE
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SECTIONS 3, 4, AND 9, T4N, R1W
MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

REVISIONS
- -

ORIGINAL ISSUE DATE:
SEPTEMBER 19, 2025

DRAWING TITLE
DETAILS

PEA JOB NO.	2021-2237
P.M.	GKL
DN.	JMJ
DES.	GKL

DRAWING NUMBER:
C-3.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2021\2021-2237 (DC COSTIGAN DRAIN)\C 0 Plans\CAD\C 1 Exhibits\C-3.0 DETAILS-21-2237.dwg PLOT DATE: 2/10/2026 BY: Drew DuBois

#9

WETLAND DELINEATION

Costigan

T04N, R01W, Section 04
Meridian Township, Ingham County
Michigan

Prepared By:

StreamsideEco

Prepared For:

INGHAM COUNTY
CLEAN WATER
DRAIN COMMISSIONER
PATRICK E. LINDEMANN

March 19, 2026

Introduction

StreamsideEco, LLC (SECO) conducted a wetland delineation on a property located within T04N, R01W, Section 04, Meridian Township, Michigan. The area of study focused on wetlands located on the north side of Saginaw Highway in specific areas of potential project impacts (**Figure 1**). This is the second wetland report for the Costigan Drain Project with the first delineation conducted south of Saginaw Highway (separate report). The purpose of this work was to identify the extent, location and regulatory status of wetlands within the study area.

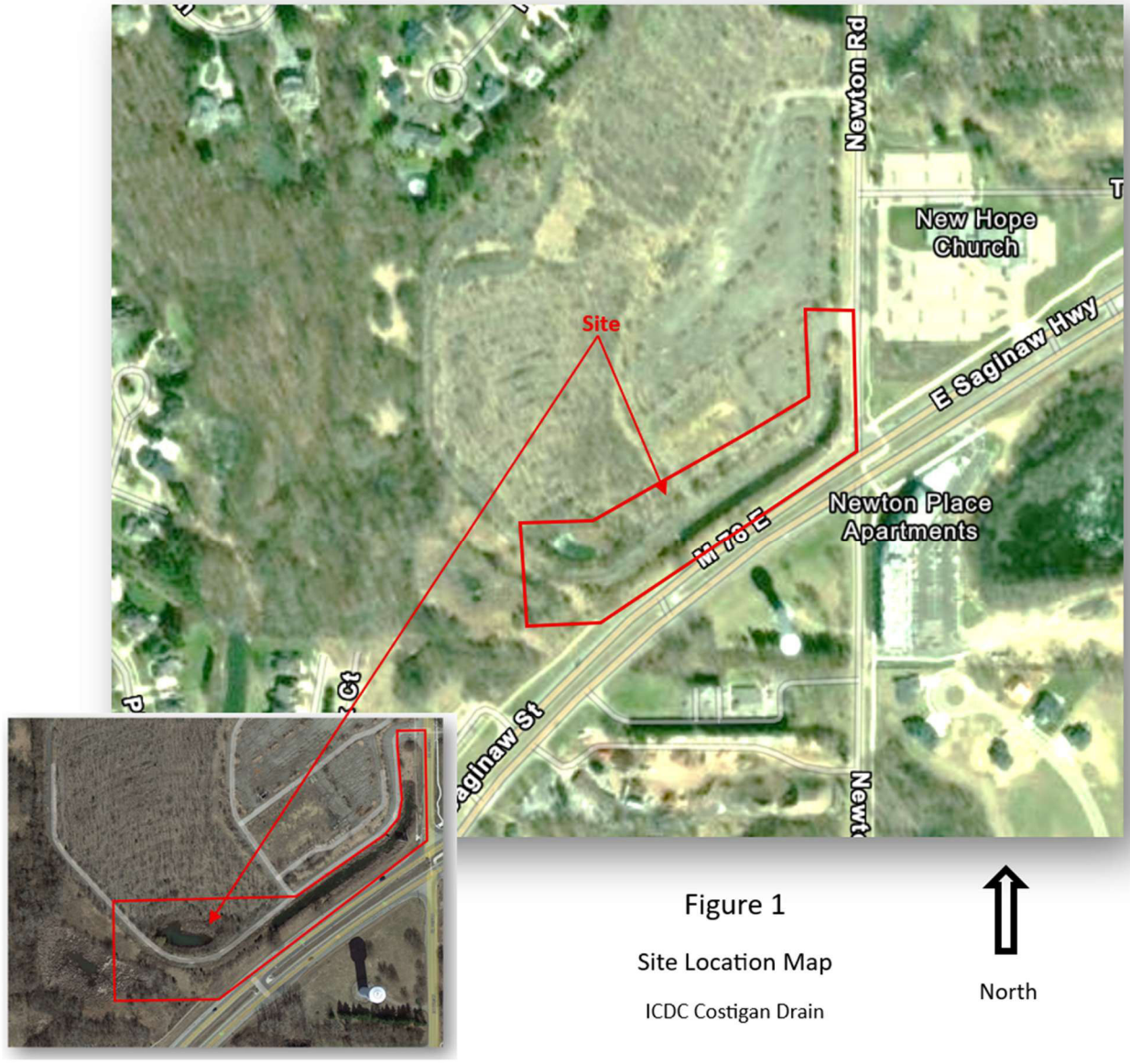


Figure 1

Site Location Map

ICDC Costigan Drain

North

Methods

On August 4, 2025, SECO conducted a wetland review and delineation pursuant to statutory language and Rules of Part 303, Wetland Protection, of the Natural Resources and Environmental Protection Act (NREPA), 1994 P.A. 451, as amended. As required, specific methodology followed that set forth in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual including the Northcentral and Northeast Regional Supplement. The wetland/upland interface was flagged in the field with survey ribbon and sequentially lettered and numbered for ease in visualizing and surveying boundaries. The wetland boundaries were subsequently surveyed by PEA, the project engineers.

Results and Discussion

Three wetland boundaries were established within the study area (**Figure 2**). The lettering/numbering of each delineated area are provided in the table below.

Boundary A	A1-A59
Boundary B	B1-B15
Boundary C	C1-C13

Figure 2

Wetland Delineation Map

ICDC Costigan Drain

North

Wetland A is a linear, shallow open water feature with emergent wetland throughout. The majority of the open water is mostly covered with Small duckweed (*Lemna minor*). The margins, ans portions of the linear open water, consist of emergent wetland vegetation dominated by narrow-leaved cattail (*Typha angustifolia*) intermixed with with scrub shrub wetland species including gray dogwood (*Cornus racemosa*) and peachleaf willow (*Salix amygdaloides*).

Wetland B is the southern half of what appears to be an excavated pond that has developed into and emergent wetland, strongly dominated by narrow-leaved cattail. The wetland continues to the north outside the study area but based on site reviews and aerial photographic interpretation, this is an isolated wetland separated from other wetlands on site by an old drive.

Wetland C is an emergent and wet meadow wetland with a schrub scrub and forested wetland component, particulairly off site to the west and north. The emergent/wet meadow wetland is dominated by narrow-leaved cattail and smooth goldenrod (*Solidago gigantea).*

Dominant wetland plant species present along the wetland/upland interfaces are provided in Table 1 below. Michigan Department of Environment, Great Lakes and Energy (EGLE) Wetland Data Sheets are provided in **Attachment A** for each wetland boundary.

Table 1. Wetland plant species present along the wetland/upland interfaces.

Area	Scientific Name	Common Name	Wet Rating
Wetland A	*Cephalanthus occidentalis*	Buttonbush	OBL
	Cornus racemosa	Gray Dogwood	FAC
	Lemna minor	Lesser duckweed	OBL
	Salix amygdaloides	Peachleaf Willow	FACW
	Solidago gigantea	Smooth Goldenrod	FACW
	Symphyotrichum novae-angliae	New England Aster	FACW
	Toxicodendron radicans	Poison Ivy	FAC
	Typha angustifolia	Narrow-leaved Cattail	OBL
Wetland B	*Eupatorium perfoliatum*	Boneset	FACW
	Lemna minor	Lesser duckweed	OBL
	Lycopus americanus	Bugleweed	OBL
	Salix interior	Sandbar Willow	FACW
	Solidago flexicaulis	Zig-Zag goldenrod	FACU
	Toxicodendron radicans	Poison Ivy	FAC
	Typha angustifolia	Narrow-leaved Cattail	OBL
Wetland C	*Euthamia graminifolia*	Flat Top Aster	FAC
	Fraxinus pennsylvanica	Green Ash	FACW
	Lycopus americanus	Bugleweed	OBL
	Monarda fistulosa	Wild Bergamot	FACU
	Solidago gigantea	Smooth Goldenrod	FACW
	Thuja occidentalis	Cedar	FACW

Wetland Regulation

Wetlands in Michigan are regulated by EGLE under Part 303 of NREPA if they are greater than five acres in size. Wetlands are also regulated by the state, regardless of size, if they are: contiguous to, within 500 feet of, or have a surface water connection to an inland lake, stream, or pond or; are within 1,000 feet of a Great Lake or Great Lake Connecting Waters. Based on our review, it is our opinion that all wetlands delineated on site are regulated by the State because they are all part of a larger wetland system that appears greater than 5 acres, and/or have a surface water connection to other aquatic resources.

Permits would be required from the State prior to conducting any regulated activities within the wetland. Regulated activities include but are not necessarily limited to excavating, filling, grading (essentially movement of soils), construction, altering hydrology (draining), and use (e.g. directing and storing water).

Numerous natural environmental factors and human induced changes may cause changes in the extent of wetland on a parcel over a period of time. The water resources identified on the property represents SECO's opinion on what EGLE would consider to be wetland based on the condition of the site at the time of inspection and recent regulatory policies and attitudes. Please note that EGLE has the final determination regarding the presence and location of wetlands and surface waters and their respective jurisdictional statuses. We recommend a jurisdictional confirmation from EGLE be requested.

ATTACHMENT A

EGLE Data Sheets

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: ICDC State: MI Sampling Point: A4 Up
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Concave
Slope (%): 2-12 Lat.: 42.764369 Long.: -84.432997 Datum: N/A
Soil Map Unit Name: Urban land - Marlette complex NWI Classification: N/A
Are climatic/hydrologic conditions of the site typical for this time of the year? (If no, explain in remarks)
Are vegetation , soil , or hydrology significantly disturbed? Are "normal
Are vegetation , soil , or hydrology naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ___	No X	Depth (inches):	
Water table present?	Yes ___	No X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes ___	No X	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: A4 Up

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Elaeagnus umbellata*	40	Y	FACU
2	*Rhamnus cathartica*	10	N	FAC
3	*Cornus racemosa*	5	N	FAC
4				
5				
6				
7				
8				
9				
10				
		55	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Equisetum hyemale*	30	Y	FAC
2	*Solidago canadensis*	25	Y	FACU
3	*Sericocarpus linifolius*	10	N	UPL
4	*Plantago major*	5	N	FACU
5	*Grass*	5	N	
6	*Toxicodendron radicans*	1	N	FAC
7				
8				
9				
10				
11				
12				
13				
14				
15				
		76	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	11	28
Herb Stratum	15	38
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 3 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 33.33% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	46	x 3 =	138
FACU species	70	x 4 =	280
UPL species	10	x 5 =	50
Column totals	126 (A)		468 (B)

Prevalence Index = B/A = 3.71

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL **Sampling Point:** A4 Up

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-5	10TY 3/2	80	10YR 6/2	20			Loam	
5-	7.5YR 4/6	100					Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: ICDC State: MI Sampling Point: A4 Wet
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Moraines Local relief (concave, convex, none): Concave
Slope (%): 2-12 Lat.: 42.764369 Long.: -84.432997 Datum: N/A
Soil Map Unit Name: Urban land - Marlette complex NWI Classification: N/A
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	X	No	____	Depth (inches): 3
Water table present?	Yes	X	No	____	Depth (inches): 3
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches): 3

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: A4 Wet

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Acer saccharum*	1		FACU
2				
3				
4				
5				
6				
7				
8				
9				
10				
		1	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	40	Y	FAC
2	*Cornus racemosa*	15	Y	FAC
3	*Cephalanthus occidentalis*	5	N	OBL
4				
5				
6				
7				
8				
9				
10				
		60	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Typha angustifolia*	40	Y	OBL
2	*Cornus racemosa*	30	Y	FAC
3	*Lemna minor*	10	N	OBL
4	*Toxicodendron radicans*	5	N	FAC
5	*Cephalanthus occidentalis*	5	N	OBL
6	*Parthenocissus quinquefolia*	1	N	FACU
7	*Symphyotrichum novae-angliae*	1	N	FACW
8				
9				
10				
11				
12				
13				
14				
15				
		92	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	1
Sapling/Shrub Stratum	12	30
Herb Stratum	18	46
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	60	x 1 =	60	
FACW species	1	x 2 =	2	
FAC species	90	x 3 =	270	
FACU species	2	x 4 =	8	
UPL species	0	x 5 =	0	
Column totals	153	(A)	340	(B)

Prevalence Index = B/A = 2.22

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL **Sampling Point:** A4 Wet

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-3	7.5YR 2.5/2							
3-10	5YR 3/2							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: ICDC State: MI Sampling Point: B5 Up
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Moraines Local relief (concave, convex, none): Concave
Slope (%): 2-12 Lat.: 42.763418 Long.: -84.435237 Datum: N/A
Soil Map Unit Name: Urban land - Marlette complex NWI Classification: N/A
Are climatic/hydrologic conditions of the site typical for this time of the year? ____ (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	____	No	X	Depth (inches): ____
Saturation present? (includes capillary fringe)	Yes	____	No	X	Depth (inches): ____

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B5 Up

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Populus deltoides*	1		FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		1	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	5	Y	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Solidago canadensis*	20	Y	FACU
2	*Rhamnus cathartica*	10	Y	FAC
3	*Toxicodendron radicans*	5	N	FAC
4	*Daucus carota*	5	N	UPL
5	*Achillea millefolium*	5	N	FACU
6	*Taraxacum officinale*	5	N	FACU
7				
8				
9				
10				
11				
12				
13				
14				
15				
		50	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Parthenocissus quinquefolia*	10	Y	FACU
2				
3				
4				
5				
		10	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	1
Sapling/Shrub Stratum	1	3
Herb Stratum	10	25
Woody Vine Stratum	2	5

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	21	x 3 =	63
FACU species	40	x 4 =	160
UPL species	5	x 5 =	25
Column totals	66 (A)		248 (B)

Prevalence Index = B/A = 3.76

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation
___ Dominance test is >50%
___ Prevalence index is ≤3.0*
___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL **Sampling Point:** B5 Up

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-5	10TY 3/3	80	10YR 6/3	20			Loam	
5-10	7.5YR 4/6	100					Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: ICDC State: MI Sampling Point: B5 Wet
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Moraines Local relief (concave, convex, none): Concave
Slope (%): 2-12 Lat.: 42.763418 Long.: -84.435237 Datum: N/A
Soil Map Unit Name: Urban land - Marlette complex NWI Classification: N/A
Are climatic/hydrologic conditions of the site typical for this time of the year? ____ (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	X	No	____	Depth (inches):	0.5
Water table present?	Yes	X	No	____	Depth (inches):	0.5
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches):	0.5

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B5 Wet

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Salix interior*	5	Y	FACW
2				
3				
4				
5				
6				
7				
8				
9				
10				
		5	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Typha angustifolia*	50	Y	OBL
2	*Eupatorium perfoliatum*	10	N	FACW
3	*Lemna minor*	5	N	OBL
4	*Lycopus americanus*	5	N	OBL
5	*Salix interior*	1	N	FACW
6	*Toxicodendron radicans*	1	N	FAC
7	*Solidago flexicaulis*	1	N	FACU
8				
9				
10				
11				
12				
13				
14				
15				
		73	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	1	3
Herb Stratum	15	37
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	60	x 1 =	60
FACW species	16	x 2 =	32
FAC species	1	x 3 =	3
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column totals	78 (A)		99 (B)

Prevalence Index = B/A = 1.27

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL **Sampling Point:** B5 Wet

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-3	7.5YR 2.5/2						Organics	
3-10	5YR 3/2						Mucky Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: ICDC State: MI Sampling Point: C13 Up
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Depression on Outwash Plains Local relief (concave, convex, none): Concave
Slope (%): 0-1 Lat.: 42.763418 Long.: -84.435237 Datum: N/A
Soil Map Unit Name: Houghton muck NWI Classification: N/A
Are climatic/hydrologic conditions of the site typical for this time of the year? ____ (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	____	No	X	Depth (inches): ____
Saturation present? (includes capillary fringe)	Yes	____	No	X	Depth (inches): ____

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: C13 Up

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	50	Y	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		50	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Solidago canadensis*	80	Y	FACU
2	*Monarda fistulosa*	5	N	FACU
3	*Parthenocissus quinquefolia*	1	N	FACU
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		86	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	10	25
Herb Stratum	17	43
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across all Strata: 2 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	50	x 3 =	150
FACU species	86	x 4 =	344
UPL species	0	x 5 =	0
Column totals	136 (A)		494 (B)

Prevalence Index = B/A = 3.63

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL **Sampling Point:** C13 Up

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-3	10YR 4.4							Disturbed fro past developm

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: ICDC State: MI Sampling Point: C13 Wet
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Depression on Outwash Plains Local relief (concave, convex, none): Concave
Slope (%): 0-1 Lat.: 42.763418 Long.: -84.435237 Datum: N/A
Soil Map Unit Name: Houghton muck NWI Classification: N/A
Are climatic/hydrologic conditions of the site typical for this time of the year? ____ (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	____	No	X	Depth (inches): ____
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches): 9

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: C13 Wet

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Fraxinus pennsylvanica*	5	Y	FACW
2	*Thuja occidentalis*	5	Y	FACW
3				
4				
5				
6				
7				
8				
9				
10				
		10	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Typha angustifolia*	30	Y	OBL
2	*Solidago gigantea*	25	Y	FACW
3	*Lycopus americanus*	10	N	OBL
4	*Vitis riparia*	5	N	FAC
5	*Euthamia graminifolia*	5	N	FAC
6	*Monarda fistulosa*	5	N	FACU
7				
8				
9				
10				
11				
12				
13				
14				
15				
		80	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	2	5
Sapling/Shrub Stratum	0	0
Herb Stratum	16	40
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	40	x 1 =	40
FACW species	35	x 2 =	70
FAC species	10	x 3 =	30
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column totals	90 (A)		160 (B)

Prevalence Index = B/A = 1.78

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL **Sampling Point:** C13 Wet

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-4	N 2.5							
4-10	7.5YR 2.5/2							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

#10

WETLAND DELINEATION

Costigan

T04N, R01W, Section 04
Meridian Township, Ingham County, Michigan

Prepared By:

StreamsideEco

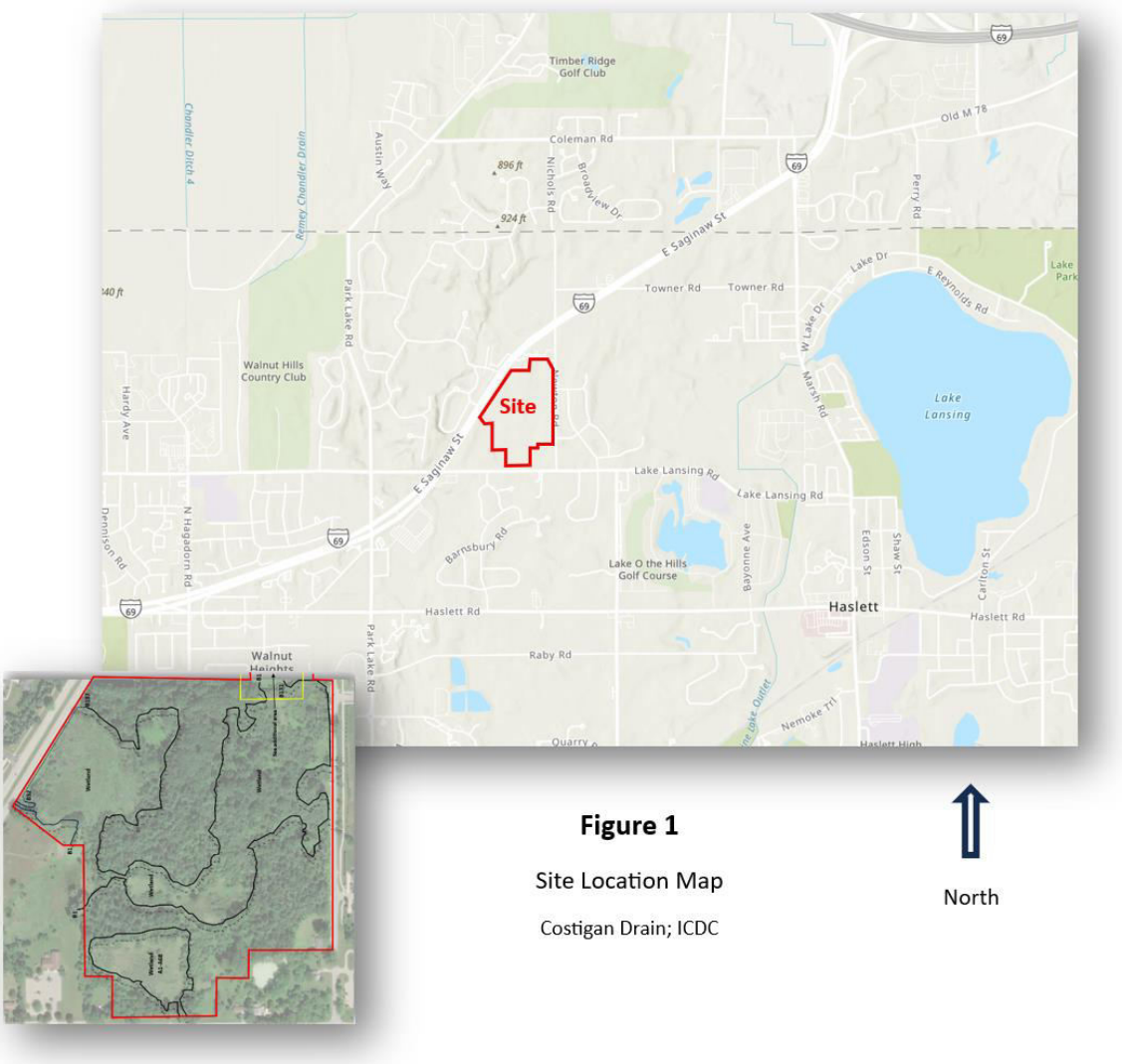
Prepared For:

INGHAM COUNTY
CLEAN WATER
DRAIN COMMISSIONER
PATRICK E. LINDEMANN

September 15, 2025

Introduction

StreamsideEco, LLC (SECO) conducted a wetland delineation on a property located within T04N, R01W, Section 04, Meridian Township, Michigan. The area of study focused on wetlands located on the south side of Saginaw Highway in specific areas of potential project impacts (**Figure 1**). This is the first wetland report for the Costigan Drain Project with the second delineation conducted north of Saginaw Highway (separate report). The purpose of this work is to identify the extent, location and regulatory status of wetlands within the study area.



Methods

During May and June, 2025, SECO conducted a wetland review and delineation pursuant to statutory language and Rules of Part 303, Wetland Protection, of the Natural Resources and Environmental Protection Act (NREPA), 1994 P.A. 451, as amended. As required, specific methodology followed that set forth in the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual including the

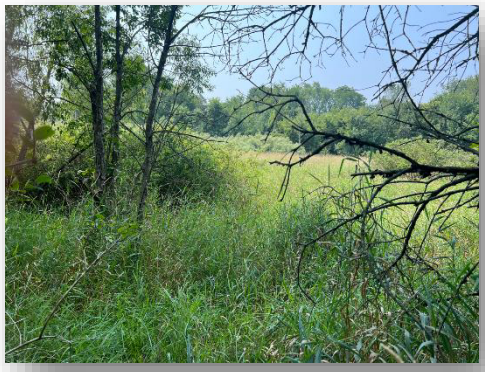
Northcentral and Northeast Regional Supplement. The wetland/upland interface was flagged in the field with survey ribbon and sequentially lettered and numbered for ease in visualizing and surveying boundaries. The wetland boundaries were subsequently surveyed by PEA, the project engineers.

Results and Discussion

Five wetland boundaries were established along the drain (**Figure 2**). The lettering/numbering of each delineated area are provided in the table below. A map of the surveyed wetlands, with each flag number identified may be found In **Attachment A**.

Boundary A	A1-A68
Boundary B(1)	B1-B32
Boundary B(2)	B1-B187
Boundary B(4)	B1-B134
Boundary Y	T1-Y23

Wetlands A consists of an emergent/wet meadow wetland with scattered shrubs and trees. The majority of this area is strongly dominated by reed canary grass (*Phalaris arundinacea*). Trees and shrubs present include buttonbush (*Cephalanthus occidentalis*), silver maple (*Acer saccharum*), green ash (*Fraxinus pennsylvanica*), black willow (*Salix nigra*) and silky dogwood (*Cornus obliqua*).



The most northern portion of Wetland B contains a flooded emergent wetland with a forested and scrub shrub perimeter. The emergent portion is dominated by narrow and broad leaved cattails (Typha angustifolia; Typha latifolia respectively), reed canary grass, and mud flat. Forested and scrub shrub boarders contain American elm (*Ulmus americana*), green ash, common buckthorn *(Rhamnus cathartica*), gray dogwood (*Cornus racemosa*) and alder.

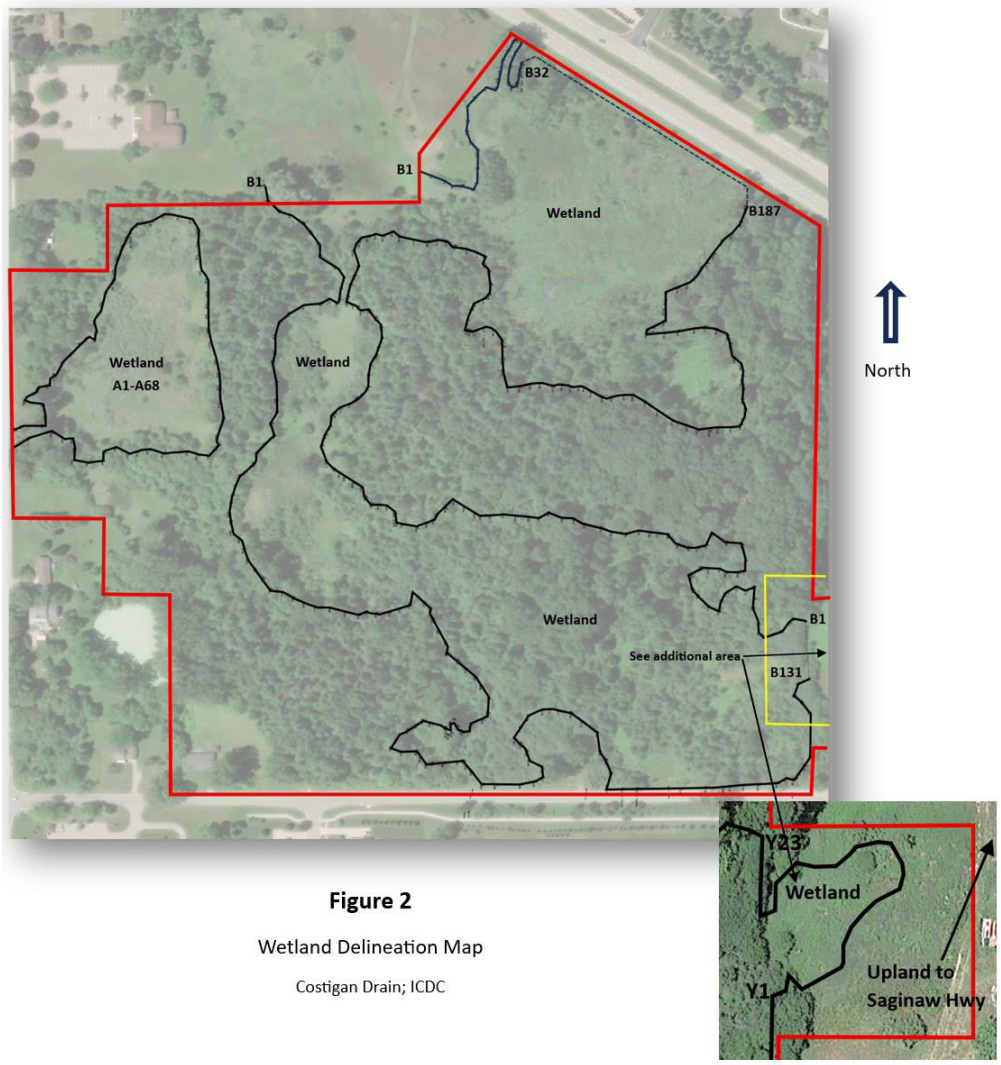


Figure 2

Wetland Delineation Map

Costigan Drain; ICDC

Wetland B, near Newton Road, contains emergent/wet meadow wetland dominated by reed canary grass and narrow leaved cattail. A thread, and pockets of wet meadow wetland is present further north in Wetland B which essentially follows the path of the old Costigan Drain tile. This wetland is dominated by forested and scrub shrub wetland, much of which contains larger colonies of common buchthorn. Other forested species present include silver maple, green ash, black willow, American elm, gray and silky dogwood, and red-osier dogwood.

Michigan Department of Environment, Great Lakes and Energy (EGLE) Wetland Data Sheets are provided in **Attachment B** for each wetland boundary.

Wetland Regulation

Wetlands in Michigan are regulated by EGLE under Part 303 of NREPA if they are greater than five acres in size. Wetlands are also regulated by the state, regardless of size, if they are: contiguous to, within 500 feet of, or have a surface water connection to an inland lake, stream, or pond or; are within 1,000 feet of a Great Lake or Great Lake Connecting Waters. Based on our review, it is our opinion that all wetlands delineated on site are regulated by the State because they are all part of a larger wetland system that is greater than 5 acres in size, and have a surface water connection to a stream to the east.

Permits would be required from the State prior to conducting any regulated activities within the wetland. Regulated activities include but are not necessarily limited to excavating, filling, grading (essentially movement of soils), construction, altering hydrology (draining), and use (e.g. directing and storing water).

Numerous natural environmental factors and human induced changes may cause changes in the extent of wetland on a parcel over a period of time. The water resources identified on the property represents SECO's opinion on what EGLE would consider to be wetland based on the condition of the site at the time of inspection and recent regulatory policies and attitudes. Please note that EGLE has the final determination regarding the presence and location of wetlands and surface waters and their respective jurisdictional statuses. We recommend a jurisdictional confirmation from EGLE be requested.

ATTACHMENT A

Wetland Survey

ATTACHMENT B

EGLE Data Sheets

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: ICDC State: MI Sampling Point: A43 Up
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Depression on Outwash Plains Local relief (concave, convex, none): Concave
Slope (%): 0-10 Lat.: 42.75609 Long.: -84.43578 Datum: N/A
Soil Map Unit Name: Urban land-Marlette complex NWI Classification: PEM1F
Are climatic/hydrologic conditions of the site typical for this time of the year? ____ (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	____	No	X	Depth (inches): ____
Saturation present? (includes capillary fringe)	Yes	____	No	X	Depth (inches): ____

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: A43 Up

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Pinus strobus*	10	Y	FACU
2	*Fraxinus pennsylvanica*	5	Y	FACW
3				
4				
5				
6				
7				
8				
9				
10				
		15	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Cornus racemosa*	15	Y	FAC
2	*Lonicera tatarica*	15	Y	FACU
3	*Rhamnus cathartica*	5	N	FAC
4				
5				
6				
7				
8				
9				
10				
		35	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Solidago altissima*	20	Y	FACU
2	*Rubus occidentalis*	15	Y	UPL
3	*Toxicodendron radicans*	10	Y	FAC
4	*Rhamnus cathartica*	5	N	FAC
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		50	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	3	8
Sapling/Shrub Stratum	7	18
Herb Stratum	10	25
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across all Strata: 7 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 42.86% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	35	x 3 =	105
FACU species	45	x 4 =	180
UPL species	15	x 5 =	75
Column totals	100 (A)		370 (B)

Prevalence Index = B/A = 3.70

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL **Sampling Point:** A43 Up

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-12	10YR 3/3		10YR 6/2					

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: ICDC State: MI Sampling Point: A43 Wet
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Depression on Outwash Plains Local relief (concave, convex, none): Concave
Slope (%): 0-1 Lat.: 42.75609 Long.: 0 Datum: N/A
Soil Map Unit Name: Houghton muck NWI Classification: PEM1F
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	____	No	X	Depth (inches): ____
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches): 8

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: A43 Wet

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Salix nigra*	20	Y	OBL
2	*Fraxinus pennsylvanica*	10	Y	FACW
3				
4				
5				
6				
7				
8				
9				
10				
		30	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Cornus obliqua*	5	Y	FACW
2	*Salix nigra*	5	Y	OBL
3				
4				
5				
6				
7				
8				
9				
10				
		10	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Phalaris arundinacea*	80	Y	FACW
2	*Toxicodendron radicans*	5	N	FAC
3	*Cirsium muticum*	1	N	OBL
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		86	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	6	15
Sapling/Shrub Stratum	2	5
Herb Stratum	17	43
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	26	x 1 =	26
FACW species	95	x 2 =	190
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	126 (A)		231 (B)

Prevalence Index = B/A = 1.83

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL **Sampling Point:** A43 Wet

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-1	N2.5/							
1-9	7.5YR 2.5/2							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: PEA Group State: MI Sampling Point: B6 Up (1-134)
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Depressions Local relief (concave, convex, none): Concave
Slope (%): 0-2 Lat.: 42.757307 Long.: -85.437332 Datum: N/A
Soil Map Unit Name: Colwood-Brookston loams NWI Classification: PEM1A
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ____	No X	Depth (inches):	
Water table present?	Yes ____	No X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes ____	No X	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B6 Up (1-134)

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	15	Y	FAC
2	*Pinus strobus*	15	Y	FACU
3				
4				
5				
6				
7				
8				
9				
10				
		30	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	25	Y	FAC
2	*Lonicera tatarica*	5	N	FACU
3	*Cornus racemosa*	5	N	FAC
4				
5				
6				
7				
8				
9				
10				
		35	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	30	Y	FAC
2	*Rubus occidentalis*	30	Y	UPL
3	*Rubus allegheniensis*	25	Y	FACU
4	*Rosa multiflora*	5	N	FACU
5	*Urtica dioica*	5	N	FAC
6	*Boehmeria cylindrica*	5	N	OBL
7				
8				
9				
10				
11				
12				
13				
14				
15				
		100	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	6	15
Sapling/Shrub Stratum	7	18
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	5	x 1 =	5
FACW species	0	x 2 =	0
FAC species	80	x 3 =	240
FACU species	50	x 4 =	200
UPL species	30	x 5 =	150
Column totals	165 (A)		595 (B)

Prevalence Index = B/A = 3.61

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL **Sampling Point:** B6 Up (1-134)

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR 2/2	80	10YR 4/3	20			Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: ICDC State: MI Sampling Point: B6 Wet (1-134)
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Depressions Local relief (concave, convex, none): Concave
Slope (%): 0-2 Lat.: 42.757307 Long.: -85.437332 Datum: N/A
Soil Map Unit Name: Aurelius Muck NWI Classification: PEM1A
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	____	No	X	Depth (inches): ____
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches): 8

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B6 Wet (1-134)

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Salix nigra*	25	Y	OBL
2	*Populus deltoides*	5	N	FAC
3				
4				
5				
6				
7				
8				
9				
10				
		30	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Cornus racemosa*	5	Y	FAC
2	*Rhamnus cathartica*	1	N	FAC
3				
4				
5				
6				
7				
8				
9				
10				
		6	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Phalaris arundinacea*	80	Y	FACW
2	*Urtica dioica*	20	Y	FAC
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		100	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	6	15
Sapling/Shrub Stratum	1	3
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across all Strata: 4 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	25	x 1 =	25
FACW species	80	x 2 =	160
FAC species	31	x 3 =	93
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	136 (A)		278 (B)

Prevalence Index = B/A = 2.04

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL **Sampling Point:** B6 Wet (1-134)

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-9	N2.5/							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: PEA Group State: MI Sampling Point: B19 Up (1-32)
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Depression on Outwash Plains Local relief (concave, convex, none): Concave
Slope (%): 0-1 Lat.: 42.758414 Long.: -84.438537 Datum: N/A
Soil Map Unit Name: Collwood loam NWI Classification: PFO1C
Are climatic/hydrologic conditions of the site typical for this time of the year? ____ (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	N		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ____	No X	Depth (inches):	
Water table present?	Yes ____	No X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes ____	No X	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B19 Up (1-32)

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Elaeagnus umbellata*	1		FACU
2				
3				
4				
5				
6				
7				
8				
9				
10				
		1	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Solidago canadensis*	80	Y	FACU
2	*Cirsium arvense*	5	N	FACU
3	*Toxicodendron radicans*	5	N	FAC
4	*Parthenocissus quinquefolia*	1	N	FACU
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		91	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	0	1
Herb Stratum	18	46
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across all Strata: 1 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	5	x 3 =	15
FACU species	87	x 4 =	348
UPL species	0	x 5 =	0
Column totals	92 (A)		363 (B)

Prevalence Index = B/A = 3.95

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL **Sampling Point:** B19 Up (1-32)

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR 2/3	80	10YR 4/3	20			Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? N

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: ICDC State: MI Sampling Point: B19 Wet (1-32)
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Depression on Outwash Plains Local relief (concave, convex, none): Concave
Slope (%): 0-1 Lat.: 42.758414 Long.: -84.438537 Datum: N/A
Soil Map Unit Name: Houghton muck NWI Classification: PFO1C
Are climatic/hydrologic conditions of the site typical for this time of the year? Y (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	____	No	X	Depth (inches): ____
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches): 8

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B19 Wet (1-32)

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	5	Y	FAC
2	*Acer negundo*	5	Y	FAC
3	*Populus deltoides*	5	Y	FAC
4	*Prunus serotina*	5	Y	FACU
5				
6				
7				
8				
9				
10				
		20	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Rhamnus cathartica*	10	Y	FAC
2				
3				
4				
5				
6				
7				
8				
9				
10				
		10	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Typha latifolia*	5	Y	OBL
2	*Phalaris arundinacea*	5	Y	FACW
3	*Symphyotrichum novae-angliae*	5	Y	FACW
4	*Parthenocissus quinquefolia*	1	N	FACU
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		16	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	4	10
Sapling/Shrub Stratum	2	5
Herb Stratum	3	8
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across all Strata: 8 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 87.50% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	5	x 1 =	5
FACW species	10	x 2 =	20
FAC species	25	x 3 =	75
FACU species	6	x 4 =	24
UPL species	0	x 5 =	0
Column totals	46 (A)		124 (B)

Prevalence Index = B/A = 2.70

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL **Sampling Point:** B19 Wet (1-32)

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
	10YR 2/2	80	10YR 4/2	20			Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: PEA Group State: MI Sampling Point: B40 Up (187)
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Depression on Outwash Plains Local relief (concave, convex, none): Concave
Slope (%): 0-1 Lat.: 42.759318 Long.: -84.434716 Datum: N/A
Soil Map Unit Name: collwood NWI Classification: PEM1C
Are climatic/hydrologic conditions of the site typical for this time of the year? ____ (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	N	**Is the sampled area within a wetland?**	N
Hydric soil present?	Y		
Indicators of wetland hydrology present?	N	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes ____	No X	Depth (inches):	
Water table present?	Yes ____	No X	Depth (inches):	
Saturation present? (includes capillary fringe)	Yes ____	No X	Depth (inches):	

Indicators of wetland hydrology present? N

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B40 Up (187)

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Ulmus americana*	10	Y	FACW
2	*Prunus serotina*	5	Y	FACU
3	*Frangula alnus*	5	Y	FAC
4	*Tilia americana*	5	Y	FACU
5				
6				
7				
8				
9				
10				
		25	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Parthenocissus quinquefolia*	40	Y	FACU
2	*Boehmeria cylindrica*	20	Y	OBL
3	*Podophyllum peltatum*	15	N	FACU
4	*Toxicodendron radicans*	5	N	FAC
5	*Rhamnus cathartica*	5	N	FAC
6	*Quercus rubra*	1	N	FACU
7				
8				
9				
10				
11				
12				
13				
14				
15				
		86	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	5	13
Sapling/Shrub Stratum	0	0
Herb Stratum	17	43
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 50.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	20	x 1 =	20
FACW species	10	x 2 =	20
FAC species	15	x 3 =	45
FACU species	66	x 4 =	264
UPL species	0	x 5 =	0
Column totals	111 (A)		349 (B)

Prevalence Index = B/A = 3.14

Hydrophytic Vegetation Indicators:

___ Rapid test for hydrophytic vegetation

___ Dominance test is >50%

___ Prevalence index is ≤3.0*

___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)

___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? N

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

SOIL **Sampling Point:** B40 Up (187)

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	10YR 2/2	80	10YR 4/3	20			Loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
___ Coast Prairie Redox (A16) (**LRR K, L, R**)
___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
___ Dark Surface (S7) (**LRR K, L**
___ Polyvalue Below Surface (S8) (**LRR K, L**)
___ Thin Dark Surface (S9) (**LRR K, L**)
___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
___ Red Parent Material (TF2)
___ Very Shallow Dark Surface (TF12)
___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? ___Y___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Costigan City/County: Ingham Co Sampling Date: 8/3/2025
Applicant/Owner: PEA Group State: MI Sampling Point: B40 Wet (187)
Investigator(s): Mike Nurse, John Nurse, Jacob Robbins Section, Township, Range: S0404N01W
Landform (hillslope, terrace, etc.): Depression on Outwash Plains Local relief (concave, convex, none): Concave
Slope (%): 0-1 Lat.: 42.759318 Long.: -84.434716 Datum: N/A
Soil Map Unit Name: Houghton muck NWI Classification: PEM1C
Are climatic/hydrologic conditions of the site typical for this time of the year? ____ (If no, explain in remarks)
Are vegetation ____, soil ____, or hydrology ____ significantly disturbed? Are "normal
Are vegetation ____, soil ____, or hydrology ____ naturally problematic? circumstances" present? Yes
(If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	Y	**Is the sampled area within a wetland?**	Y
Hydric soil present?	Y		
Indicators of wetland hydrology present?	Y	If yes, optional wetland site ID:	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface water present?	Yes	____	No	X	Depth (inches): ____
Water table present?	Yes	____	No	X	Depth (inches): ____
Saturation present? (includes capillary fringe)	Yes	X	No	____	Depth (inches): 10

Indicators of wetland hydrology present? Y

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: B40 Wet (187)

Tree Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Ulmus americana*	20	Y	FACW
2	*Fraxinus pennsylvanica*	5	Y	FACW
3				
4				
5				
6				
7				
8				
9				
10				
		25	= Total Cover	

Sapling/Shrub Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Frangula alnus*	15	Y	FAC
2	*Cornus racemosa*	10	Y	FAC
3	*Rhamnus cathartica*	5	N	FAC
4	*Fraxinus pennsylvanica*	5	N	FACW
5				
6				
7				
8				
9				
10				
		35	= Total Cover	

Herb Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1	*Urtica dioica*	70	Y	FAC
2	*Impatiens capensis*	10	N	FACW
3	*Glyceria striata*	5	N	OBL
4	*Solidago gigantea*	1	N	FACW
5	*Parthenocissus quinquefolia*	1	N	FACU
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		87	= Total Cover	

Woody Vine Stratum	Plot Size ( )	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0	= Total Cover	

50/20 Thresholds

	20%	50%
Tree Stratum	5	13
Sapling/Shrub Stratum	7	18
Herb Stratum	17	44
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across all Strata: 5 (B)

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	5	x 1 =	5
FACW species	41	x 2 =	82
FAC species	100	x 3 =	300
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column totals	147 (A)		391 (B)

Prevalence Index = B/A = 2.66

Hydrophytic Vegetation Indicators:

- ___ Rapid test for hydrophytic vegetation
- X Dominance test is >50%
- X Prevalence index is ≤3.0*
- ___ Morphogical adaptations* (provide supporting data in Remarks or on a separate sheet)
- ___ Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

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

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

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

Hydrophytic vegetation present? Y

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

SOIL **Sampling Point:** B40 Wet (187)

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

Depth (Inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type*	Loc**	Texture	Remarks
0-10	N2.5/							

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

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

Indicators for Problematic Hydric Soils:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Dark Surface (S7) (**LRR K, L**
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and weltand hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
Type: _____
Depth (inches): _____

Hydric soil present? Y

Remarks:

#11

FINAL ORDER OF DETERMINATION.

Whereas, I, George Graham, Drain Commissioner of the County of Ingham, State of Michigan, did on the 30th day of January A. D. 1919, make and issue an order determining that it was necessary and conducive to the public health, convenience and welfare that a certain Drain know as the "Costigan Drain" should be located and established in the township of Meridian in said County of Ingham and State aforesaid, which said drain is described as follows:

Commencing

Survey of the Costigan Drain

Survey of the Costigan Drain, located on sections 3 and 4, Town 4 North, Range 1 West, Township of Meridian, County of Ingham, and State of Michigan, the centerline thereof being described as follows:

Commencing in the Pine Lake Outlet Drain at a point in the N&S ⅛ line to the SW ¼ of said section 3, 678 feet N of the S ⅛ post to said SW ¼, thence over and across the following description: S 36 acres of the W ½ of the SW ¼ of section 3, William L. Haag and George H. McNeil, owners, as follows: Commencing at station 0 plus 00 feet of said drain, thence N 84 deg. 55' W 1313 feet to station 13 plus 13 feet in the W line of said lands at a point 245 feet S of the NW corner thereof. Total length of said drain on said lands is 1313 feet.

Thence over and across the following description: the E ½ of the SE ¼ of section 4, town and range aforesaid, Roy A. Douglas, owner, as follows. Commencing at station 13 plus 13 feet in the E line of said lands at a point 245 feet S of the NW corner of the S 36 acres of the W ½ of the SW ¼ of section 3, thence N 74 deg. 30' W 1402 feet, to station 27 plus 15 feet in the W line of said lands at a point 1100 feet N of the SW corner thereof. Total length of said drain on said lands is 1402 feet.

Thence over and across the following description: the W ½ of the SE ½ of section 4, Willis A. Culver, owner, as follows: Commencing at station 27 plus 15 feet in the E line of said lands at a point 1100 feet N of the SE corner thereof, thence N 87 deg. 35' W 505 feet, thence S 36 deg. 35' W 434 feet, thence S 2 deg. 40' E 184 feet, thence S 61 deg. W 127 feet, thence N 84 deg. W 135 feet, thence N 21 deg. W 372 feet, thence N 41 deg. 40' W 228 feet to station 47 plus 00 feet in the W line of said lands at a point 1075 feet N of the SW corner thereof. Total length of said drain on said lands is 1985 feet.

Thence over and across the following description: the SE ¼ of SW ¼ of section 4, Daniel R. Andrews and wife, Millie E., joint owners, as follows: Commencing at station 47 plus 00 feet in the E line of said lands at a point 1075 feet N of the SE corner thereof, thence N 41 deg. 40' W 38 feet, thence N 83 deg. 30' W 256 feet, thence S 41 deg. 50' W 606 feet, thence N 76 deg. 20' W 678 feet to station 62 plus 78 feet, the upper terminus of said drain, at a point in the W line of said lands 500 feet S of the center of the SW ¼ of section 4. Total length of said drain on said lands is 1579 feet.

follows: Commencing at station 0 plus 00 feet of said Branch Drain, thence N 1 deg. 30' E 221 feet to station 2 plus 21 feet in the N line of said lands at a point 25 feet W of the NE corner thereof. Total length of said drain on said lands is 221 feet.

Thence over and across the following description: the NE ¼ of the SW ¼ of said section 4, Ray LaDu, owner, as follows: Commencing at station 2 plus 21 feet in the S line of said lands at a point 25 feet W of the SE corner thereof, thence N 30 deg. W 379 feet to station 9 plus 00 feet, the upper terminus of said Branch Drain at a point 380 feet W and 575 feet N of the E ⅛ post to the SW ¼ of section 4. Total length of said drain on said lands is 679 feet.

The total length of said Branch Drain is 900 feet, or 54.54 rods.

The total length of said Main and Branch Drains is 7,178 feet, or 435.02 rods.

SPECIFICATIONS.

Station stakes and grade hubs are set every 100 feet distant throughout the course of said drain and branch, except between station 62 and the upper terminus of the Main Drain, which is 78 feet; and 25 feet to the right of the centerline, going upstream, from station 0 to station 33 of the Main Drain, and 5 feet to the right of the centerline of the remaining portion of the Main Drain and throughout the course of the Branch Drain.

Said Main Drain shall be constructed as an open drainage channel from station 0 to station 32, with a bottom width of 3 feet, and a 1½ to 1 slope of banks. From station 32 to station 62 plus 78 feet said drain shall be constructed as a closed drain of the following diameters: Station 32 to station 47 plus 40 feet, 20-inch tile; station 47 plus 40 feet to station 56, 16-inch tile; station 56 to station 62 plus 78 feet, 15-inch tile.

Said Branch Drain shall be constructed as a closed drain of 12-inch tile throughout.

The grade of the Main Drain shall be as follows. Commencing at station 0, grade elevation, 841.50; thence a grade of 0.08% to station 32, grade elevation, 844.06; thence a rise in grade of 1.74 feet, grade elevation, 845.80; thence a grade of 0.12% to station 62 plus 78 feet, grade elevation, 849.49.

The grade of said Branch Drain shall be as follows: Commencing at station 0, grade elevation, 849.00, thence a grade of 0.15% to station 9, grade elevation, 850.35.

The right of way for construction

erage depth of the open portion is 5.33 feet.

The maximum depth of the closed portion of the Main Drain is 8.06 feet. The minimum depth is 3.06 feet. The average depth is 5.92 feet.

The total fall of the Branch Drain is 1.35 feet.

The maximum depth is 3.86 feet. The minimum depth is 2.51 feet. The average depth is 3.58 feet.

Said drain shall be constructed with the following depths in feet and hundredths of feet, measured from a level with the tops of the aforementioned grade hubs.

SECTION ONE.

(3200 feet, or 193.93 rods open work.)

Sta.	Depth Feet	Sta.	Depth Feet
0	5.48	16	5.00
Com. 3-ft. bot.		17	5.32
1	5.30	18	5.69
2	5.67	19	5.61
3	4.84	20	5.28
4	5.06	21	5.15
5	5.43	22	6.47
6	5.35	23	6.79
7	5.22	24	5.31
8	4.89	25	5.43
9	4.96	26	5.25
10	4.78	27	5.77
11	5.10	28	5.49
12	5.32	29	5.11
13	5.59	30	4.63
14	5.01	31	4.80
15	5.18	32	5.57

SECTION TWO.

(3078 feet, or 186.54 rods tile.)

Sta.	Depth Feet	Sta.	Depth Feet
32	3.83	Com. 16-inch.	
Com. 20-inch.		48	3.49
33	4.89	49	5.22
34	6.24	50	4.75
35	6.17	51	5.02
36	7.65	52	4.90
37	6.93	53	4.73
38	5.31	54	3.96
39	5.59	55	6.49
40	6.63	56	6.67
41	6.93	Com. 15-inch.	
42	4.21	57	6.55
43	4.79	58	6.13
44	6.82	59	6.16
45	7.75	60	6.14
46	7.48	61	5.72
47	8.06	62	3.45
plus 40		plus 78	3.06

SECTION THREE.

(900 feet, or 54.54 rods tile.)

Sta.	Depth Feet	Sta.	Depth Feet
0	3.61	5	3.51
Com. 12-inch.		6	2.51
1	3.86	7	3.71
2	3.71	8	3.71

was necessary and conducive to the public health, convenience and welfare that a certain Drain know as the "Costigan Drain" should be located and established in the township of Meridian in said County of Ingham and State aforesaid, which said drain is described as follows: Commencing

Survey of the Costigan Drain

Survey of the Costigan Drain, located on sections 3 and 4, Town 4 North, Range 1 West, Township of Meridian, County of Ingham, and State of Michigan, the centerline thereof being described as follows:

Commencing in the Pine Lake Outlet Drain at a point in the N&S ⅛ line to the SW ¼ of said section 3, 678 feet N of the S ⅛ post to said SW ¼, thence over and across the following description: S 36 acres of the W ½ of the SW ¼ of section 3, William L. Haag and George H. McNeil, owners, as follows: Commencing at station 0 plus 00 feet of said drain, thence N 84 deg. 55' W 1313 feet to station 13 plus 13 feet in the W line of said lands at a point 245 feet S of the NW corner thereof. Total length of said drain on said lands is 1313 feet.

Thence over and across the following description: the E ½ of the SE ¼ of section 4, town and range aforesaid, Roy A. Douglas, owner, as follows. Commencing at station 13 plus 13 feet in the E line of said lands at a point 24.5 feet S of the NW corner of the S 36 acres of the W ½ of the SW ¼ of section 3, thence N 74 deg. 30' W 1402 feet, to station 27 plus 15 feet in the W line of said lands at a point 1100 feet N of the SW corner thereof. Total length of said drain on said lands is 1402 feet.

Thence over and across the following description: the W ½ of the SE ½ of section 4, Willis A. Culver, owner, as follows: Commencing at station 27 plus 15 feet in the E line of said lands at a point 1100 feet N of the SE corner thereof, thence N 87 deg. 35' W 505 feet, thence S 36 deg. 35' W 434 feet, thence S 2 deg. 40' E 184 feet, thence S 61 deg. W 127 feet, thence N 84 deg. W 135 feet, thence N 21 deg. W 372 feet, thence N 41 deg. 40' W 228 feet to station 47 plus 00 feet in the W line of said lands at a point 1075 feet N of the SW corner thereof. Total length of said drain on said lands is 1985 feet.

Thence over and across the following description: the SE ¼ of SW ¼ of section 4, Daniel R. Andrews and wife, Millie E., joint owners, as follows: Commencing at station 47 plus 00 feet in the E line of said lands at a point 1075 feet N of the SE corner thereof, thence N 41 deg. 40' W 38 feet, thence N 83 deg. 30' W 256 feet, thence S 41 deg. 50' W 606 feet, thence N 76 deg. 20' W 678 feet to station 62 plus 78 feet, the upper terminus of said drain, at a point in the W line of said lands 500 feet S of the center of the SW ¼ of section 4. Total length of said drain on said lands is 1578 feet.

The total length of the Main Drain is 6278 feet, or 380.48 rods.

BRANCH DRAIN.

A branch to the Main Drain is located as follows: Commencing at station 47 plus 38 feet of the Main Drain, at a point 221 feet S and 25 feet W of the E ⅛ post of the SW ¼ of section 4, town and range aforesaid, thence over and across the following description: the SE ¼ of the SW ¼ of said section 4, Daniel R. Andrews and wife, Millie E., joint owners, as follows: Commencing at station 0 plus 00 feet of said Branch Drain, thence N 1 deg. 30' E 221 feet to station 2 plus 21 feet in the N line of said lands at a point 25 feet W of the NE corner thereof. Total length of said drain on said lands is 221 feet.

Thence over and across the following description: the NE ¼ of the SW ¼ of said section 4, Ray LaDu, owner, as follows: Commencing at station 2 plus 21 feet in the S line of said lands at a point 25 feet W of the SE corner thereof, thence N 30 deg. W 379 feet to station 9 plus 00 feet, the upper terminus of said Branch Drain at a point 380 feet W and 575 feet N of the E ⅛ post to the SW ¼ of section 4. Total length of said drain on said lands is 679 feet.

The total length of said Branch Drain is 900 feet, or 54.54 rods.

The total length of said Main and Branch Drains is 7,178 feet, or 435.02 rods.

SPECIFICATIONS.

Station stakes and grade hubs are set every 100 feet distant throughout the course of said drain and branch, except between station 62 and the upper terminus of the Main Drain, which is 78 feet; and 25 feet to the right of the centerline, going upstream, from station 0 to station 33 of the Main Drain, and 5 feet to the right of the centerline of the remaining portion of the Main Drain and throughout the course of the Branch Drain.

Said Main Drain shall be constructed as an open drainage channel from station 0 to station 32, with a bottom width of 3 feet, and a 1½ to 1 slope of banks. From station 32 to station 62 plus 78 feet said drain shall be constructed as a closed drain of the following diameters: Station 32 to station 47 plus 40 feet, 20-inch tile; station 47 plus 40 feet to station 56, 16-inch tile; station 56 to station 62 plus 78 feet, 15-inch tile.

Said Branch Drain shall be constructed as a closed drain of 12-inch tile throughout.

The grade of the Main Drain shall be as follows. Commencing at station 0, grade elevation, 841.50; thence a grade of 0.08% to station 32, grade elevation, 844.06; thence a rise in grade of 1.74 feet, grade elevation, 845.80; thence a grade of 0.12% to station 62 plus 78 feet, grade elevation, 849.49.

The grade of said Branch Drain shall be as follows: Commencing at station 0, grade elevation, 849.00, thence a grade of 0.15% to station 9, grade elevation, 850.35.

The right of way for construction of said drain shall include fifty (50) feet on each side of the centerline as above described.

All work of construction shall be according to plans and specifications on file in the office of the County Drain Commissioner, said work to include the construction of one (1) concrete bulkhead and one catchbasin at the places designated on the profile.

The total fall of the Main Drain is 7.99 feet. The maximum depth of the open portion is 6.79 feet. The minimum depth is 4.63 feet. The average depth of the open portion is 5.33 feet.

The maximum depth of the closed portion of the Main Drain is 8.06 feet. The minimum depth is 3.06 feet. The average depth is 5.92 feet.

The total fall of the Branch Drain is 1.35 feet.

The maximum depth is 3.86 feet. The minimum depth is 2.51 feet. The average depth is 3.58 feet.

Said drain shall be constructed with the following depths in feet and hundredths of feet, measured from a level with the tops of the aforementioned grade hubs.

SECTION ONE.

(3200 feet, or 193.93 rods open work.)

Sta.	Depth Feet	Sta.	Depth Feet
0	5.48	16	5.00
Com. 3-ft. bot.		17	5.32
1	5.30	18	5.69
2	5.67	19	5.61
3	4.84	20	5.28
4	5.06	21	5.15
5	5.43	22	6.47
6	5.35	23	6.79
7	5.22	24	5.31
8	4.89	25	5.43
9	4.96	26	5.25
10	4.78	27	5.77
11	5.10	28	5.49
12	5.32	29	5.11
13	5.59	30	4.63
14	5.01	31	4.80
15	5.18	32	5.57

SECTION TWO.

(3078 feet, or 186.54 rods tile.)

Sta.	Depth Feet	Sta.	Depth Feet
32	3.83	Com. 16-inch.	
Com. 20-inch.		48	3.49
33	4.89	49	5.22
34	6.24	50	4.75
35	6.17	51	5.02
36	7.65	52	4.90
37	6.93	53	4.73
38	5.31	54	3.96
39	5.59	55	6.49
40	6.63	56	6.67
41	6.93	Com. 15-inch.	
42	4.21	57	6.55
43	4.79	58	6.13
44	6.82	59	6.16
45	7.75	60	6.14
46	7.48	61	5.72
47	8.06	62	3.45
plus 40		plus 78	3.06

SECTION THREE.

(900 feet, or 54.54 rods tile.)

Sta.	Depth Feet	Sta.	Depth Feet
0	3.61	5	3.51
Com. 12-inch.		6	2.51
1	3.86	7	3.71
2	3.71	8	3.71
3	3.86	9	3.56
4	3.81		

BENCH MARKS

Basswood S Sta. 0, Elev., 848.36.
Willow S. Sta. 26, Elev., 849.73.
White Ash N Sta. 45, Elev., 856.00.
Oak N Sta. 59, Elev., 856.85.

Survey completed Dec. 19, 1919.

WOLVERINE ENGINEERING CO.,
Engineers.
By W. E. Zimmer.

By order of George Graham, County drain Commissioner of the County of Ingham, State of Michigan.

---said order being based upon application, duly made as provided by law;

And Whereas, Since the date of the said order, survey and measurement of the line thereof having been made, the same found to be practicable and the right of way for said drain and all damages by reason of the construction thereof having been released by all of the owners of said land traversed by said drain;

And Whereas, For such of the owners of said lands as did not release the right of way for said drain and damages, as aforesaid, an application was made by me, the said County Drain Commissioner of the County of---, to the Probate Court for the County of---for the appointment of three Special Commissioners to determine the necessity for said drain, and for the taking of private property for the use and benefit of the public for the purpose thereof, and the just compensation to be made therefor, which said Special Commissioners having been so appointed by said Probate Court, did on the---day of ---A. D. 191---, make and file with me, the said County Drain Commissioner of the County of---, a return in writing of their hearing and determination, and of their several awards: and it appearing from said return that said Special Commissioners have determined that the said drain will be conducive to the public health, convenience and welfare, and that it is necessary to take private property for the use and benefit of the public for the purpose of said drain; and it further appearing from said return that they have awarded and determined the just compensation to be paid to each and every person over and across whose lands said drain is to be constructed, for the right of way over and upon the same, and all their damages in excess of benefits determined by reason of the construction thereof upon said lands.

Now, Therefore, I, George Graham, County Drain Commissioner of the County of Ingham, do order and determine that the said drain shall be and the same is hereby established in accordance with the above described survey, and that the commencement, route, terminus, length, depth and width of surface excavations of said drain shall, in every respect, be in accordance therewith.

The several tracts or parcels of land to be assessed for benefits in the construction of said drain, are as follows: ---

---

1

Meridian of Michigan.

The following lands in Town 4 North, Range 1 West:

The Township of Meridian at large.

The following lands in Section 3, T4N,R1W:

Commencing at the SW corner of the N 44 acres of Sec. W ½ of SW ¼, Sec. 3, thence N 50 rods, SE'ly to a point 20 rods E of Beg., thence W to Beg.

Charles Bray, owner.

Commencing in the N and S 1/8 line of the SW ¼, Sec.3 678 feet N of S 1/8 post of said SW ¼, thence SW'ly to the SW corner of said Sec., thence N to the NW corner of S 36 acres of W ½ of said SW ¼, thence E 20 rods, SE'ly to beginning.

William L. Haag and George H. McNeil, owners.

The following lands in Section 4, T4N,R1W:

Meridian of Michigan.

The following lands in Town 4 North, Range 1 West:

The Township of Meridian at large.

The following lands in Section 3, T4N,R1W:

Commencing at the SW corner of the N 44 acres of Sec. W ½ of SW ¼, Sec. 3, thence N 50 rods, SE'ly to a point 20 rods E of Beg., thence W to Beg.

Charles Bray, owner.

Commencing in the N and S 1/8 line of the SW ¼, Sec.3 678 feet N of S 1/8 post of said SW ¼, thence SW'ly to the SW corner of said Sec., thence N to the NW corner of S 36 acres of W ½ of said SW ¼, thence E 20 rods, SE'ly to beginning.

William L. Haag and George H. McNeil, owners.

The following lands in Section 4, T4N,R1W:

The E ½ of the NE ¼ except Commencing at the NW corner thereof, thence S 59° E 40 rods, thence SE'ly to a point 30 rods W of the SE corner of said E ½ of NE ¼, thence E 30 rods, N to NE corner of Sec., thence W to Beg.

Harlan P.Towner,owner.
~~Roy A. Douglas,owner.~~

The E ½ of the SE ¼, except a parcel 30 rods E and W by 38 rods N and S in the NE corner thereof.

Roy A. Douglas,owner.

The W ½ of SE ¼.

Willis A. Culver,owner.

SW ¼ of NE ¼.

Ray LaDu, owner.

The S 10 acres of NW ¼ of NE ¼.

Daniel R. Andrews, and Wife Nellie E.,owners.

The NW ¼ of NE ¼, except the S 10 acres thereof.

Lambert Johnson and Wife Mary E., owners.

The N 52 acres of the NW ¼, except commencing at the SW corner thereof, thence E 70 rods, N 25 rods, E 15 rods, N to the N line of Sec., thence W to the NW corner of Sec., thence S to Beg.

C. Herbert Hunt and Wife Fanny, owners.

The S 104 acres of the NW ¼ , except the W 60 rods thereof.

Banker W. Cade,owners.

The W ½ of SW ¼, except commencing at the SW corner thereof, thence E 35 rods, NW'ly to a point50 rods N of beginning, S to beginning, and except commencing at a point 20 rods W of the NE corner of said description, thence S 40 rods, W 25 rods, S 40 rods, W to the W line of Sec., thence N to the W ¼ Post of section, thence E to beginning.

Pauline Everett,owner.

The SE ¼ of SW ¼.

Daniel R. Andrews and Wife Millie E.,owners.

The NE ¼ of SW ¼.

Ray LaDu,owner.

The following lands in Section 9,T4N,R1W:

A parcel of land 5 rods N and S by 60 rods E and W in the NE corner of N 60 acres of E ½ of NE ¼.

Fred W. Kaiser,owner.

Commencing at the NW corner of the NW ¼ of NE ¼,thence S 40 rods, E 40 rods, NE'ly to the NE corner of said NW ¼ of NE ¼,thence W to beginning.

Lee B. Furwick and Wife Anna,owners

Commencing at the NE corner of the NW ¼, thence W 20 rods, S 40 rods, E 20 rods, N 40 rods to beginning.

George E. Hardy and Wife Allie, owners.

Commencing at a point 20 rods W of the N ¼ post of Sec. 9, thence W to the W line of E 38 acres of E ½ of NW ¼, thence S 40 rods, E to a point S of Beg., thence N to Beg.

J. C. Hardy, owner.

Commencing at the NE corner of the W 42 acres of the E ½ of NW ¼, thence S 40 rods, NW'ly to a point 15 rods S of the N 1/8 post of the NW ¼ of Sec. 9, thence N 15 rods, E to beginning.

Pauline Everett, owner.

Commencing at the NE corner of the W ½ of NW ¼,Sec. 9, thence W 45 rods, SE'ly to a poinr 15 rods S of beginning, thence N to Beginning.

Fredrick H. Masier and Mae Masier, owners.

All of which said tract or parcels of land shall, and they are hereby declared to constitute the Special Assessment for the purpose of said drain, said district to be known and designated as "Costigan Drain Special Assessment District."

Given under my hand, this 5th day of April A. D. 1921

George Graham

County Drain Commissioner of the County of Ingham.

STATE OF MICHIGAN }
County of _____ } ss.

I, _____ County Drain Commissioner of said County of _____, do hereby certify that the within and foregoing is a true and compared copy of the original Final Order of Determination made by me on the _____ day of _____ A. D. 191___, in the matter of _____ Drain _____

Witness my hand this _____ day of _____ A. D. 191___

_____
County Drain Commissioner.

IN THE MATTER OF

_____ Drain

FINAL ORDER OF DETERMINATION

Date of Order _____

Filed this _____ day of _____ A. D. 191___

_____ County Clerk.

OCT 1921

VERNON J.
COUNTY CLERK

was necessary and conducive to the public health, convenience and welfare that a certain Drain know as the "Costigan Drain" should be located and established in the township of Meridian in said County of Ingham and State aforesaid, which said drain is described as follows: Commencing

Survey of the Costigan Drain

Survey of the Costigan Drain, located on sections 3 and 4, Town 4 North, Range 1 West, Township of Meridian, County of Ingham, and State of Michigan, the centerline thereof being described as follows:

Commencing in the Pine Lake Outlet Drain at a point in the N&S ⅛ line to the SW ¼ of said section 3, 678 feet N of the S ⅛ post to said SW ¼, thence over and across the following description: S 36 acres of the W ½ of the SW ¼ of section 3, William L. Haag and George H. McNeil, owners, as follows: Commencing at station 0 plus 00 feet of said drain, thence N 84 deg. 55' W 1313 feet to station 13 plus 13 feet in the W line of said lands at a point 245 feet S of the NW corner thereof. Total length of said drain on said lands is 1313 feet.

Thence over and across the following description: the E ½ of the SE ¼ of section 4, town and range aforesaid, Roy A. Douglas, owner, as follows. Commencing at station 13 plus 13 feet in the E line of said lands at a point 24.5 feet S of the NW corner of the S 36 acres of the W ½ of the SW ¼ of section 3, thence N 74 deg. 30' W 1402 feet, to station 27 plus 15 feet in the W line of said lands at a point 1100 feet N of the SW corner thereof. Total length of said drain on said lands is 1402 feet.

Thence over and across the following description: the W ½ of the SE ½ of section 4, Willis A. Culver, owner, as follows: Commencing at station 27 plus 15 feet in the E line of said lands at a point 1100 feet N of the SE corner thereof, thence N 87 deg. 35' W 505 feet, thence S 36 deg. 35' W 434 feet, thence S 2 deg. 40' E 184 feet, thence S 61 deg. W 127 feet, thence N 84 deg. W 135 feet, thence N 21 deg. W 372 feet, thence N 41 deg. 40' W 228 feet to station 47 plus 00 feet in the W line of said lands at a point 1075 feet N of the SW corner thereof. Total length of said drain on said lands is 1985 feet.

Thence over and across the following description: the SE ¼ of SW ¼ of section 4, Daniel R. Andrews and wife, Millie E., joint owners, as follows: Commencing at station 47 plus 00 feet in the E line of said lands at a point 1075 feet N of the SE corner thereof, thence N 41 deg. 40' W 38 feet, thence N 83 deg. 30' W 256 feet, thence S 41 deg. 50' W 606 feet, thence N 76 deg. 20' W 678 feet to station 62 plus 78 feet, the upper terminus of said drain, at a point in the W line of said lands 500 feet S of the center of the SW ¼ of section 4. Total length of said drain on said lands is 1578 feet.

The total length of the Main Drain is 6278 feet, or 380.48 rods.

BRANCH DRAIN.

A branch to the Main Drain is located as follows: Commencing at station 47 plus 38 feet of the Main Drain, at a point 221 feet S and 25 feet W of the E ⅛ post of the SW ¼ of section 4, town and range aforesaid, thence over and across the following description: the SE ¼ of the SW ¼ of said section 4, Daniel R. Andrews and wife, Millie E., joint owners, as follows: Commencing at station 0 plus 00 feet of said Branch Drain, thence N 1 deg. 30' E 221 feet to station 2 plus 21 feet in the N line of said lands at a point 25 feet W of the NE corner thereof. Total length of said drain on said lands is 221 feet.

Thence over and across the following description: the NE ¼ of the SW ¼ of said section 4, Ray LaDu, owner, as follows: Commencing at station 2 plus 21 feet in the S line of said lands at a point 25 feet W of the SE corner thereof, thence N 30 deg. W 379 feet to station 9 plus 00 feet, the upper terminus of said Branch Drain at a point 380 feet W and 575 feet N of the E ⅛ post to the SW ¼ of section 4. Total length of said drain on said lands is 679 feet.

The total length of said Branch Drain is 900 feet, or 54.54 rods.

The total length of said Main and Branch Drains is 7,178 feet, or 435.02 rods.

SPECIFICATIONS.

Station stakes and grade hubs are set every 100 feet distant throughout the course of said drain and branch, except between station 62 and the upper terminus of the Main Drain, which is 78 feet; and 25 feet to the right of the centerline, going upstream, from station 0 to station 33 of the Main Drain, and 5 feet to the right of the centerline of the remaining portion of the Main Drain and throughout the course of the Branch Drain.

Said Main Drain shall be constructed as an open drainage channel from station 0 to station 32, with a bottom width of 3 feet, and a 1½ to 1 slope of banks. From station 32 to station 62 plus 78 feet said drain shall be constructed as a closed drain of the following diameters: Station 32 to station 47 plus 40 feet, 20-inch tile; station 47 plus 40 feet to station 56, 16-inch tile; station 56 to station 62 plus 78 feet, 15-inch tile.

Said Branch Drain shall be constructed as a closed drain of 12-inch tile throughout.

The grade of the Main Drain shall be as follows. Commencing at station 0, grade elevation, 841.50; thence a grade of 0.08% to station 32, grade elevation, 844.06; thence a rise in grade of 1.74 feet, grade elevation, 845.80; thence a grade of 0.12% to station 62 plus 78 feet, grade elevation, 849.49.

The grade of said Branch Drain shall be as follows: Commencing at station 0, grade elevation, 849.00, thence a grade of 0.15% to station 9, grade elevation, 850.35.

The right of way for construction of said drain shall include fifty (50) feet on each side of the centerline as above described.

All work of construction shall be according to plans and specifications on file in the office of the County Drain Commissioner, said work to include the construction of one (1) concrete bulkhead and one catchbasin at the places designated on the profile.

The total fall of the Main Drain is 7.99 feet. The maximum depth of the open portion is 6.79 feet. The minimum depth is 4.63 feet. The average depth of the open portion is 5.33 feet.

The maximum depth of the closed portion of the Main Drain is 8.06 feet. The minimum depth is 3.06 feet. The average depth is 5.92 feet.

The total fall of the Branch Drain is 1.35 feet.

The maximum depth is 3.86 feet. The minimum depth is 2.51 feet. The average depth is 3.58 feet.

Said drain shall be constructed with the following depths in feet and hundredths of feet, measured from a level with the tops of the aforementioned grade hubs.

SECTION ONE.

(3200 feet, or 193.93 rods open work.)

Sta.	Depth Feet	Sta.	Depth Feet
0	5.48	16	5.00
Com. 3-ft. bot.		17	5.32
1	5.30	18	5.69
2	5.67	19	5.61
3	4.84	20	5.28
4	5.06	21	5.15
5	5.43	22	6.47
6	5.35	23	6.79
7	5.22	24	5.31
8	4.89	25	5.43
9	4.96	26	5.25
10	4.78	27	5.77
11	5.10	28	5.49
12	5.32	29	5.11
13	5.59	30	4.63
14	5.01	31	4.80
15	5.18	32	5.57

SECTION TWO.

(3078 feet, or 186.54 rods tile.)

Sta.	Depth Feet	Sta.	Depth Feet
32	3.83	Com. 16-inch.	
Com. 20-inch.		48	3.49
33	4.89	49	5.22
34	6.24	50	4.75
35	6.17	51	5.02
36	7.65	52	4.90
37	6.93	53	4.73
38	5.31	54	3.96
39	5.59	55	6.49
40	6.63	56	6.67
41	6.93	Com. 15-inch.	
42	4.21	57	6.55
43	4.79	58	6.13
44	6.82	59	6.16
45	7.75	60	6.14
46	7.48	61	5.72
47	8.06	62	3.45
plus 40		plus 78	3.06

SECTION THREE.

(900 feet, or 54.54 rods tile.)

Sta.	Depth Feet	Sta.	Depth Feet
0	3.61	5	3.51
Com. 12-inch.		6	2.51
1	3.86	7	3.71
2	3.71	8	3.71
3	3.86	9	3.56
4	3.81		

BENCH MARKS

Basswood S Sta. 0, Elev., 848.36.
Willow S. Sta. 26, Elev., 849.73.
White Ash N Sta. 45, Elev., 856.00.
Oak N Sta. 59, Elev., 856.85.

Survey completed Dec. 19, 1919.

WOLVERINE ENGINEERING CO.,
Engineers.
By W. E. Zimmer.

By order of George Graham, County drain Commissioner of the County of Ingham, State of Michigan.

LIBER 63 PAGE 195

COSTIGAN DRAIN

RELEASE OF RIGHT OF WAY. (D6) News Print, Mason

RELEASE OF RIGHT OF WAY

For and in consideration of prospective benefits to be derived by [1] us by reason of the locating and establishing of a certain Drain, under the supervision of the County Drain Commissioner of the County of Ingham and State of Michigan, as hereinafter described, [2] We Daniel R. Andrews and wf Millie E and Ray LaDu

of Meridian Township

do hereby convey and release to the County of Ingham the right of way for a certain Drain, hereinafter more particularly designated and described, over and across the following lands, [3] owned by us, and situated in the Township of Meridian

of the County of Ingham and State aforesaid, more particularly described as follows, to-wit:

The SE¼ of the SW¼ of section 4
Daniel R. Andrews and wf Millie E.

The NE¼ of the SW¼ of section 4
Ray LaDu, owner

The Right of Way hereby conveyed and released is for the sole and only purpose of locating and constructing over and across said premises a certain Drain, application for which in writing was made on the 28th day of June A. D. 19 17, by Ray LaDu, Roy Douglas, Daniel Andrews and others, and the necessity for which has been determined by the County Drain Commissioner of the County of Ingham in his opinion, bearing date the 25th day of July A. D. 1917, and the practicability thereof having been determined by said Drain Commissioner of the County of Ingham in his order bearing date the 30th day of December A. D. 1919, in which said order the route and course of said Drain is described as follows, to-wit:

LIBER 63 PAGE 197

Survey of the Costigan Drain

Survey of the Costigan Drain, located on sections 3 and 4, Town 4 North, Range 1 West, Township of Meridian, County of Ingham, and State of Michigan, the centerline thereof being described as follows:

Commencing in the Pine Lake Outlet Drain at a point in the N&S ⅛ line to the SW ¼ of said section 3, 678 feet N of the S ⅛ post to said SW ¼, thence over and across the following description: S 36 acres of the W ½ of the SW ¼ of section 3, William L. Haag and George H. McNeil, owners, as follows: Commencing at station 0 plus 00 feet of said drain, thence N 84 deg. 55' W 1313 feet to station 13 plus 13 feet in the W line of said lands at a point 245 feet S of the NW corner thereof. Total length of said drain on said lands is 1313 feet.

Thence over and across the following description: the E ½ of the SE ¼ of section 4, town and range aforesaid, Roy A. Douglas, owner, as follows. Commencing at station 13 plus 13 feet in the E line of said lands at a point 245 feet S of the NW corner of the S 36 acres of the W ½ of the SW ¼ of section 3, thence N 74 deg. 30' W 1402 feet, to station 27 plus 15 feet in the W line of said lands at a point 1100 feet N of the SW corner thereof. Total length of said drain on said lands is 1402 feet.

Thence over and across the following description: the W ½ of the SE ½ of section 4, Willis A. Culver, owner, as follows: Commencing at station 27 plus 15 feet in the E line of said lands at a point 1100 feet N of the SE corner thereof, thence N 87 deg. 35' W 505 feet, thence S 36 deg. 35' W 434 feet, thence S 2 deg. 40' E 184 feet, thence S 61 deg. W 127 feet, thence N 84 deg. W 135 feet, thence N 21 deg. W 372 feet, thence N 41 deg. 40' W 228 feet to station 47 plus 00 feet in the W line of said lands at a point 1075 feet N of the SW corner thereof. Total length of said drain on said lands is 1985 feet.

Thence over and across the following description: the SE ¼ of SW ¼ of section 4, Daniel R. Andrews and wife, Millie E., joint owners, as follows: Commencing at station 47 plus 00 feet in the E line of said lands at a point 1075 feet N of the SE corner thereof, thence N 41 deg. 40' W 38 feet, thence N 83 deg. 30' W 256 feet, thence S 41 deg. 50' W 606 feet, thence N 76 deg. 20' W 678 feet to station 62 plus 78 feet, the upper terminus of said drain, at a point in the W line of said lands 500 feet S of the center of the SW ¼ of section 4. Total length of said drain on said lands is 1578 feet.

The total length of the Main Drain is 6278 feet, or 380.48 rods.

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Thence over and across the following description: the NE ¼ of the SW ¼ of said section 4, Ray LaDu, owner, as follows: Commencing at station 2 plus 21 feet in the S line of said lands at a point 25 feet W of the SE corner thereof, thence N 30 deg. W 379 feet to station 9 plus 00 feet, the upper terminus of said Branch Drain at a point 380 feet W and 575 feet N of the E ⅛ post to the SW ¼ of section 4. Total length of said drain on said lands is 679 feet.

The total length of said Branch Drain is 900 feet, or 54.54 rods.

The total length of said Main and Branch Drains is 7,178 feet, or 435.02 rods.

SPECIFICATIONS.

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Said Main Drain shall be constructed as an open drainage channel from station 0 to station 32, with a bottom width of 3 feet, and a 1½ to 1 slope of banks. From station 32 to station 62 plus 78 feet said drain shall be constructed as a closed drain of the following diameters: Station 32 to station 47 plus 40 feet, 20-inch tile; station 47 plus 40 feet to station 56, 16-inch tile; station 56 to station 62 plus 73 feet, 15-inch tile.

Said Branch Drain shall be constructed as a closed drain of 12-inch tile throughout.

The grade of the Main Drain shall be as follows. Commencing at station 0, grade elevation, 841.50; thence a grade of 0.08% to station 32, grade elevation, 844.06; thence a rise in grade of 1.74 feet, grade elevation, 845.30; thence a grade of 0.12% to station 62 plus 78 feet, grade elevation, 849.49.

The grade of said Branch Drain shall be as follows: Commencing at station 0, grade elevation, 849.00, thence a grade of 0.15% to station 9, grade elevation, 850.35.

The right of way for construction of said drain shall include fifty (50) feet on each side of the centerline as above described.

All work of construction shall be according to plans and specifications on file in the office of the County Drain Commissioner, said work to include the construction of one (1) concrete bulkhead and one catchbasin at the places designated on the profile.

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The maximum depth is 3.86 feet. The minimum depth is 2.51 feet. The average depth is 3.58 feet.

Said drain shall be constructed with the following depths in feet and hundredths of feet, measured from a level with the tops of the aforementioned grade hubs.

SECTION ONE.

(3200 feet, or 193.93 rods open work.)

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9	4.96	26	5.25
10	4.78	27	5.77
11	5.10	28	5.49
12	5.32	29	5.11
13	5.59	30	4.63
14	5.01	31	4.80
15	5.18	32	5.57

SECTION TWO.

(3078 feet, or 186.54 rods tile.)

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Com. 20-inch.		48	3.49
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36	7.65	52	4.90
37	6.93	53	4.73
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39	5.59	55	6.49
40	6.63	56	6.67
41	6.93	Com. 15-inch.	
42	4.21	57	6.55
43	4.79	58	6.13
44	6.82	59	6.16
45	7.75	60	6.14
46	7.48	61	5.72
47	8.06	62	3.45
plus 40		plus 78	3.06

SECTION THREE.

(900 feet, or 54.54 rods tile.)

Sta.	Depth Feet	Sta.	Depth Feet
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Com. 12-inch.		6	2.51
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3	3.86	9	3.56
4	3.81		

BENCH MARKS

Basswood S Sta. 0, Elev., 848.36.
Willow S. Sta. 26, Elev., 849.73.
White Ash N Sta. 45, Elev., 856.00.
Oak N Sta. 59, Elev., 856.85.

Survey completed Dec. 19, 1919.

WOLVERINE ENGINEERING CO.,
Engineers.
By W. E. Zimmer.

By order of George Graham, County drain Commissioner of the County of Ingham, State of Michigan.

This conveyance is based upon the above described line of route and shall be deemed to include the extreme width of said Drain as shown in the survey thereof, to which survey reference is hereby made for a more particular description, and includes a release of all claims to damages in any way arising from or incident to the opening and maintaining of said Drain across said premises, and also sufficient ground on either side of the center line of said Drain for the construction thereof and for the deposit of the excavations therefrom.

Witness, our hand and seal, this 12th day of January A. D. 1920

IN PRESENCE OF

L. Lloyd Doane
Lloyd Doane

Ray LaDu [L. S.]
Ray LaDu

Dan R. Andrews [L. S.]
Dan R. Andrews

Nellie E. Andrews [L. S.]
Nellie E. Andrews

[L. S.]

[L. S.]

STATE OF MICHIGAN
County of Ingham } ss.

Be it Remembered, That on this 12th day of January A. D. 1920 before me, the subscriber, a Notary Public said County, personally came Ray LaDu, Dan R. Andrews Millie E. Andrews

to me known to be the person who executed the foregoing instrument, and acknowledged the execution thereof as his free act and deed.

Lloyd R. Doane
Lloyd R. Doane Notary Public
My Commission Expires Sept 18 1920

RECEIVED and RECORDED at 8A M
November 4, 1955
Mia Bell Humphrey
REGISTER OF DEEDS.
INGHAM COUNTY, MICHIGAN

NOTE.

1. In space indicated by figure 1, insert "me" or us" as the case may be.
2. In space indicated by figure 2, insert "I" or "we" as the case may be, to be followed by the name or names and residence.
3. In space indicated by figure 3, insert "owned" or "occupied" as the fact may be.
4. The acknowledgment may be taken by the Drain Commissioner, by a Justice of the Peace or a Notary Public. Every release should be entered by the Commissioner in his book of record.

(D6)

RELEASE OF RIGHT OF WAY

IN THE MATTER OF

Costigan Drain.

TO

Millie
Daniel Andrews & wf

Ray. La Du.

Received and filed this

day of A. D. 19

Ray LaDu et al

to

County of Ingham

REGISTER OF DEEDS
Ingham County, Mich. } ss.
Received for Record this 4 day
of Nov. 1955 at 8 o'clock
A M. and recorded in Liber 63
of Misc. on page 195
Mia Bell Humphrey
Register of Deeds

COSTIGAN DRAIN LIBER 63 PAGE 199

RELEASE OF RIGHT OF WAY. (D6) News Print, Mason.

RELEASE OF RIGHT OF WAY

For and in consideration of prospective benefits to be derived by[1] us by reason of the construction of a certain Drain, under the supervision of the County Drain Commissioner of the County of Ingham and State of Michigan, as hereinafter described,[2] We, William L. Haag, George H. McNeil , Roy A. Douglas and Willis A. Culver

of

do hereby convey and release to the County of Ingham, the right of way for a certain Drain, hereinafter more particularly designated and described, over and across the following lands, owned by us, and situated in the Township of Meridian

of the County of Ingham and State aforesaid, more particularly described as follows, to-wit:

S 36 acres of the W ½ of the SW ¼ of section 3, T4N, R1W, Meridian of Michigan.

William L. Haag and George H. McNeil, owners.

The E ½ of the SE ¼ of section 4, Town 4 North, Range 1 We West, Meridian of Michigan.

Roy A. Douglas, owner.

The W ½ of the SE ¼ of section 4 , Town 4 North, Range 1 West, Meridian of Michigan .

Willis A. Culver, owner.

The Right of Way hereby conveyed and released is for the sole and only purpose of locating and constructing over and across said premises a certain Drain, application for which in writing was made on the 28th day of June A. D. 19 17, by Ray LaDu, Roy Douglas, Dan Andrews and others, and the necessity for which has been determined by the ~~township board of the township of~~ County Drain Commissioner of the Count y of Ingham, ~~they being the township board of the township through which proposed Drain passes,~~ in ~~their~~ his order bearing date the 25th day of July A. D. 19 17, and the practicability thereof having been determined by the said Drain Commissioner of the Count y of Ingham, in his order bearing date the 30th day of December A. D. 19 19, in which said order the route and course of said Drain is described as follows, to-wit:

Refer to Survey of December 19, 1919 as recorded in Liber 63 Page 195 of miscellaneous records in the office of the Register of Deeds.

Liber 63 Page 201

This conveyance is based upon the above described line of route and shall be deemed to include the extreme width of said Drain as shown in the survey thereof, to which survey reference is hereby made for a more particular description, and includes a release of all claims to damages in any way arising from or incident to the opening and maintaining of said Drain across said premises, and also sufficient ground on either side of the center line of said Drain for the construction thereof and for the deposit of the excavations therefrom.

Witness, our hand S and seal S, this 12th day of January A. D. 1922

IN PRESENCE OF

Lloyd Doane

Lloyd Doane

Lloyd Doane

Lloyd Doane [L. S.]

Roy Douglas [L. S.]

W. A. Culver [L. S.]

William L. Haag [L. S.]

Geo. H. McNeil [L. S.]

STATE OF MICHIGAN,

STATE OF MICHIGAN,
COUNTY OF INGHAM.

Be it Remembered, That on this 15th day of January A. D. 1922 before me, the subscriber, a Notary Public of said County, personally came Wm. L. Haag & Geo. H. McNeil to me known to be the person s who executed the foregoing instrument, and acknowledge the execution thereof as their free act and deed.

Lloyd Doane

Notary Public, Ingham County, Michigan.

My commission expires 2-15-1922 19

1. In space [illegible]
2. In space indicated by figure 2, insert "I" or "we" as the case may be, and name or names and residence.
3. In space indicated by figure 3, insert "owned" or "occupied" as the fact may be.
4. The acknowledgment may be taken by the Drain Commissioner, by a Justice of the Peace of a Notary Public. Every release should be entered by the Commissioner in his book of record.

LIBER 63 PAGE 201

This conveyance is based upon the above described line of route and shall be deemed to include the extreme width of said Drain as shown in the survey thereof, to which survey reference is hereby made for a more particular description, and includes a release of all claims to damages in any way arising from or incident to the opening and maintaining of said Drain across said premises, and also sufficient ground on either side of the center line of said Drain for the construction thereof and for the deposit of the excavations therefrom.

Witness, our hand S and seal S, this 12th day of January A. D. 1920

IN PRESENCE OF

Lloyd Doane
Lloyd Doane

Lloyd Doane
Lloyd Doane

Roy Douglas [L. S.]
Roy Douglas

W. A. Culver [L. S.]
W. A. Culver

William L. Haag [L. S.]
William L. Haag

Geo. H. McNeil [L. S.]
Geo. H. McNeil

[L. S.]

STATE OF MICHIGAN, } ss
County of Ingham

Be it Remembered, That on this 12th day of January A. D. 1920 before me, the subscriber, a Notary Public said County, personally came Roy Douglas, W. A. Culver

to me known to be the person S who executed the foregoing instrument, and she acknowledged the execution thereof as h is free act and deed.

Lloyd R. Doane
Lloyd R. Doane
Notary Public
My Commission expires Sept 15, 1920

RECEIVED and RECORDED at 8 A. M
November 4, 1955
Mia Bell Humphrey
REGISTER OF DEEDS.
INGHAM COUNTY, MICHIGAN

NOTE.

1. In space indicated by figure 1, insert "me" or "us" as the case may be.
2. In space indicated by figure 2, insert "I" or "we" as the case may be, to be followed by the name or names and residence.
3. In space indicated by figure 3, insert "owned" or "occupied" as the fact may be.
4. The acknowledgment may be taken by the Drain Commissioner, by a Justice of the Peace of a Notary Public. Every release should be entered by the Commissioner in his book of record.

(D6)

RELEASE OF RIGHT OF WAY

IN THE MATTER OF

Castigan Drain

TO

Wm. L. Haag & Sec.
McNeil — Roy Douglas

Willis A. Culver

Received and filed this

day of A. D. 191

OCT 5 1921

VERN [illegible] COUNTY CLERK

Roy Douglas et al

to

County of Ingham

REGISTER OF DEEDS
Ingham County, Mich. } ss.

Received for Record this 4 day of Nov. 1955 at 8 o'clock A.M. and recorded in Liber 63 of Misc. on page 199

Mia Bell Humphrey
Register of Deeds

Survey of the Costigan Drain

Survey of the Costigan Drain, located on sections 3 and 4, Town 4 North, Range 1 West, Township of Meridian, County of Ingham, and State of Michigan, the centerline thereof being described as follows:

Commencing in the Pine Lake Outlet Drain at a point in the N&S ⅛ line to the SW ¼ of said section 3, 678 feet N of the S ⅛ post to said SW ¼, thence over and across the following description: S 36 acres of the W ½ of the SW ¼ of section 3, William L. Haag and George H. McNeil, owners, as follows: Commencing at station 0 plus 00 feet of said drain, thence N 84 deg. 55' W 1313 feet to station 13 plus 13 feet in the W line of said lands at a point 245 feet S of the NW corner thereof. Total length of said drain on said lands is 1313 feet.

Thence over and across the following description: the E ½ of the SE ¼ of section 4, town and range aforesaid, Roy A. Douglas, owner, as follows. Commencing at station 13 plus 13 feet in the E line of said lands at a point 24.5 feet S of the NW corner of the S 36 acres of the W ½ of the SW ¼ of section 3, thence N 74 deg. 30' W 1402 feet, to station 27 plus 15 feet in the W line of said lands at a point 1100 feet N of the SW corner thereof. Total length of said drain on said lands is 1402 feet.

Thence over and across the following description: the W ½ of the SE ½ of section 4, Willis A. Culver, owner, as follows: Commencing at station 27 plus 15 feet in the E line of said lands at a point 1100 feet N of the SE corner thereof, thence N 87 deg. 35' W 505 feet, thence S 36 deg. 35' W 434 feet, thence S 2 deg. 40' E 184 feet, thence S 61 deg. W 127 feet, thence N 84 deg. W 135 feet, thence N 21 deg. W 372 feet, thence N 41 deg. 40' W 228 feet to station 47 plus 00 feet in the W line of said lands at a point 1075 feet N of the SW corner thereof. Total length of said drain on said lands is 1985 feet.

Thence over and across the following description: the SE ¼ of SW ¼ of section 4, Daniel R. Andrews and wife, Millie E., joint owners, as follows: Commencing at station 47 plus 00 feet in the E line of said lands at a point 1075 feet N of the SE corner thereof, thence N 41 deg. 40' W 38 feet, thence N 83 deg. 30' W 256 feet, thence S 41 deg. 50' W 606 feet, thence N 76 deg. 20' W 678 feet to station 62 plus 78 feet, the upper terminus of said drain, at a point in the W line of said lands 500 feet S of the center of the SW ¼ of section 4. Total length of said drain on said lands is 1578 feet.

The total length of the Main Drain is 6278 feet, or 380.48 rods.

BRANCH DRAIN.

A branch to the Main Drain is located as follows: Commencing at station 47 plus 38 feet of the Main Drain, at a point 221 feet S and 25 feet W of the E ⅛ post of the SW ¼ of section 4, town and range aforesaid, thence over and across the following description: the SE ¼ of the SW ¼ of said section 4, Daniel R. Andrews and wife, Millie E., joint owners, as follows: Commencing at station 0 plus 00 feet of said Branch Drain, thence N 1 deg. 30' E 221 feet to station 2 plus 21 feet in the N line of said lands at a point 25 feet W of the NE corner thereof. Total length of said drain on said lands is 221 feet.

Thence over and across the following description: the NE ¼ of the SW ¼ of said section 4, Ray LaDu, owner, as follows: Commencing at station 2 plus 21 feet in the S line of said lands at a point 25 feet W of the SE corner thereof, thence N 30 deg. W 379 feet to station 9 plus 00 feet, the upper terminus of said Branch Drain at a point 380 feet W and 575 feet N of the E ⅛ post to the SW ¼ of section 4. Total length of said drain on said lands is 679 feet.

The total length of said Branch Drain is 900 feet, or 54.54 rods.

The total length of said Main and Branch Drains is 7,178 feet, or 435.02 rods.

SPECIFICATIONS.

Station stakes and grade hubs are set every 100 feet distant throughout the course of said drain and branch, except between station 62 and the upper terminus of the Main Drain, which is 78 feet; and 25 feet to the right of the centerline, going upstream, from station 0 to station 33 of the Main Drain, and 5 feet to the right of the centerline of the remaining portion of the Main Drain and throughout the course of the Branch Drain.

Said Main Drain shall be constructed as an open drainage channel from station 0 to station 32, with a bottom width of 3 feet, and a 1½ to 1 slope of banks. From station 32 to station 62 plus 78 feet said drain shall be constructed as a closed drain of the following diameters: Station 32 to station 47 plus 40 feet, 20-inch tile; station 47 plus 40 feet to station 56, 16-inch tile; station 56 to station 62 plus 78 feet, 15-inch tile.

Said Branch Drain shall be constructed as a closed drain of 12-inch tile throughout.

The grade of the Main Drain shall be as follows. Commencing at station 0, grade elevation, 841.50; thence a grade of 0.08% to station 32, grade elevation, 844.06; thence a rise in grade of 1.74 feet, grade elevation, 845.80; thence a grade of 0.12% to station 62 plus 78 feet, grade elevation, 849.49.

The grade of said Branch Drain shall be as follows: Commencing at station 0, grade elevation, 849.00, thence a grade of 0.15% to station 9, grade elevation, 850.35.

The right of way for construction of said drain shall include fifty (50) feet on each side of the centerline as above described.

All work of construction shall be according to plans and specifications on file in the office of the County Drain Commissioner, said work to include the construction of one (1) concrete bulkhead and one catchbasin at the places designated on the profile.

The total fall of the Main Drain is 7.99 feet. The maximum depth of the open portion is 6.79 feet. The minimum depth is 4.63 feet. The average depth of the open portion is 5.33 feet.

The maximum depth of the closed portion of the Main Drain is 8.06 feet. The minimum depth is 3.06 feet. The average depth is 5.92 feet.

The total fall of the Branch Drain is 1.35 feet.

The maximum depth is 3.86 feet. The minimum depth is 2.51 feet. The average depth is 3.58 feet.

Said drain shall be constructed with the following depths in feet and hundredths of feet, measured from a level with the tops of the aforementioned grade hubs.

SECTION ONE.

(3200 feet, or 193.93 rods open work.)

Sta.	Depth Feet	Sta.	Depth Feet
0	5.48	16	5.00
Com. 3-ft. bot.		17	5.32
1	5.30	18	5.69
2	5.67	19	5.61
3	4.84	20	5.28
4	5.06	21	5.15
5	5.43	22	6.47
6	5.35	23	6.79
7	5.22	24	5.31
8	4.89	25	5.43
9	4.96	26	5.25
10	4.78	27	5.77
11	5.10	28	5.49
12	5.32	29	5.11
13	5.59	30	4.63
14	5.01	31	4.80
15	5.18	32	5.57

SECTION TWO.

(3078 feet, or 186.54 rods tile.)

Sta.	Depth Feet	Sta.	Depth Feet
32	3.83	Com. 16-inch.	
Com. 20-inch.		48	3.49
33	4.89	49	5.22
34	6.24	50	4.75
35	6.17	51	5.02
36	7.65	52	4.90
37	6.93	53	4.73
38	5.31	54	3.96
39	5.59	55	6.49
40	6.63	56	6.67
41	6.93	Com. 15-inch.	
42	4.21	57	6.55
43	4.79	58	6.13
44	6.82	59	6.16
45	7.75	60	6.14
46	7.48	61	5.72
47	8.06	62	3.45
plus 40		plus 78	3.06

SECTION THREE.

(900 feet, or 54.54 rods tile.)

Sta.	Depth Feet	Sta.	Depth Feet
0	3.61	5	3.51
Com. 12-inch.		6	2.51
1	3.86	7	3.71
2	3.71	8	3.71
3	3.86	9	3.56
4	3.81		

BENCH MARKS

Basswood S Sta. 0, Elev., 848.36.
Willow S. Sta. 26, Elev., 849.73.
White Ash N Sta. 45, Elev., 856.00.
Oak N Sta. 59, Elev., 856.85.

Survey completed Dec. 19, 1919.

WOLVERINE ENGINEERING CO.,
Engineers.
By W. E. Zimmer.

By order of George Graham, County drain Commissioner of the County of Ingham, State of Michigan.

COSTIGAN DRAIN LIBER 63 PAGE 199

RELEASE OF RIGHT OF WAY. (D6) News Print, Mason.

RELEASE OF RIGHT OF WAY

For and in consideration of prospective benefits to be derived by[1] us by reason of the construction of a certain Drain, under the supervision of the County Drain Commissioner of the County of Ingham and State of Michigan, as hereinafter described,[2] We, William L. Haag, George H. McNeil , Roy A. Douglas and Willis A. Culver

of

do hereby convey and release to the County of Ingham, the right of way for a certain Drain, hereinafter more particularly designated and described, over and across the following lands, owned by us, and situated in the Township of Meridian

of the County of Ingham and State aforesaid, more particularly described as follows, to-wit:

S 36 acres of the W ½ of the SW ¼ of section 3, T4N, R1W, Meridian of Michigan.

William L. Haag and George H. McNeil, owners.

The E ½ of the SE ¼ of section 4, Town 4 North, Range 1 We West, Meridian of Michigan.

Roy A. Douglas, owner.

The W ½ of the SE ¼ of section 4 , Town 4 North, Range 1 West, Meridian of Michigan .

Willis A. Culver, owner.

The Right of Way hereby conveyed and released is for the sole and only purpose of locating and constructing over and across said premises a certain Drain, application for which in writing was made on the 28th day of June A. D. 19 17, by Ray LaDu, Roy Douglas, Dan Andrews and others, and the necessity for which has been determined by the ~~township board of the township of~~ County Drain Commissioner of the Count y of Ingham, ~~they being the township board of the township through which proposed Drain passes,~~ in ~~their~~ his order bearing date the 25th day of July A. D. 19 17, and the practicability thereof having been determined by the said Drain Commissioner of the Count y of Ingham, in his order bearing date the 30th day of December A. D. 19 19, in which said order the route and course of said Drain is described as follows, to-wit:

Refer to Survey of December 19, 1919 as recorded in Liber 63 Page 195 of miscellaneous records in the office of the Register of Deeds.

Liber 63 Page 201

This conveyance is based upon the above described line of route and shall be deemed to include the extreme width of said Drain as shown in the survey thereof, to which survey reference is hereby made for a more particular description, and includes a release of all claims to damages in any way arising from or incident to the opening and maintaining of said Drain across said premises, and also sufficient ground on either side of the center line of said Drain for the construction thereof and for the deposit of the excavations therefrom.

Witness, our hand S and seal S, this 12th day of January A. D. 1922

IN PRESENCE OF

Lloyd Doane

Lloyd Doane

Lloyd Doane

Lloyd Doane [L. S.]

Roy Douglas [L. S.]

W. A. Culver [L. S.]

William L. Haag [L. S.]

Geo. H. McNeil [L. S.]

STATE OF MICHIGAN,

STATE OF MICHIGAN,
COUNTY OF INGHAM.

Be it Remembered, That on this 15th day of January A. D. 1922 before me, the subscriber, a Notary Public of said County, personally came Wm. L. Haag & Geo. H. McNeil to me known to be the person s who executed the foregoing instrument, and acknowledge the execution thereof as their free act and deed.

Lloyd Doane

Notary Public, Ingham County, Michigan.

My commission expires 2-15-1922 19

1. In space [illegible]
2. In space indicated by figure 2, insert "I" or "we" as the case may be, and name or names and residence.
3. In space indicated by figure 3, insert "owned" or "occupied" as the fact may be.
4. The acknowledgment may be taken by the Drain Commissioner, by a Justice of the Peace of a Notary Public. Every release should be entered by the Commissioner in his book of record.

LIBER 63 PAGE 201

This conveyance is based upon the above described line of route and shall be deemed to include the extreme width of said Drain as shown in the survey thereof, to which survey reference is hereby made for a more particular description, and includes a release of all claims to damages in any way arising from or incident to the opening and maintaining of said Drain across said premises, and also sufficient ground on either side of the center line of said Drain for the construction thereof and for the deposit of the excavations therefrom.

Witness, our hand S and seal S, this 12th day of January A. D. 1920

IN PRESENCE OF

Lloyd Doane
Lloyd Doane

Lloyd Doane
Lloyd Doane

Roy Douglas [L. S.]
Roy Douglas

W. A. Culver [L. S.]
W. A. Culver

William L. Haag [L. S.]
William L. Haag

Geo. H. McNeil [L. S.]
Geo. H. McNeil

[L. S.]

STATE OF MICHIGAN, } ss
County of Ingham

Be it Remembered, That on this 12th day of January A. D. 1920 before me, the subscriber, a Notary Public said County, personally came Roy Douglas, W. A. Culver

to me known to be the person S who executed the foregoing instrument, and she acknowledged the execution thereof as h is free act and deed.

Lloyd R. Doane
Lloyd R. Doane
Notary Public
My Commission expires Sept 15, 1920

RECEIVED and RECORDED at 8 A. M
November 4, 1955
Mia Bell Humphrey
REGISTER OF DEEDS.
INGHAM COUNTY, MICHIGAN

NOTE.

1. In space indicated by figure 1, insert "me" or "us" as the case may be.
2. In space indicated by figure 2, insert "I" or "we" as the case may be, to be followed by the name or names and residence.
3. In space indicated by figure 3, insert "owned" or "occupied" as the fact may be.
4. The acknowledgment may be taken by the Drain Commissioner, by a Justice of the Peace of a Notary Public. Every release should be entered by the Commissioner in his book of record.

(D6)

RELEASE OF RIGHT OF WAY

IN THE MATTER OF

Castigan Drain

TO

Wm. L. Haag & Sec.
McNeil — Roy Douglas

Willis A. Culver

Received and filed this

day of A. D. 191

OCT 5 1921

VERN [illegible] COUNTY CLERK

Roy Douglas et al

to

County of Ingham

REGISTER OF DEEDS
Ingham County, Mich. } ss.

Received for Record this 4 day of Nov. 1955 at 8 o'clock A.M. and recorded in Liber 63 of Misc. on page 199

Mia Bell Humphrey
Register of Deeds

Survey of the Costigan Drain

Survey of the Costigan Drain, located on sections 3 and 4, Town 4 North, Range 1 West, Township of Meridian, County of Ingham, and State of Michigan, the centerline thereof being described as follows:

Commencing in the Pine Lake Outlet Drain at a point in the N&S ⅛ line to the SW ¼ of said section 3, 678 feet N of the S ⅛ post to said SW ¼, thence over and across the following description: S 36 acres of the W ½ of the SW ¼ of section 3, William L. Haag and George H. McNeil, owners, as follows: Commencing at station 0 plus 00 feet of said drain, thence N 84 deg. 55' W 1313 feet to station 13 plus 13 feet in the W line of said lands at a point 245 feet S of the NW corner thereof. Total length of said drain on said lands is 1313 feet.

Thence over and across the following description: the E ½ of the SE ¼ of section 4, town and range aforesaid, Roy A. Douglas, owner, as follows. Commencing at station 13 plus 13 feet in the E line of said lands at a point 24.5 feet S of the NW corner of the S 36 acres of the W ½ of the SW ¼ of section 3, thence N 74 deg. 30' W 1402 feet, to station 27 plus 15 feet in the W line of said lands at a point 1100 feet N of the SW corner thereof. Total length of said drain on said lands is 1402 feet.

Thence over and across the following description: the W ½ of the SE ½ of section 4, Willis A. Culver, owner, as follows: Commencing at station 27 plus 15 feet in the E line of said lands at a point 1100 feet N of the SE corner thereof, thence N 87 deg. 35' W 505 feet, thence S 36 deg. 35' W 434 feet, thence S 2 deg. 40' E 184 feet, thence S 61 deg. W 127 feet, thence N 84 deg. W 135 feet, thence N 21 deg. W 372 feet, thence N 41 deg. 40' W 228 feet to station 47 plus 00 feet in the W line of said lands at a point 1075 feet N of the SW corner thereof. Total length of said drain on said lands is 1985 feet.

Thence over and across the following description: the SE ¼ of SW ¼ of section 4, Daniel R. Andrews and wife, Millie E., joint owners, as follows: Commencing at station 47 plus 00 feet in the E line of said lands at a point 1075 feet N of the SE corner thereof, thence N 41 deg. 40' W 38 feet, thence N 83 deg. 30' W 256 feet, thence S 41 deg. 50' W 606 feet, thence N 76 deg. 20' W 678 feet to station 62 plus 78 feet, the upper terminus of said drain, at a point in the W line of said lands 500 feet S of the center of the SW ¼ of section 4. Total length of said drain on said lands is 1578 feet.

The total length of the Main Drain is 6278 feet, or 380.48 rods.

BRANCH DRAIN.

A branch to the Main Drain is located as follows: Commencing at station 47 plus 38 feet of the Main Drain, at a point 221 feet S and 25 feet W of the E ⅛ post of the SW ¼ of section 4, town and range aforesaid, thence over and across the following description: the SE ¼ of the SW ¼ of said section 4, Daniel R. Andrews and wife, Millie E., joint owners, as follows: Commencing at station 0 plus 00 feet of said Branch Drain, thence N 1 deg. 30' E 221 feet to station 2 plus 21 feet in the N line of said lands at a point 25 feet W of the NE corner thereof. Total length of said drain on said lands is 221 feet.

Thence over and across the following description: the NE ¼ of the SW ¼ of said section 4, Ray LaDu, owner, as follows: Commencing at station 2 plus 21 feet in the S line of said lands at a point 25 feet W of the SE corner thereof, thence N 30 deg. W 379 feet to station 9 plus 00 feet, the upper terminus of said Branch Drain at a point 380 feet W and 575 feet N of the E ⅛ post to the SW ¼ of section 4. Total length of said drain on said lands is 679 feet.

The total length of said Branch Drain is 900 feet, or 54.54 rods.

The total length of said Main and Branch Drains is 7,178 feet, or 435.02 rods.

SPECIFICATIONS.

Station stakes and grade hubs are set every 100 feet distant throughout the course of said drain and branch, except between station 62 and the upper terminus of the Main Drain, which is 78 feet; and 25 feet to the right of the centerline, going upstream, from station 0 to station 33 of the Main Drain, and 5 feet to the right of the centerline of the remaining portion of the Main Drain and throughout the course of the Branch Drain.

Said Main Drain shall be constructed as an open drainage channel from station 0 to station 32, with a bottom width of 3 feet, and a 1½ to 1 slope of banks. From station 32 to station 62 plus 78 feet said drain shall be constructed as a closed drain of the following diameters: Station 32 to station 47 plus 40 feet, 20-inch tile; station 47 plus 40 feet to station 56, 16-inch tile; station 56 to station 62 plus 78 feet, 15-inch tile.

Said Branch Drain shall be constructed as a closed drain of 12-inch tile throughout.

The grade of the Main Drain shall be as follows. Commencing at station 0, grade elevation, 841.50; thence a grade of 0.08% to station 32, grade elevation, 844.06; thence a rise in grade of 1.74 feet, grade elevation, 845.80; thence a grade of 0.12% to station 62 plus 78 feet, grade elevation, 849.49.

The grade of said Branch Drain shall be as follows: Commencing at station 0, grade elevation, 849.00, thence a grade of 0.15% to station 9, grade elevation, 850.35.

The right of way for construction of said drain shall include fifty (50) feet on each side of the centerline as above described.

All work of construction shall be according to plans and specifications on file in the office of the County Drain Commissioner, said work to include the construction of one (1) concrete bulkhead and one catchbasin at the places designated on the profile.

The total fall of the Main Drain is 7.99 feet. The maximum depth of the open portion is 6.79 feet. The minimum depth is 4.63 feet. The average depth of the open portion is 5.33 feet.

The maximum depth of the closed portion of the Main Drain is 8.06 feet. The minimum depth is 3.06 feet. The average depth is 5.92 feet.

The total fall of the Branch Drain is 1.35 feet.

The maximum depth is 3.86 feet. The minimum depth is 2.51 feet. The average depth is 3.58 feet.

Said drain shall be constructed with the following depths in feet and hundredths of feet, measured from a level with the tops of the aforementioned grade hubs.

SECTION ONE.

(3200 feet, or 193.93 rods open work.)

Sta.	Depth Feet	Sta.	Depth Feet
0	5.48	16	5.00
Com. 3-ft. bot.		17	5.32
1	5.30	18	5.69
2	5.67	19	5.61
3	4.84	20	5.28
4	5.06	21	5.15
5	5.43	22	6.47
6	5.35	23	6.79
7	5.22	24	5.31
8	4.89	25	5.43
9	4.96	26	5.25
10	4.78	27	5.77
11	5.10	28	5.49
12	5.32	29	5.11
13	5.59	30	4.63
14	5.01	31	4.80
15	5.18	32	5.57

SECTION TWO.

(3078 feet, or 186.54 rods tile.)

Sta.	Depth Feet	Sta.	Depth Feet
32	3.83	Com. 16-inch.	
Com. 20-inch.		48	3.49
33	4.89	49	5.22
34	6.24	50	4.75
35	6.17	51	5.02
36	7.65	52	4.90
37	6.93	53	4.73
38	5.31	54	3.96
39	5.59	55	6.49
40	6.63	56	6.67
41	6.93	Com. 15-inch.	
42	4.21	57	6.55
43	4.79	58	6.13
44	6.82	59	6.16
45	7.75	60	6.14
46	7.48	61	5.72
47	8.06	62	3.45
plus 40		plus 78	3.06

SECTION THREE.

(900 feet, or 54.54 rods tile.)

Sta.	Depth Feet	Sta.	Depth Feet
0	3.61	5	3.51
Com. 12-inch.		6	2.51
1	3.86	7	3.71
2	3.71	8	3.71
3	3.86	9	3.56
4	3.81		

BENCH MARKS

Basswood S Sta. 0, Elev., 848.36.
Willow S. Sta. 26, Elev., 849.73.
White Ash N Sta. 45, Elev., 856.00.
Oak N Sta. 59, Elev., 856.85.

Survey completed Dec. 19, 1919.

WOLVERINE ENGINEERING CO.,
Engineers.
By W. E. Zimmer.

By order of George Graham, County drain Commissioner of the County of Ingham, State of Michigan.

OFFICE OF THE INGHAM COUNTY DRAIN COMMISSIONER

IN THE MATTER OF: COSTIGAN COUNTY DRAIN

FIRST ORDER OF DETERMINATION

WHEREAS, a Petition, dated September 20, 1993, has been made and filed with me, Patrick E. Lindemann, the County Drain Commissioner of the County of Ingham, State of Michigan, praying for extending of a certain drain described as follows:

Beginning at a point 611 ft. West and 726 ft. North from the N 1/4 Post of Sec 9, Meridian Twp., Ingham County, State of Michigan. Thence S 33 deg 20'36"W 458.00 ft., thence S 6 deg. 55'3"E 274.00 ft, thence S 26 deg 33'54"E 42.50 ft., thence South 62.00 feet, thence East 15.00 ft., thence South 50.00 feet., thence S 44 deg 3'35"E 188.30 ft., thence East 277.50 ft., thence S 66 deg. E 40 ft. to the terminus at a point 351.03 ft. West and 230.57 ft. South of the N 1/4 Post of said section 9.

The Petition was signed by Victoria Hallman, Julie Edwards, Joe Edwards Jennifer K. Kreta, Val Fuehrer, Milton W. Fuehrer Robert Bilger and Donna Bilger, whose lands will be liable for an assessment of the drain.

WHEREAS, The Board of Determination, consisting of Bruce Stark, Diane Castle, Wayne Wood in a meeting of the Board held on January 20, 1994, according to the statute, by a majority vote of the Board, determined that the proposed drain is necessary and conducive to the public health, convenience or welfare; and

WHEREAS, as a means of determining the necessity of the proposed drain, I did cause a survey and measurement to be made by a competent engineer or surveyor: Kater Engineering.

NOW, THEREFORE, the proposed drain having been determined to be necessary and conducive to the public health, convenience or welfare of Meridian Township and that

the proposed drain should be granted, I do hereby determine from the survey that the drain should be located, established and constructed in accordance with the survey filed in my office as is hereinafter more particularly specified.

I DO FURTHER ORDER AND DETERMINE that the name of the drain shall be called the "Costigan Drain" by which name and/or number it shall thereafter be known and recorded.

IT IS THEREUPON FURTHER ORDERED AND DETERMINED that the commencement, route and terminus of the drain, with the width, length and depth thereof, shall be in accordance with the engineer's survey and is as follows:

Beginning at the N 1/4 Post,Sec. 9, T4N, RlW, Ingham County Michigan, thence S 100 ft, thence E272 ft to the west line of the Sleepy Hollow Subdivision. Thence S to the Sw cor of Lot 5 of Sleepy Hollow Subdivision, thence SW'ly to a point 210 ft SE'ly of the NW cor of Lots 6 & 7 along the lot line, thence SW'ly to a point 200 ft S of the NW cor of Lot 7, thence W 204.5 ft, thence N 55 deg 24'30" W 176.14 ft, thence N 22 ft, thence W 327.5 ft. thence N 246 ft, thence NW'ly to the NE cor of Lot 28 of Everett Farms Subdivision, thence W to the NW cor of Lot 32 of Everett FArms Subdivision, thence N to the Se cor of lot 34 of Everett Farms Subdivision, thence NW'ly to the NW cor of Lot 34, thence W 33 ft to the center of Everett Lane, thence N 50 ft to the center of Lake Lansing Road, thence E 183 ft, thence N 540 ft, thence E 860 ft, thence S 540 ft, thence E 497 ft to the POB.

Dated: 3-27-1998

Patrick E. Lindemann
Ingham County Drain Commissioner

(5)

DEV103

COPY

B:3257 P:1085 3/13/07 11:58 AM Pages: 5
2007-010988 MISCELLANEOUS Receipt #24310
Paula Johnson, Ingham County, Michigan

RELEASE OF RIGHT-OF-WAY

Costigan Drain

For and in consideration of prospective benefits to be derived by reason of the establishing and maintaining of a certain Drain under the supervision of the County Drain Commissioner of the County of Ingham and State of Michigan, as hereinafter described,

G.S. Fedewa Builders, Inc.
a Michigan Corporation
5570 Okemos Road
East Lansing, Michigan 48823

does hereby convey and release to the Costigan Drain Drainage District the Right-of-Way for a certain Drain, hereinafter more particularly designated and described, over and across a portion of the following lands owned by them and situated in the Township of Meridian, County and State aforesaid, which lands owned are described as follows:

Plat of Sierra Ridge Estates as recorded in Liber 56, Pages 42-44, Ingham County Records and as shown on the recorded plat thereof, EXCEPT Lots 1, 2, 3, 4, 6, 7, 8, 9, 11, 16, 21, 23, 24, 26, and 28.

AND ALSO: Undeveloped land of Sierra Ridge Estates, part of the Southeast ¼ of Section 4, T4N, R1W, Meridian Township, Ingham County, Michigan; Commencing at the South ¼ corner of Section 4, T4N, R1W, thence N00°08'49"E along the North and South ¼ line of said section, 851.97 feet to the point of beginning of this description; thence continuing N00°08'49"E along said North and South ¼ line, 1694.00 feet to the Center of Section 4, T4N, R1W; thence S89°44'32"E, 1322.42 feet along the East & West ¼ line of said section 4 to the Northeast Corner of the West ½ of the Southeast ¼ of said Section 4; thence S00°04'18"W, 1506.94 feet along the East line of the West ½ of the Southeast ¼ of said Section 4; thence along the Northerly line of the Plat of Sierra Ridge Estates, as recorded in Liber 56, Pages 42 - 44, Ingham County Records the following 13 courses; thence N89°55'42"W, 559.43 feet; thence S77°11'53"W, 91.11 feet; thence S63°28'52"W, 142.00 feet; thence

INGHAM COUNTY
REGISTER OF DEEDS
RECEIVED
2007 MAR 13 A 9:07

Southeasterly along the arc of a curve to the left 47.02 feet, radius 736.00 feet, central angle 03°39'36", chord bearing S28°20'50"E, 47.01 feet; thence S59°49'14"W, 170.00 feet; thence S44°34'36"W, 68.24 feet; thence S59°12'28"W, 50.00 feet; thence S66°07'08"W, 87.62 feet; thence N20°47'26"W, 100.00 feet; thence N89°59'54"W, 59.00 feet; thence N00°00'06"E, 83.44 feet; thence S69°38'50"W, 111.40 feet; thence N89°51'11"W, 55.00 feet; to the point of beginning. Containing 48.771 acres.

The Right-of-Way or Easement is conveyed over that land described as follows:

Cross Lot Easement 1 on Sierra Ridge Estates

A 20.00 foot wide easement lying 10.00 feet on either side of the following described centerline, being situated in Meridian Township, Ingham County, Michigan, further described as follows: Commencing at the South ¼ corner of Section 4, T4N, R1W, and running thence N00°08'49"E along the North and South ¼ line of said Section 736.00 feet; thence East 55.00 feet to the Point of Beginning of this description; thence N00°08'49"E 215.73 feet to the Point of Ending.

Cross Lot Easement 2 on Sierra Ridge Estates

A 20.00 foot wide strip of land lying 10.00 feet on either side of the following described centerline, being situated in Meridian Township, Ingham County, Michigan, further described as follows: Commencing at the South ¼ corner of Section 4, T4N, R1W; thence N00°08'49"E along the North and South ¼ line of said Section 520.00 feet; thence East 55.00 feet to the Point of Beginning of this description; thence N00°08'49"E 150.00 feet to the Point of Ending.

Cross Lot Easement 3 on Sierra Ridge Estates

Commencing at the South ¼ corner of Section 4, T4N, R1W; thence S90°00'00"E along the South line of said Section 1325.89 feet along the South line of said Section 4 to the Southeast corner of the West ½ of the Southeast ¼ of Section 4; thence N00°04'18"E, 1082.94 feet along the East line of the West ½ of the Southeast ¼ of Section 4 to the point of beginning; thence N89°55'42"W, 480.00 feet; thence S39°14'57"W, 79.12 feet; thence N68°28'52"W, 32.96 feet; thence Northwesterly 100.21 feet along a curve to the left, said curve having a radius of 213.00 feet, a central angle of 26°57'17", and a long chord of 99.28 feet and bearing N00°47'01"E; thence S77°11'53"W, 11.12 feet; thence N39°14'57"E, 67.70 feet; thence N72°48'52"E, 32.29 feet; thence N81°30'24"E, 61.34 feet; thence S87°28'14"E, 436.42 feet to the East line of the West ½ of the Southeast ¼ of Section 4; thence S00°04'18"W, 100.00 feet to the point of beginning.

Easement 4 As Shown on the Sierra Ridge Estates
32 feet wide Drain Easement
Commencing at the South ¼ corner of Section 4, T4N, R1W, Meridian Township, Ingham County, Michigan; thence 951.87 feet, N00°08'49"E along the North & South ¼ line of said Section 4; thence S89°51'11"E, 33.00 feet to the point of beginning; thence N00°08'49"E, 115.00 feet; thence S89°51'11"E, 32.00 feet; thence S00°08'49"W, 111.26 feet; thence S69°38'50"W, 10.68 feet; thence N89°51'11"W, 22.00 feet to the point of beginning.

Storm Water Detention Pond West located on the Sierra Ridge Estates
Commencing at the South ¼ corner of Section 4, T4N, R1W and running thence N00°08'49"E along the North and South ¼ line of said Section 520.00 feet to the South line of the Plat of Sierra Ridge Estates; thence N90°00'00"E along said line 170.38 feet to the Southeast corner of Lot 12, Sierra Ridge Estates according to the Plat thereof, to the Point of Beginning of this description; thence N00°00'06"E along the East line of said Lot 149.99 feet to the South line of Sacramento Way; thence S89°59'54"E along said line 135.82 feet; thence Northeasterly 48.28 feet along a curve to the left, said curve having a radius of 216.00 feet, a central angle of 12°48'19", and a long chord of 48.17 feet and bearing N83°35'57"E to the Northwest corner of Lot 11; thence S12°48'13"E along the West line of Lots 11 and 10, 159.32 feet to the South line of the plat of Sierra Ridge Estates; thence N90°00'00"W along said line 219.00 feet to the Point of Beginning.

This conveyance is based upon the above-described line of route and shall be deemed to include the extreme width of said Drain as shown in the survey thereof, to which survey reference is hereby made for a more particular description, and includes a release of all claims to damages in any way arising from or incident to the opening and maintaining of said Drain across said premises; and also the feet of ground on either side of the center line of said Drain, for the construction thereof; and shall be deemed a sufficient conveyance to vest in the Drainage District an easement in said lands for the uses and purposes of drainage together with such rights of entry upon, passage over, deposit of excavated earth and storage of material and equipment on such lands, as may be necessary or useful for the construction, maintenance, improvement, cleaning out and repair of such drain.

G.S. Fedewa Builders, Inc.

Gerald S. Fedewa
President

STATE OF MICHIGAN)
)ss
COUNTY OF INGHAM)

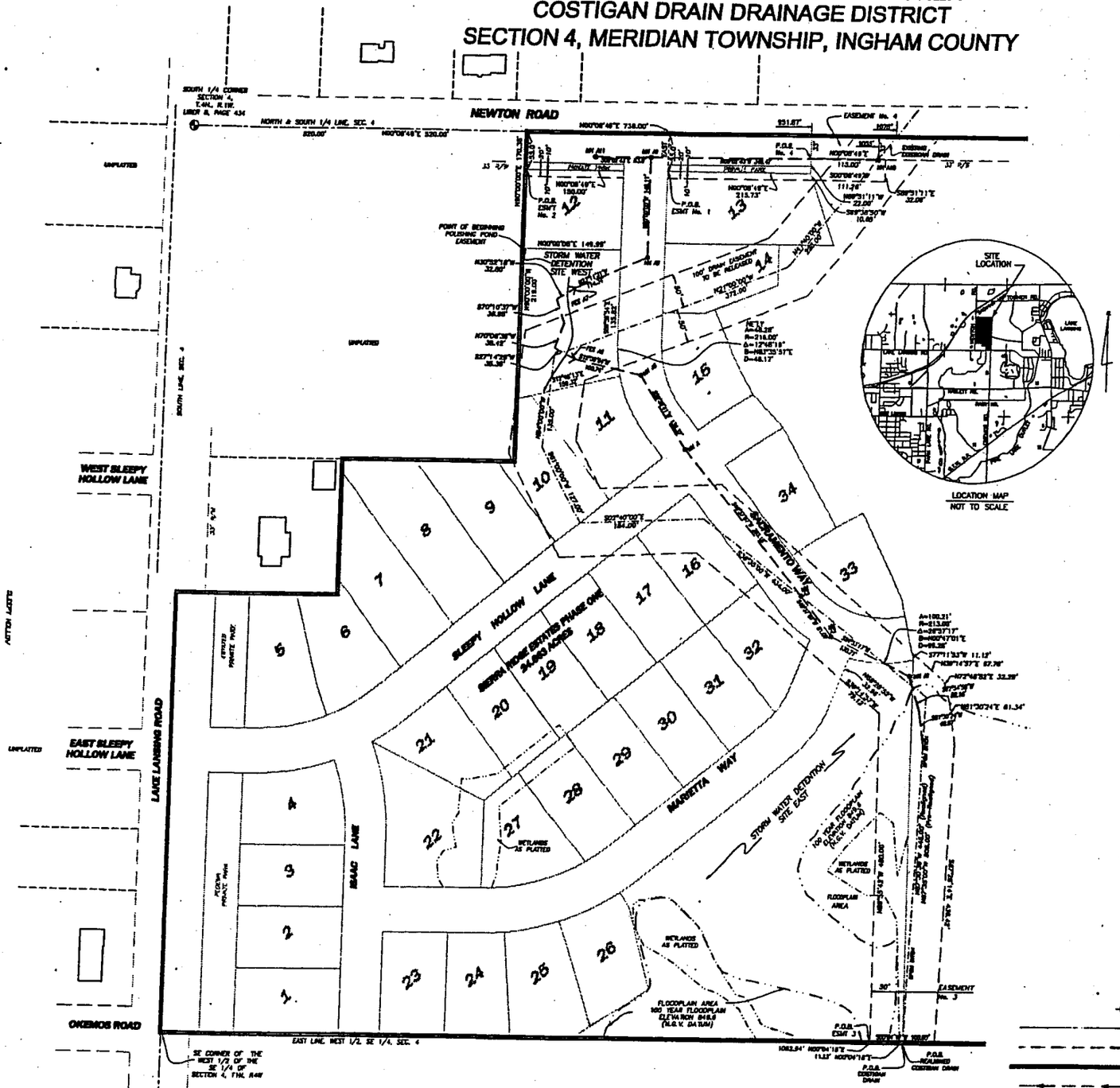
The foregoing instrument was acknowledged before me this 9th day of March, 2007, by Gerald S. Fedewa, President of G.S. Fedewa Builders, Inc.

Notary Public
State of Michigan, County of INGHAM
My commission expires: 12/14/2011
Acting in the County of INGHAM

CECELIA KRAMER
NOTARY PUBLIC - STATE OF MICHIGAN
COUNTY OF INGHAM
My Commission Expires Dec. 14, 2011
Acting in the County of Ingham

Drafted by and return to:
Ingham County Drain Commissioner's Office
707 Buhl Avenue
Mason, Michigan 48854

PATRICK E. LINDEMANN
INGHAM COUNTY DRAIN COMMISSIONER
COSTIGAN DRAIN DRAINAGE DISTRICT
SECTION 4, MERIDIAN TOWNSHIP, INGHAM COUNTY



0' 80' 160' 240'

SCALE: 1"=80'

Abandoned Costigan Drain

Over and across the following description As recorded in Liber 83, Page 185, Ingham County Records, Ingham County Michigan, drain to be abandoned as follows: the W 1/2 of the SE 1/4 of section 4, Willis A. Culver, owner, Commencing at station 27 plus 15 feet in the E line of said lands at a point 1100 feet N of the SE corner thereof, thence N 87 deg. 35' W 505 feet, thence S 38 deg.35' W 434 feet, thence S 3 deg. 40' E 164 feet, thence S 61 deg. W 127 feet, thence N 84 deg. W 135 feet, thence N 21 deg. W 372 feet, thence N 41 deg. 40' W 226 feet to station 47 plus 00 feet in the W line of said lands at a point 1075 feet N of the SW corner thereof. Total length of said drain on said lands is 1985 feet.

Realigned Costigan Drain As Shown on the Sierra Ridge Estates Property

Over and across the West ½ of the Southwest ¼ of Section 4, T4N, R1W, Meridian Township, Ingham County Michigan, Described as: Beginning on the East line of said West ½ of the Southwest ¼ of Section 4 at a point 1133 feet N00°04'18"E of the Southwest corner of said West ½ of the Southwest ¼ of Section 4 said point of beginning in the existing Costigan Drain; thence in an open ditch N87°36'39"E 445 feet to an enclosed pipe storm drain; thence along said pipe S31°30'24"E, 48.27 feet; thence S72°54'39"E, 32.16 feet; thence S21°53'17"E, 130.71 feet; thence S49°37'07"E, 61.88 feet; thence S49°37'07"E, 283.18 feet; to MH A, being a discharge intersection with the Sierra Ridge Drain; thence S38°25'41"E, 136.37 feet; thence S12°38'54"W, 100.74 feet to "Storm Water Detention Site West" as shown on the recorded plat of Sierra Ridge Estates, as recorded in Liber 56, Pages 42-44, Ingham County Records; thence thru "Storm Water Detention Site West" the following four (4) courses: (1.) S27°14'28"W, 33.38 feet; (2.) N70°06'38"W, 38.42 feet; (3.) S70°10'37"W, 38.93 feet; and (4.) N30°52'18"W, 32.80 feet to an enclosed pipe storm drain; thence along said pipe N23°11'31"W, 114.34 feet; thence N90°00'00"W, 146.11 feet to MH AB in Newton Road; thence N00°02'43"E, 345.47 feet to a point 1025 feet North & 33 feet East of the South ¼ corner of Section 4, T4N, R1W, being the intersection with the existing Costigan Drain and the west end of the Costigan Drain relocation thru the west ½ of the Southwest ¼ of Section 4.

Also Beginning at MH AB in Newton Road, thence S00°02'43"E, 83.0 feet to a point of ending.

(Total Length 2111.97 feet)

Costigan Drain Easements

Easement 1 As Shown on the Sierra Ridge Estates Property

A 20.00 feet wide easement lying 10.00 feet on either side of the following described centerline being situated in Meridian Township, Ingham County, Michigan, further described as follows: Commencing at the South ¼ corner of Section 4, T4N, R1W; thence N00°08'48"E along the North and South ¼ line of said Section, 738.00 feet; thence East 35.00 feet to the point of beginning of this description; thence N00°08'48"E, 215.73 feet to the point of ending.

Easement 2 As Shown on the Sierra Ridge Estates Property

A 20.00 feet wide easement lying 10.00 feet on either side of the following described centerline being situated in Meridian Township, Ingham County, Michigan, further described as follows: Commencing at the South ¼ corner of Section 4, T4N, R1W; thence N00°08'48"E along the North and South ¼ line of said Section, 520.00 feet; thence East 35.00 feet to the point of beginning of this description; thence N00°08'48"E, 150.00 feet to the point of ending.

Easement 3 As Shown on the Sierra Ridge Estates Property

Commencing at the South ¼ corner of Section 4, T4N, R1W; thence S90°00'00"E along the South line of said Section 1,323.00 feet along the South line of said Section 4 to the Southwest corner of the West ½ of the Southwest ¼ of Section 4; thence N00°04'18"E, 1082.94 feet along the East line of the West ½ of the Southwest ¼ of Section 4 to the point of beginning; thence N00°20'43"W, 480.00 feet; thence S38°14'37"E, 79.12 feet; thence N68°28'32"E, 32.98 feet; thence Northeasterly 100.21 feet along a curve to the left, said curve having a radius of 213.00 feet, a central angle of 26°57'17", and a long chord of 99.28 feet and bearing N00°47'01"E; thence S77°13'37"E, 11.13 feet; thence N39°14'37"E, 67.70 feet; thence N72°48'32"E, 32.29 feet; thence N81°30'24"E, 61.34 feet; thence S87°28'19"E, 438.42 feet to the East line of the West ½ of the Southwest ¼ of Section 4; thence S00°04'18"W, 100.00 feet to the point of beginning.

Easement 4 As Shown on the Sierra Ridge Estates Property

33 Feet wide Drain Easement

Commencing at the South ¼ corner of Section 4, T4N, R1W, Meridian Township, Ingham County, Michigan; thence S31.87 feet, N00°08'48"E along the North & South ¼ line of said Section 4; thence S89°51'11"E, 33.00 feet to the point of beginning; thence N00°08'48"E, 115.00 feet; thence S89°51'11"E, 32.00 feet; thence S00°08'48"W, 111.26 feet; thence S89°36'30"W, 10.68 feet; thence N89°51'11"W, 22.00 feet to the point of beginning.

Storm Water Detention Site West

"Storm Water Detention Site West"

As shown on sheet of 3 of the recorded plat of Sierra Ridge Estates as recorded in Liber 56, Page 42-44, Ingham County Records.

Also Described as:

Commencing at the South ¼ corner of Section 4, T4N, R1W, and running thence N00°08'48"E, along the North and South ¼ line of said Section, 520.00 feet to the South line of the Plat of Sierra Ridge Estates, as recorded in Liber 56, Page 42 - 44, Ingham County Records; thence N90°00'00"W, along said line, 1323.00 feet to the Southwest corner of Lot 12, Sierra Ridge Estates; thence N00°04'18"E, 1082.94 feet along the West line of said Lot 12 to the point of beginning of this description; thence N00°20'43"W, along the East line of Lot 13, 480.00 feet to the South line of Sacramento Way; thence Northeasterly 100.21 feet along a curve to the left, said curve having a radius of 213.00 feet, a central angle of 26°57'17", and a long chord of 99.28 feet and bearing N00°47'01"E; thence S38°39'34"E, 135.82 feet; thence Northeasterly 48.28 feet along a curve to the left, said curve having a radius of 218.00 feet, a central angle of 12°41'18", and a long chord of 48.17 feet and bearing N45°28'34"E to the Northwest corner of Lot 11; thence S12°48'13"E along the West line of Lots 11 and 10, 159.32 feet to the Southwest corner of said Lot 10; thence N90°00'00"E along said line 218.00 feet to the point of Sierra Ridge Estates; thence N90°00'00"E along said line 218.00 feet to the point of beginning.

LEGEND

- SECTION CORNER
- PARCEL LINE
- ROAD RIGHT OF WAY
- SIERRA RIDGE DRAIN DRAINAGE DISTRICT BOUNDARY
- COSTIGAN DRAIN CENTERLINE
- COSTIGAN DRAIN EASEMENT

FRED N. WHITE ENGINEER No. 12034

REGISTERED PROFESSIONAL ENGINEER

NO.	REVISIONS	BY	DATE

FRED WHITE ENGINEERING COMPANY
2500 NORTH GRAND RIVER AVENUE
LANSING, MICHIGAN 48906
PHONE: (517) 321-7111 FAX: (517) 321-0799
CIVIL ENGINEERING SURVEYING
EST. 1940

PATRICK E. LINDEMANN
INGHAM COUNTY DRAIN COMMISSIONER

COSTIGAN DRAIN

DRAIN I.D. NO.
-

Job No.
063330

#12

33-02-02-04-100-003
M78 INSITE VENTURE LLC
6365 NEWTON
EAST LANSING MI, 48823

33-02-02-04-100-004;
MI DEPT OF TRANSPORTATION
0 M-78 R/W
425 WEST OTTAWA STREET,
LANSING, MICHIGAN, 48933

33-02-02-04-328-001; 33-02-02-04-352-020
MERIDIAN CHARTER TOWNSHIP
6025 NEWTON
EAST LANSING MI, 48823

33-02-02-04-376-007; 33-02-02-04-376-008; 33-02-02-04-376-009
EYDE LAND HOLDINGS LLC
0 NEWTON & LAKE LANSING
300 S WASHINGTON SQUARE, SUITE 400, LANSING, MI 48933
HASLETT MI, 48840

33-02-02-04-352-023
G S FEDEWA BUILDERS INC
0 M-78
1640 HASLETT RD. #7A, HASLETT, MI 48840
EAST LANSING MI, 48823

33-02-02-04-352-024
CROSSROADS ASSEMBLY OF GOD
2400 LAKE LANSING
EAST LANSING MI, 48823

33-02-02-04-376-003
BATES, DALE & JANICE
2368 LAKE LANSING
EAST LANSING MI, 48823

33-02-02-04-376-004
GAGNON, MICHAEL J & RAEANN TRUSTEES
2310 LAKE LANSING
EAST LANSING MI, 48823

33-02-02-04-376-006
CLAYTON, EDWARD F &
2292 LAKE LANSING
EAST LANSING MI, 48823

33-02-02-04-376-005
LYTONGPAO, CHOU
6024 NEWTON
EAST LANSING MI, 48823

33-02-02-04-376-010
BATEMAN, MIKE & ARVILLA &
6031 NEWTON
EAST LANSING MI, 48823

33-02-02-04-327-008
JEHOVAH WITNESSES CONGREG
2231 M-78
EAST LANSING MI, 48823

33-02-02-04-327-002; 33-02-02-04-327-005;
HAMMOND, L LEE
2247 M-78
EAST LANSING MI, 48823

33-02-02-04-327-003; 33-02-02-04-327-007; 33-02-02-04-327-006
SUMBAL, AHSAN & IFFAT
2267 M-78
EAST LANSING MI, 48823

To: **Planning Commission**
Environmental Commission

From: **Timothy R. Schmitt, *AICP***
Community Planning and Development Director

Date: **October 21, 2026**

Re: **Ordinance 2026-14 – Data Center and Battery Energy Storage Systems regulations**

In May of this year, the Township Board enacted a moratorium on the development of any data center or battery energy storage system (BESS) projects. That six month pause on development for these two uses was put in place to allow the Township Attorneys' office time to develop an ordinance for review. The first draft of that ordinance is attached for initial discussion. This is an amendment to the Zoning Ordinance to provide standards for both of these uses.

To reiterate a point I've made continuously this year, there is no proposal for a data center or a BESS project, nor has Staff had any discussions with anyone that would give any inkling there is a project being considered. This ordinance is purely proactive, intending to get regulations in place, in the event that a project comes together.

A few key points from the ordinance that the Boards reviewing the matter will want to review and discuss:

- Establishes definitions for new terms in the ordinance.
- Establishes 'accessory data centers' which are small facilities that are found in many office environments, creating a different approval process for them.
- Allows accessory data centers in the C-3 and I districts.
- Creates a special use permit process for data centers in the I district, along with an extensive set of review criteria and performance standards.

The Township Board is seeking input from the Planning Commission and Environmental Commission on the proposed ordinance. We hope to receive comments and questions at the initial meeting and will follow up, in writing, for any subsequent meetings where the matter is discussed. Staff looks forward to discussing this matter with both Boards in October and November.

Attachments

1. Ordinance 2026-14 – DRAFT Data Center and Battery Energy Storage Systems regulations

MERIDIAN CHARTER TOWNSHIP
INGHAM COUNTY, MICHIGAN

DATA CENTER FACILITY
ZONING ORDINANCE AMENDMENT

ORDINANCE NO._____

At a meeting of the Township Board of the Charter Township of Meridian, Ingham County, Michigan, held at the Meridian Municipal Building at 5151 Marsh Road, Okemos, Michigan, 48864 on _____, 2026, at _____ p.m., Township Board Member _____ moved to adopt the following Ordinance, which motion was seconded by Township Board Member _____.

An Ordinance to amend the Meridian Township Zoning Ordinance, as amended, to regulate Data Centers, add Data Centers as a special land use, including applicable application requirements and performance standards, define a permissible accessory Data Center, and provide for Data Centers as a special use in the Industrial (I) District.

THE CHARTER TOWNSHIP OF MERIDIAN, INGHAM COUNTY, MICHIGAN ORDAINS:

SECTION 1. AMENDMENT TO ZONING ORDINANCE ARTICLE I: The Meridian Township Zoning Ordinance, Chapter 86, Article I, §86-2, shall be amended to add the following definitions to the respective subsections:

A. **Accessory Data Center.** A data center that occupies more than 50 square feet, exclusively serves the principal on-site use, is a customary and incidental function of the principal use, and does not exceed 2% of the floor area of the principal structure.

B. **Abandoned Data Center.** Any data center use that remains nonfunctional or inoperative to the extent that it is not used for digital data operations for a period of 18 months will be considered abandoned and subject to abandonment and decommissioning provisions.

C. **Backup Generators.** Natural Gas, diesel, gasoline, or other combustion equipment used to generate electricity during a power outage or similar emergency. Backup generators are only to be used during periods of outages, natural disasters or similar "emergency events" for power generation and for regular reliability testing and exercising.

D. **Battery Energy Storage System ("BESS")**. Rechargeable electrical system that allows storage and disbursement of energy from on-site or nearby commercial scale power generating systems (over 10 megawatts) or from the public utility electric grid.

E. Closed loop Cooling System. A process to cool the heat generated by on-site servers and other related components of a Data Center by withdrawing water that is then recycled for cooling purposes and additional water is only withdrawn to replace what is lost through evaporation, allowing the water supply to be used continuously.

F. Data Center. A facility used primarily for the storage, management, processing, and transmission of digital data, which houses computer or network equipment, systems, servers, appliances and other associated components related to digital data operations. The facility may also include air handlers, power generators, water cooling and storage facilities.

G. Daytime. The period of a day beginning at 9:00 a.m. and ending at 6:00 p.m. local time, each day of the week.

H. Habitable Structure. A residence, school, hospital, church, public library, business, office, store, retail establishment, or other buildings people frequently sleep in, occupy, or congregate, excluding accessory structures. Generally, a structure occupied by humans.

I. Nighttime. The period of the day beginning at 6:00 p.m. and ending at 9:00 a.m. local time, each day of the week.

J. Non-Participating Property. Any lands that do not have an agreement with an applicant or developer to host or participate with a Data Center or other applicable special land use.

K. Participating Property. Any lands that have an agreement related to a Data Center or other applicable special land use.

L. Recycled Water System. A practice of using and repurposing water and wastewater for alternative uses such as cooling a Data Center, its components, and accessory uses.

SECTION 2. AMENDMENT TO ZONING ORDINANCE ARTICLE IV: The Meridian Township Zoning Ordinance, Chapter 86, Article IV, Division 3, §86-405 titled C-3 Commercial District shall be amended to add subsection (c)(4)(13) to state as follows:

(13) Accessory Data Center. An accessory data center that exclusively serves the principal on-site use as a customary and incidental part of that use, does not lease or provide processing services to third parties, and applies under and satisfies the general Special Use Permit requirements in Article II, Division 4, Section §86-121 *et seq*.

SECTION 3. AMENDMENT TO ZONING ORDINANCE ARTICLE IV: The Meridian Township Zoning Ordinance, Chapter 86, Article IV, Division 4, §86-435 I District: Industrial District shall be amended to add subsection (b)(4)(f.) to state as follows:

f. Accessory Data Center. An accessory data center that exclusively serves the principal on-site use as a customary and incidental part of that use, does not lease or provide

processing services to third parties, and applies under and satisfies the general Special Use Permit requirements in Article II, Division 4, Section §86-121 *et seq*.

SECTION 4. AMENDMENT TO ZONING ORDINANCE ARTICLE IV: The Meridian Township Zoning Ordinance, Chapter 86, Article IV, Division 4, §86-435 I District: Industrial District shall be amended to add subsection (c)(4) to state as follows:

(4) Data Centers

SECTION 5. AMENDMENT TO ARTICLE ZONING ORDINANCE VI: The Meridian Township Zoning Ordinance, Chapter 86, Article VI Special Use Requirements and Restrictions shall be amended to add §86-661 to state as follows:

§86-661 Data Centers

a) Intent & Purpose.
The purpose of this Section is to promote the effective and efficient use of Data Centers. It is the intent of the Township to permit these systems by regulating their siting, design, and installation to protect the public health, safety, and welfare, and to ensure their compatibility with adjacent land uses. Data Centers, as defined in this Ordinance, shall comply with the provisions of this Ordinance and are only permitted as authorized by this section.

b) Special Use and Site Plan Standards.
Data Centers are subject to the review process set forth for special use permits under Chapter 86, Article II, Division 4, Section §86-121 *et seq.* of this Zoning Ordinance. To the extent there is any conflict between the general requirements under §86-121, and this section, this section shall control.

c) Additional Application Requirements for Data Centers.

1. All applications for Data Centers must be accompanied by detailed site plans, drawn to scale and dimensioned and certified by a registered engineer licensed in the State of Michigan, displaying the information in compliance with the requirements set forth in §86-124 of the Zoning Ordinance and other information as required in this subsection.

a. *Site Plan.* A site plan, as required under §86-124 of the Zoning Ordinance.

b. *Description.* A description of the Data Center, including:

i. The location and a description of the Data Center.

ii. A description of the anticipated effects of the Data Center on the natural environment, natural resources, and solid waste disposal capacity, which may include records of consultation with relevant state, tribal, and federal agencies.

iii. A description of the expected use of the Data Center.

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iv. Anticipated or future use of augmentation for a project. Should an applicant intend to repurpose or augment a project site, applicants must provide a narrative indicating the anticipated project life of the project with repurposing or augmentation and detail plans and schedules for repurposing or augmentation activities.

v. If the project anticipates future phases, the description shall clearly delineate the phase so that each phase is distinct and clear.

vi. Additional information required by the Township as it relates to the site plan.

2. *Environmental Impacts.* The expected direct impacts of the Data Center on the environment and natural resources and how the applicant intends to address and mitigate these impacts. This includes any impacts to water quality, water supply, or potential groundwater contamination and methods to avoid such impacts to water sources.

3. *Public Health and Safety*. Information on the effects of the Data Center on public health and safety.

4. *Agency Consultation.* Evidence of consultation, if required, before submission of the application, with the Department of Environment, Great Lakes, and Energy and other relevant state and federal agencies before submitting the application, including, but not limited to, the Department of Natural Resources and the Department of Agriculture and Rural Development.

5. *Stormwater.* A stormwater assessment and a plan that will require approval by the Ingham County Drain Commissioner to minimize, mitigate, and ensure that predevelopment water surface run-off is consistent with post-development water surface run-off as applied through applicable standards used by the Ingham County Drain Commissioner.

6. *Emergency and Fire Response.* An emergency response plan addressing how emergency services providers (EMS, fire, and law enforcement) can respond to emergencies that could occur at the site. Applicants shall demonstrate how their emergency response plan is consistent with industry practices and standards for similar facilities including compliance with NFPA 855: "Standard for the Installation of Stationary Energy Storage Systems" or successor standard. The emergency response plan shall also be provided by the applicant to Township emergency medical services, fire protection, and law enforcement providers for an opportunity to comment, and comments from the providers above must be submitted to the Township for review. The emergency response plan shall include a containment plan addressing surrounding areas, which shall detail all non-permeable liners utilized for battery storage components or address why liners are not needed and containment can be accomplished using other methods. Should an emergency response plan identify any necessary resources or training not possessed

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by a Township emergency services provider, the applicant must identify how it will provide such resources or training to the applicable provider. The emergency response plan must include an obligation for an applicant and owner and operator to provide an emergency hotline phone number (staffed 24 hours a day; 7 days a week) that is accessible by the Township.

7. *Threat Assessment and Risk Mitigation*. The application must include a comprehensive assessment of potential physical, environmental, and operational threats.

a. *Risk and Hazard Assessment*. Prior to construction, the Applicant shall submit a Risk and Hazard Assessment, which shall be prepared by a qualified professional, and shall evaluate the following at a minimum:

i. *Manmade and Natural Hazards*. The plan shall evaluate the Project site's vulnerability to natural disasters and manmade hazards, and ensure the location is safe for operations and service delivery.

ii. *Hazardous Materials Inventory*. A complete inventory of all battery technologies, fuel storage, and chemical coolants proposed for the site. The assessment must detail potential failure modes (e.g., thermal runaway for batteries) and the specific containment measure proposed.

b. *Physical Security Standards*. The applicant must provide an assessment of physical security standards that consider the following at a minimum:

i. *Perimeter Security*. The applicant shall demonstrate the Data Center is secured to detect and identify unauthorized access and allow for adequate time for a response to undesired conduct.

ii. *Access Control*. The Data Center shall demonstrate access control to the system for emergency response to be implemented during construction and post-construction.

iii. *Surveillance and Monitoring*. The applicant shall demonstrate that the Data Center will utilize a surveillance system to ensure monitoring of the facility perimeter and allow for the following at a minimum:

a. Remote incident assessment for response support;

b. Post-event analysis and investigations;

c. Live video surveillance and monitoring;

c. *Critical Infrastructure Acknowledgement*. The assessment shall determine whether the facility supports critical services and, if so, ensure priority consideration for utility restoration and emergency access in the event of a natural disaster.

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8. *Decommissioning Plan.* A decommissioning plan drafted by a professional engineer that is consistent with the requirements of this Ordinance. The decommissioning plan shall include, but is not limited to, financial assurance in the form of a bond, a parent company guarantee, or an irrevocable letter of credit, but excluding cash. The amount of the financial assurance shall not be less than the estimated cost of decommissioning the Data Center, without deducting salvage value, as calculated by a third party with expertise in decommissioning, hired by the applicant. Moreover, an applicant for a Data Center, prior to construction, must enter into a decommissioning agreement acceptable to the Township Board before issuance of required permits for construction specifying the obligations of decommissioning and includes terms noting: (1) decommissioning obligations must be assigned to any future owner or operator of the Data Center; (2) the Township will have land rights to perform decommissioning itself with a posted financial assurance should it need to decommission a project; (3) the anticipated life of the project before decommissioning; (4) how the Township will receive land access rights to decommission the project should it be required to decommission the project; (5) an acknowledgement from the applicant or project owner that the estimate of project decommissioning costs will be updated and reviewed at a minimum of every three (3) years by a mechanism acceptable to the Township, including but not limited to, an inflationary index or review of decommissioning costs by a professional engineer or other qualified professional and that the financial assurance required for decommissioning to be posted with the Township will be updated at a minimum of every three (3) years to match the new estimate of project decommissioning costs; unless the estimate of decommissioning costs goes down in which case the financial assurance will remain at the same value. Such obligation can be waived by the Township Board.

9. *Construction Schedule / Lifespan.*

a. An anticipated construction commencement date and anticipated completion date for project construction. An estimate of the total operating lifespan of the project before decommissioning in years. The applicant shall provide a construction schedule that will be imposed upon approval. Upon approval, the applicant shall commit to the approved schedule.

b. As required by §86-128 of the Ordinance, any special use permit granted under this Ordinance shall be valid for a period of twenty-four (24) months from the date of issuance of said permit. A special use permit shall become null and void and fees forfeited unless construction and/or use is commenced within twenty-four (24) months and completed within thirty-six (36) months of the date of issuance unless an extension is granted or unless specifically approved as a phased development. A violation of a requirement, condition, or safeguard shall be considered a violation of this

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Ordinance and grounds for the Planning Commission to terminate and cancel such special use permit.

10. *Application Escrow.* An escrow account shall be funded by an applicant when an applicant applies for a special use permit for a Data Center. The monetary amount deposited by the applicant in escrow with the Township shall be estimated by the Township to cover all reasonable costs and expenses associated with the zoning review and approval process (including site plan review), which costs include, but are not limited to, reasonable fees of a Township attorney, planner, and/or engineer, as well as costs for any other outside consultants or reports or studies that the Township determines are reasonably related to the zoning review process for a particular application. An escrow amount shall be in addition to any non-refundable application fees determined by the Township. At any point during the zoning review process, the Township may require that the applicant place additional monies in escrow with the Township should the existing escrow amount filed by the applicant be insufficient. If the escrow account needs replenishing and the applicant refuses to do so within 45 days, the zoning review and approval process shall cease until and unless the applicant makes the required escrow deposit. Such application escrow shall be held by the Township Treasurer in a separate bank account, and upon completion of Township zoning review, all excess escrow funds must be returned to an applicant without interest. To the extent the escrow funds are not sufficient to cover all costs, any amount of costs in excess of the escrow shall be paid by the applicant.

11. *Public Water Required***.** Connection to municipal public water with confirmed capacity for operation is required unless approval is provided by the Township that an alternative design will not cause an unreasonable burden on available potable water for those served from the same aquifer sourced for the use. Any water cooling must use a closed loop or recycled water system. Cooling water flushing and refills are limited to amounts as approved by the municipal utility providing water, or to the extent it is an alternative design, the Township Board.

12. *Water Feasibility Study*. The applicant shall provide a water feasibility study. The purpose of the study is to determine if there is an adequate supply of water for the proposed Data Center and to estimate the impact of the Data Center on existing wells, groundwater, and surface waters in the vicinity. No Data Center shall be approved unless the water feasibility study demonstrates that the anticipated water supply yield is adequate for the project and that the proposed water withdrawals and discharges will not endanger or adversely affect the quantity or quality of groundwater supplies or surface waters in the vicinity, which shall include addressing thermal impacts from the discharge as well as thermal discharge itself. The water feasibility study shall include the following information at a minimum:

a. The projected water demands of the Data Center;

b. The source of water to be used;

c. A description of any water that will be used, including the amount or proportion of water to be used for each purpose (e.g. cooling, humidity control, fire suppression, and domestic usage);

d. Identification of how water will be released into surrounding water bodies and an analysis of environmental impact of each release;

e. A description of the amount or portion of water withdrawn that will be recycled or discharged and by what means;

f. The location of all existing wells within 1,000 feet of the property boundary, with a notation of the capacity of all high-yield wells;

g. A determination of the effects of the proposed water supply system on the quantity and quality of water in nearby wells, surface waters, and the groundwater table;

h. A statement of the qualifications and the signature(s) of the person(s) preparing the study.

13. *Discharge Infrastructure Design*. The applicant shall provide a discharge infrastructure design that identifies all anticipated impacts and details specific measures to mitigate, minimize, or avoid such impacts to the extent practicable. The discharge infrastructure design must include the following at a minimum:

a. The use of recycled water to reduce potable water consumption and discharge volume;

b. The method of drainage system being utilized in the project;

c. Any use or activity producing air, dust, smoke, exhaust, heat, or humidity, and how those uses will be carried in such a manner that is not perceptible at or beyond the property line;

d. Post-development runoff, and how it will not result in adverse impacts to adjacent properties, public infrastructure, or natural resources;

e. In the event that the Data Center ceases operation, the design must account for safe removal or securing of all wastewater treatment systems, fuel storage for pumps, and potential hazardous materials associated with the cooling infrastructure;

14. *Adequate Electrical Capacity***.** The applicant shall provide a feasibility study for adequate electrical capacity. The study shall demonstrate that the Data Center shall have adequate electrical capacity from an applicable service provider.

a. Adequate capacity is available on the applicable supply lines and substation to ensure that the capacity available to serve the other needs of the service area is consistent with the normal projected load growth envisioned by the provider so as to cause no negative interference with

the service currently received by electric customers within the Township.

b. Utility supply equipment and related electrical infrastructure are sufficiently sized and can safely accommodate the Data Center.

c. The Data Center will not cause electrical interference or fluctuations in line voltage on and off the operating premises.

d. The upgrades/improvements to the electrical infrastructure to support the capacity demands, and an analysis whether upgrades/improvements to provide electrical capacity to the site will have any increase on electrical customers rates within the area.

15. *Material Safety Data Sheets and Manufacturer's Manuals.* Upon submission of an application, an applicant must provide all material safety data sheets and manufacturer's instructions/manuals for substantive project components (e.g., batteries) for Township review and inspection. Should any of the above information be considered confidential or a trade secret, the applicant shall indicate a process to allow inspection of such materials upon request by the Township while at the same time protecting disclosure of the documents to the extent permitted by the Michigan Freedom of Information Act.

16. *Community Impacts Analysis*. A study that identifies the impacts of a proposed project on community resources and services, including, but not limited to, roads, fire protection (including any necessary training or equipment), police protection, emergency medical services, and public drainage systems including culverts. Applicants shall demonstrate in an application for a Data Center, how they will ensure impacts from a proposed project on community resources and services will be addressed by the applicant and not be borne on the Township.

17. *Waste.* Applicants shall identify any solid or hazardous waste by a project and how such waste will be managed.

18. *Transportation.* Applicants shall provide a transportation plan for project construction, operation, and decommissioning. Such plan shall identify project ingress and egress, be approved by the Ingham County Road Commission, and the applicant shall ensure that any damage caused to roadways the Township is responsible for funding are repaired.

19. *Signage.* Applicants shall identify all project signage and ensure signage meets the requirements of the Zoning Ordinance. Furthermore, Data Centers shall post signs in compliance with NFPA 70/70E, as amended, or any applicable local fire code in place at the time of application for approval. Additionally, signage shall be provided per NFPA 855.7.4.4, as amended, or any applicable local code in place at the time of application for approval, including information on the system type and technology, special hazards, fire suppression system and 24-hour emergency contact information, including reach-back phone number. A clearly visible warning

sign concerning voltage shall be placed at the base of all pad-mounted transformers and substations.

20. Other information reasonably required by the Township.

d) *Data Center Standards and Obligations.* Data Centers shall meet the following performance standards and obligations.

1. *Setbacks***.** Data Centers shall be subject to the following setback requirements. No setbacks shall apply between participating properties hosting the same project. To the extent there is any conflict between the general requirements under Section 8.3 and this Ordinance, the setbacks established in this Ordinance shall apply in lieu of those set forth in §86-435 for structures within the Industrial (I) District, to the extent that they are more restrictive.

2. Data Center buildings, accessory structures, and all other associated equipment must be set back as follows:

a. At least 100 feet from all non-participating property lines.

b. At least 300 feet from the nearest point of a habitable structure.

c. At least 100 feet from the public road rights-of-way.

d. Parking lots for Data Centers shall be set back at least 100 feet from public road rights-of-way, and 250 feet from all non-participating property lines.

3. *Generators*. Routine generator operation maintenance is limited to Monday-Friday between the hours of 10 a.m. and 4 p.m.

a. Generators must be enclosed in order to limit sound to 70 dBa as measured 23 feet from the generator. All equipment on site must also comply with maximum sound levels at all property lines.

b. Onsite generators must meet or exceed EPA Tier 4 emission standards.

4. *Battery Energy Storage Systems.*

a. BESS for a Data Center that are located within the project boundaries shall be designed and constructed in accordance with the NFPA (National Fire Protection Association) 855 standard including as may be periodically updated.

b. The components of a BESS shall be approved with the review of a Data Center special use permit, and shall otherwise comply with the requirements of this Ordinance.

c. The system and its components and equipment shall be listed by the nationally recognized testing laboratory, UL (Underwriters Laboratories) 9540 (standard for battery energy storage systems and equipment) or applicable nationally recognized standard with subcomponents meeting each of the following standards as applicable.

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d. All applicants shall include a detailed safety plan related to the BESS facility within the Data Center. Such a plan shall include, but not be limited to:

   i. Preliminary design with locations and descriptive details regarding components relating to fire prevention and detection and to explosion control.

   ii. Information regarding equipment designed for providing proper temperature control recommended for safe operation of batteries.

e. All BESS shall be equipped with safety systems as outlined below:

   i. Hazard detection system.

   ii. Explosion detection system.

f. Specifically, and without limitation, BESS sound emissions shall comply with the noise requirements prescribed in this Section.

g. BESS shall comply with all other applicable performance standards required of BESS principal uses as may be provided within Township Ordinances.

5. *Height of Data Center***.** The Data Center shall be no greater in height than the maximum height provided in the applicable land use district.

6. *Potential External/Off-Site Impacts.* Any use or activity producing air, dust, smoke, glare, exhaust, heat, or humidity in any form shall be carried on in such a manner that it is not perceptible beyond the lot or parcel line. The facility shall not cause an increase in air temperature of 4°F above ambient background, averaged over any 15-minute period. Stormwater shall be calculated and determined to not have post-development stormwater run-off exceed pre-development stormwater run-off as determined by the County under an applicable stormwater ordinance or regulation, or as approved by the Township in review of any Data Center. The requirements of this provision shall apply to all perceptible subsurface and vertical heat dissipation.

7. *Landscaping/Screening.* Landscaping and screening shall conform to the requirements of the Ordinance. At the Township's discretion, additional landscape buffers, noise barriers and visual screening may be imposed to ensure compatibility with surrounding uses.

8. *Parking Requirements***.** A minimum of 1 parking space per employee on the largest shift is required, plus an additional 3 visitor spaces. A minimum of one loading space is required. Loading spaces/Inghams are only permitted to be located on one facade of the Data Center Principal Building.

9. *Construction Codes***.** The Data Center shall comply with all applicable state construction codes. The Data Center shall comply with applicable utility, Michigan

Public Service Commission, as well as the Environmental Protection Agency, Department of Energy, Federal Energy Regulatory Commission and all other state and federal agency standards.

10. *Electromagnetic Interference***.** Each Data Center shall be designed, constructed and operated so as not to cause radio, wireless internet, telephone (both landline and cell phone) and television interference. In the event that electromagnetic interference is experienced as a result of the Data Center, the applicant must take appropriate action to minimize such interference, and if that is not feasible, the applicant shall provide alternate service to each individual resident or property owner affected.

11. *Noise and Vibration***.** The applicant shall demonstrate through a sound study conducted by a qualified acoustical expert that the sound generated by a Data Center during normal operations shall be limited to a maximum daytime (9:00 a.m. to 6:00 p.m. Monday-Friday) decibel level of 50 dBa and a maximum nighttime and weekend (6:00 p.m. to 9:00 a.m. Monday-Friday and all day Saturday and Sunday) decibel level of 40 dBa as measured from the property line of the use. Such sound study shall be conducted using Sound Level Meters described in ANSI S1.4-2104 and generally accepted methodology. A sound study shall be conducted at the following three phases:

a. *Preliminary Sound Study*. A preliminary study shall be conducted as part of the special use process. The preliminary sound study shall include recommended sound reducing materials or systems as needed to meet the aforesaid sound limits. The preliminary study shall include a sound frequency and transmission analysis that addresses the frequency and transmission of sound to prevent broadband noise and low-frequency hums that cause degradation to public health and property. The analysis must model how sound will transmit from the facility to the property lines, accounting for topography, existing vegetation, and proposed structures. The study must calculate the projected noise transmission when mechanical equipment is running at full capacity, including all HVAC units and generators necessary for peak operation. The sound study must specifically evaluate the potential for broadband noise and low-frequency hums generated by cooling systems and generators. The description of sound in the study must include characteristics regarding duration, intensity, and frequency. The study shall also evaluate and report anticipated decibel levels when all emergency power generation equipment is running, including backup generators.

b. *As-Built Sound Study*. An as-built sound study shall be conducted within 12 months after operation to establish conformance with the noise standards set forth within the Ordinance and any conditions of approval.

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c. *Vibration Study*. The applicant shall provide a vibration study prepared by a qualified professional that demonstrates that no vibration from the Data Center, or associated equipment will be perceptible to the human sense of feeling beyond the property line.

d. *Township Discretion and Findings*. The Township, at its discretion, may allow for an increase to 55dBa during the daytime and 45 dBa at nighttime if the Township makes a finding that any waiver increase would not exceed the ambient noise of daytime or nighttime for any dwelling within a 1/2 mile of the site. The maximum sound level in this section does not apply to:

i. Demolition work on buildings, structures, appurtenances and/or the testing of generators consistent with the requirements of any regulatory agency.

ii. Any situation arising from sudden and reasonably unforeseen events (beyond the control of the facility operator) that require the response of emergency vehicles.

iii. All measurements and modeling shall be conducted in compliance with ANSI/ISO standards for outdoor sound measurements and be supervised by a qualified acoustical expert with full member status with the Institute of Noise Control Engineering (INCE).

12. *Lighting*. A lighting plan for the Data Center shall be approved by the Township. Such plan must describe all lighting that will be utilized. Such a plan shall include but is not limited to the planned number and location of lights, light color and whether any lights will be flashing.

a. *Horizontal Surfaces*. For the lighting of predominantly horizontal surfaces, such as, but not limited to, parking areas, roadways, vehicular and pedestrian passage areas, loading docks, building entrances, sidewalks, bicycle paths, and site entrances, luminaires shall be aimed down, and shall meet Illuminating Engineering Society of North America (IESNA) full cut-off/fully shielded criteria.

b. *Non-Horizontal Surfaces*. For the lighting of predominantly non-horizontal surfaces, such as, but not limited to, facades, landscaping, and signs, luminaires shall be shielded and shall be installed and aimed to not project their output into the windows of neighboring residences, adjacent uses, past the object being illuminated, skyward, or onto a public roadway.

c. *Glare*. Vegetation screens shall not be employed to serve as the primary means for controlling glare. Rather, glare control shall be achieved primarily using such means as cutoff luminaires, shields and baffles, and appropriate application of luminaire mounting height, wattage, aiming angle, and luminaire placement.

d. *Luminaires*. Luminaires shall not be mounted more than 20 feet above the finished grade of the surface being illuminated. No pole-mounted lighting on the roof shall be permitted.

e. *Lighting After Hours*. Lighting for parking areas and vehicular traffic ways shall be automatically extinguished nightly within ½ hour of the close of the facility. When after-hours site safety/security lighting is proposed, such lighting shall not exceed 25% of the number of fixtures required or permitted for illumination during regular business hours. Where there is reduced but continued onsite activity throughout the night that requires site-wide even illumination, the use of dimming circuitry to lower illumination levels by at least 50% after 10:00 p.m. or after regular business hours, or the use of motion sensor control, shall be permitted.

13. *Mechanical Equipment*. Mechanical Equipment must be shown on any proposed plan and must be fully screened on all sides. Mechanical equipment not screened by a facade of the building must be screened by a visually solid fence, screen wall or panel, or parapet wall and constructed with the design, materials, details, and treatment compatible with those used on the nearest facade of the building.

14. *Abandonment or Decommissioning.*

a. Any Data Center which has reached the end of its useful life or has been abandoned consistent with this section of the Zoning Ordinance shall be removed. The project site must be restored to a condition substantially similar to its pre-development condition or a condition expressly authorized by the Zoning Ordinance and any property owner lease. The owner/operator shall physically remove the installation no more than 365 days after the date of discontinued operations. The owner/operator shall notify the Township and the Planning Commission by certified mail of the proposed date of discontinued operations and plans for removal.

b. Absent notice of a proposed date of decommissioning or written notice of extenuating circumstances, the Data Center shall be considered abandoned when it remains nonfunctional or inoperative to the extent that it is not used to store/transmit electric energy for a continuous period of 18 months. If the owner/operator fails to remove the installation in accordance with the requirements of this section within 365 days of abandonment, the Township is permitted to enter the property and physically remove the installation at the owner's expense.

c. Decommissioning shall consist of:

i. Physical removal of all structures, equipment, security barriers, concrete, and transmission lines (including underground lines) from the site. Underground components shall be removed completely and disposed of outside of the Township. Hazardous waste shall be disposed of in accordance with local, state and federal waste disposal regulations.

ii. Stabilization or re-vegetation of the site as necessary to minimize erosion and to return the site to a substantially similar condition compared to after development of a Data Center.

d. Requirements of abandonment and decommissioning may be waived by the Township upon demonstrating that the building(s) constructed for the Data Center are readily convertible to other uses allowed or reasonably foreseen as permitted within the district.

15. *Maximum Lot Coverage.* Lot coverage shall not exceed the land use district maximum or sixty (60%) percent, whichever is less.

16. *Complaint Resolution***.**

a. From construction until project decommissioning, an owner or operator of a Data Center must maintain a compliant resolution process that includes a publicly available permanent phone number and contact information for residents to make complaints regarding the project related to violations of the Zoning Ordinance or any zoning approvals.

b. Such process must include a form available to the public to submit complaints which shall also be made available online and be provided to the Township for distribution to residents.

c. A Data Center owner or operator shall acknowledge receipt of such complaints within seven days and shall resolve complaints within 30 days unless impractical in which case the owner or operator must notify the Township and complainant of an estimated timeframe to resolve the complaint. A resolution to a complaint that will take over 30 days to address will require approval from the Planning Commission.

d. The complaint resolution process may not require a complainant or the Township to post a monetary deposit or otherwise pay for the owner or operator to resolve or investigate a complaint.

e. The Data Center owner or operator must notify the Township of any received complaints and resolutions to complaints on a monthly or bi-monthly basis.

17. *Compliance***.** All Data Centers shall comply with all applicable local, state, and federal laws and regulations including obtaining any required permits. The Applicant agrees and consents to ongoing compliance monitoring, including but not limited to metering water, sewer use, monthly and annual reporting, production of agency reports, and 3-year periodic sound monitoring.

18. *Conditions.* The Township may impose additional reasonable conditions for the approval of a Data Center.

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SECTION 6. SEVERABILITY: The provisions of this Ordinance are declared severable. If any part of this Ordinance is declared invalid for any reason by a court of competent jurisdiction, that declaration does not affect or impair the validity of all other provisions that are not subject to that declaration.

SECTION 7. REPEAL AND FORM: All ordinances or parts of ordinances in conflict with this Ordinance are hereby repealed. Further, the Township may use the content of this Ordinance and compile/insert it into the existing Meridian Township Code of Ordinances and its Zoning Ordinance including making any technical provision numbering or clerical revisions as necessary for the compilation. See MCL 41.186 (ability of Township to codify its ordinances).

SECTION 8. EFFECTIVE DATE: This Ordinance shall take effect seven days after publication of a notice of adoption of this Ordinance, unless referendum procedures are initiated under MCL 125.3402. If referendum procedures are initiated, this Ordinance will take effect in accordance with MCL 125.3402.

YEAS: _____

NAYS: _____

ABSENT: _____

ORDINANCE DECLARED ADOPTED.

_____
Scott Hendrickson, Meridian Township Supervisor

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CERTIFICATION

I hereby certify that:

1. The above is a true copy of an Ordinance adopted by the Meridian Township at a duly scheduled and noticed meeting of that Township held on_____, 2026, pursuant to the required statutory procedures.
2. A summary of the above Ordinance was duly published in the _____ newspaper, a newspaper that circulates within Meridian Township, on_____, 2026.
3. Within one week after such publication, I recorded the above Ordinance in a book of ordinances kept by me for that purpose, including the date of passage of the Ordinance, the names of the members of the Township voting, and how each member voted.
4. I filed an attested copy of the above Ordinance with the Ingham County Clerk on _____, 2026.

ATTESTED:

_____
Angela Demas, Meridian Township Clerk

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