

# **DELTA CHARTER TOWNSHIP**

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## **Stormwater Management Program (SWMP)**



**DELTA CHARTER TOWNSHIP  
ENGINEERING DEPARTMENT  
7710 WEST SAGINAW HIGHWAY  
LANSING, MICHIGAN 48917**

REVISION – FEBRUARY 2020

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## ***Section I - Introduction and Background***

The National Pollutant Discharge Elimination System (NPDES) Program protects the surface waters of the state by assuring that discharges of wastewater comply with state and federal regulations. Anyone discharging or proposing to discharge wastewater to the surface waters of the State of Michigan must make an application for and obtain a valid NPDES permit prior to the wastewater discharge.

NPDES permits are required under Section 402 of the Federal Clean Water Act (the Federal Act), as amended (33 U.S.C. 1251 et seq., P.L. 92-500, 95-217), and under Part 31, Water Resources Protection, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (the Michigan Act). Part 31 of the Michigan Act also provides authority for the State to issue NPDES permits. The Michigan Department of Environment, Great Lakes, and Energy (EGLE) administers the NPDES permit program for the State of Michigan.

Any public body that owns or operates a regulated Municipal Separate Storm Sewer System (MS4) may be eligible for permit coverage including, but not limited to, the United States, the State of Michigan, a city, village, township, county, public school district, public college or university, a single purpose governmental agency, or any other governing body which is created by federal or state statute or law.

In 2008, the EGLE issued MS4 Watershed General Permit No. MIS610000 (hereafter referred to as "permit" or "the permit") jointly to the communities that make up the Greater Lansing Regional Committee for Stormwater Management (GLRC). Delta Township is a member of this guiding collaborative body that is comprised of participating Phase II Stormwater communities within the Greater Lansing Region. The committee has been established to guide the implementation of the entire Phase II Stormwater Program for the communities within three identified watersheds: the Grand River, the Red Cedar River and the Looking Glass River watersheds. Additionally, Delta Township was issued a Certificate of Coverage (COC No. MIG610094) under the permit. The permit specifies the implementation of certain activities with the goal of protecting water quality and meeting federal and state regulatory requirements.

In 2013, a new permit cycle began, requiring the submission of a new application for the reissuance of the permit. The permit application was submitted in February 2013. In response, EGLE issued an Individual MS4 Permit No. MI0059725 for Delta Twp MS4 - Eaton, which superseded the previous Watershed General Permit and Certificate of Coverage. The Permit was issued on July 14, 2015 and took effect on August 1, 2015. The Permit expires on October 1, 2017.

In August 2016, EGLE staff completed an audit of Delta Township's MS4 program to determine compliance with the permit. A Violation Notice was issued on February 14, 2017 by EGLE. Delta Township Engineering Department staff subsequently resolved the compliance issues and submitted responses on March 27, 2017 and April 28, 2017. EGLE closed the violation on April 28, 2017.

In accordance with permit renewal requirements, a permit application for permit reissuance was submitted on March 31, 2017 and a new permit was issued on January 30, 2020. This permit was effective on February 1, 2020 and expires on October 1, 2024.

This Stormwater Management Program (SWMP) document is a compilation of several plans, programs, procedures, policies, etc. --- such as the Township's Action Plan, Illicit Discharge Elimination Plan (IDEP), Public Education Plan (PEP), etc. --- together constituting Delta Township's permit obligations and commitments aimed at helping to reduce the discharge of pollutants to stormwater to the Maximum Extent Practicable (MEP).

The 2020 revisions to this SWMP reflect changes resulting from the issuance of the current National Pollutant Discharge Elimination System (NPDES) MS4 permit. Updates to the Total Maximum Daily Load (TMDL) Implementation plan were required to by EGLE as part of the permit application review. Specifically, the originally proposed TMDL Implementation Plan was revised to:

- Identify the procedures that the Township will use to identify and prioritize BMPs implemented to make progress toward achieving E. coli reduction
- List the Prioritized BMPs currently being implemented during the permit cycle to make progress towards achieving a load reduction
- Develop a monitoring plan for assessing the effectiveness of the BMPs in reducing E.coli

Delta Township covers an area of 22,429 acres. There are 198 miles of public roads under the jurisdiction of the Eaton County Road Commission (ECRC) and 29 miles of public highways under the jurisdiction of the Michigan Department of Transportation (MDOT). The Township does not own or operate any roads. Outside of the roadways, the Office of the Eaton County Drain Commissioner (ECDC) has jurisdiction over the entirety the public storm drainage system serving the Township. The urbanized area of the Township, as defined by the 2010 US Census (Appendix A, Map A-1), and regulated under the terms of Delta Township's jurisdictional MS4 permit encompasses 16,418 acres. An inventory of all Township owned/operated regulated MS4 stormwater system infrastructure is included in Appendix F – Drainage System Inventory. Again, the bulk of which falls under the jurisdictions of the ECDC, ECRC, and/or MDOT. The Township owned and operated property within the urbanized area covers 862 acres (i.e., 5.2% of the urbanized area), most of which being undeveloped park land (Appendix A, Map A-2). There are no nested jurisdictions covered under the Township's permit.

While Delta Township holds a jurisdictional permit, the Township recognizes that by working collectively with the abovementioned agencies, the GLRC, and other stakeholders on a regional and watershed basis illicit discharge elimination, public education and other water management activities, can be implemented more effectively and cost-efficiently.

## ***Section II – Discharge Point Location & Mapping***

Delta Township owns or operates a total of 13 known discharge points from its facilities into the ECDC's drain system. These are identified on in Appendix A on Maps A-3 through A-12. They are also listed in Table A-1 in Appendix A with the corresponding receiving Eaton County Drain, and the latitude and longitude of each identified.

The Delta Township Engineering Division maintains electronic digital copies and/or hardcopies of its MS4 infrastructure. The Township's maps are continuously revised to reflect any changes in the system, typically within 30 days of receiving updated information.

### **Newly Constructed or Identified Outfalls**

In order to seek authorization for discharge, for any discharge point that is identified, constructed or installed after October 1, 2017, the Township will provide an updated outfall map clearly showing the location of the discharge point, its identifying number, the latitude and longitude of the discharge point, and the receiving Eaton County Drain or waters of the state.

### **MS4 Discharge Point Labeling**

The Township will provide permanent identification for all of its discharge points.

### ***Section III – Enforcement Response Procedures***

Since the Township's MS4 is limited in nature and totally under the control of Township personnel, violations related to the Township's MS4 are avoided via employee training and supervision. However, Delta Township has various codes and ordinances that are applicable to stormwater issues in coordination with the Eaton County Drain Commissioner's Office, the Eaton County Road Commission, and State of Michigan and Federal Regulatory agencies. Enforcement Procedures (ERP) may vary slightly dependent on the specific code or ordinance in question. Generally the procedures are as follows:

1. Upon receipt of a complaint regarding an alleged violation, information regarding the nature of the violation, the location, the date and time that the complaint was received, and the enforcement official receiving the complaint are logged electronically into the Township's BS&A Building Department.Net software program.
2. The urgency of the complaint is determined and it is then forwarded to the appropriate enforcement official or Department for investigation. At times the appropriate investigating agency may not be the Township, but a County, State, or Federal agency. If an outside agency is the responsible enforcement agency, the Township will follow up on the status of the situation with that agency to determine what action, if any, was taken. The outcome will be recorded in the Building.Net program.
3. In those cases where the Township is the enforcement agency, an investigation is performed by the appropriate official and the presence or absence of a violation is determined. If no violation is present, it is so noted, along with the date and time of the investigation, and recorded in the Building.Net program. No further action is taken.
4. If the presence of a violation is confirmed, the investigating official verifies and records the location, as well as the date and time of investigation. The investigating official then determines the responsible party and may either issue a stop work order on site requiring noncompliant activities to cease and be corrected, write a violation letter to the responsible party mandating that the situation be brought into compliance within a reasonable period of time, or issue a citation. Copies are recorded in the Building.Net program.
5. A follow up investigation is performed to determine compliance within the time period specified by the enforcement official. If compliance is gained, it is so recorded and the file is closed. If further action is necessary, stop work orders will remain in effect, additional citations will be issued with an escalating schedule of fines until compliance is gained, or an appearance ticket is written requiring an appearance before the Eaton County Magistrate. For those refusing compliance, the matter will be referred to the Eaton County Prosecutor's Office for legal action to gain compliance.
6. In all cases, the final resolution of the violation is recorded electronically in the Building.Net program.

## ***Section IV – Public Participation/Involvement Program & Public Education Plan***

Delta Township's Public Participation/Involvement Program (PPP) and Public Education Plan (PEP) have been developed and will be implemented jointly in a collaborative effort of the member communities of the Greater Lansing Regional Committee (GLRC). The GLRC has agreed to combine efforts with regard to public participation and education. The GLRC has as a group addressed the PPP and PEP requirements for its member communities permit requirements. Appendix B contains the PEP as specifically tailored to Delta Township. The PPP is included as an element of this plan.

## ***Section V – Illicit Discharge Elimination Program (IDEP)***

### **Overview**

The purpose of the IDEP section of the SWMP is to effectively eliminate illicit discharges (including the discharge of sanitary wastewater) into the separate storm water drainage system that is under the Township's jurisdiction. Again, it is important to note that, the Township owns or operates only 5.2% of the land area located within the defined urbanized area. Delta Township owns or operates a total of 13 know discharge points that outlet in County drains under the jurisdiction of the Eaton County Drain Commissioner's Office. As noted previously, no nested jurisdictions are covered under the Township's permit. Maps detailing the Township's MS4 facilities are available for viewing in electronic digital and/or hardcopy form by contacting the Township's Engineering Division. Map A-2 in Appendix A provides an overview of the Township's facilities within the urbanized area, and Maps A-3 through A-12 identifies the Township's discharge points. Table A-1 in Appendix A provides further information regarding these discharge points. By right of ownership, the Township maintains the authority to inspect, investigate, and monitor suspected illicit discharges to the Township's MS4, which is limited to facilities located in the Township owned and operated property within the urbanized area.

### **Definitions**

For the purposes of this IDEP the following definitions are utilized;

***Illicit Discharge:*** Any discharge to, or seepage into, an MS4 that is not composed entirely of stormwater or uncontaminated groundwater except discharges pursuant to an NPDES permit.

***Illicit Connection:*** A physical connection to an MS4 that primarily conveys non-stormwater discharges other than uncontaminated groundwater into the MS4; or a physical connection not authorized or permitted by the local authority, where a local authority requires authorization or a permit for physical connections.

### **Program Procedures**

The following procedures have been developed to eliminate all illicit connections or discharges from the Township's facilities and restrict the discharge of polluting substances into its MS4. The Township will inspect its MS4, maintain/update maps of all storm water conveyances, locate discharge points, conduct dry weather screening of outfalls, and test outfalls (if necessary) to identify the presence of potential illicit connections or discharges.

### **Illicit Discharge Identification and Investigation:**

1. **MS4 Prioritization & Dry-Weather Screening Frequency:** The NPDES MS4 Permit requires prioritization of the Township's MS4 for the purpose of identifying and investigating possible illicit discharges. The prioritization criteria specified in the permit is as follows:
  - Areas with older infrastructure
  - Industrial, commercial, or mixed use areas
  - Areas with a history of past illicit discharges
  - Areas with a history of illegal dumping
  - Areas with onsite sewage disposal systems



- Areas with older sewer lines or with a history of sewer overflows or cross-connections
- Areas with sewer conversions or historic combined sewer systems
- Areas with poor dry-weather water quality
- Areas with water quality impacts, including waterbodies identified in a Total Maximum Daily Load
- Priority areas applicable to the applicant not identified above

Dry Weather Screening was completed for the permit cycle ending in October 1, 2017, the results of which can be found in Appendix G – Dry Weather Screening.

For the permit cycle beginning November 1, 2017, the Township has prioritized its Discharge/Outfall Points as Priority No. 1 through 5 (as seen in the chart below). The Discharge/Outfall Nos. are identified in more detail on the maps in Appendix A. The Township will perform dry weather-screening on all of its discharge points during the permit cycle, with the schedule as indicated below. Any necessary follow-up investigations or any newly discovered discharge points or outfalls will be addressed as they become known.

<b><u>IDEP Screening</u></b>				
<b>Facility Name</b>	<b>Discharge/ Outfall No.</b>	<b>Priority</b>	<b>Screening Points Per Year</b>	<b>Year of Sample</b>
Delta Township Administration Complex and Fire Station No 1	#1A & #1B	1	2	2017
Delta Township Library (North and South)/Sharp Park	#2A, #2B & #10	2	3	2018
Water Operations/Delta Community Center	#14, #15, #16 & #17	3	4	2019
Snow Road Ground Storage	#5	4	1	2020
Snow Road Elevated Storage and Fire Station No 3	#8 and #6	4	2	2020
Delta Recycling Center	#18	5	1	2021

Regardless of priority ranking, if suspicious flow is observed at any time from any of the Township’s Discharge/Outfall points an investigation and field screening will be performed within 24 to 48 hours from the time of said flow being observed utilizing the methods described below.

2. **Dry-Weather Screening:** Field observations at discharge points will be conducted by trained technicians and will focus on the following as required by the permit:
  - Presence/absence of flow
  - Deposits/stains on the discharge structure or bank
  - Vegetation condition

- Structural condition
- Biology, such as bacterial sheen, algae, and slimes
- Water clarity
- Color
- Odor
- Floatable materials

Trained technicians will inspect each outfall or discharge point following a period of at least 48 to 72 hours or dry weather. Visual inspection observations will be recorded and kept on file.

Samples will be collected from outfalls with flowing water or other indications of illicit discharge. Field screening of samples will be conducted by trained technicians to determine the potential presence of illicit discharges. At a minimum, collected samples will be analyzed for ammonia, fluoride, detergents, pH, and temperature. Additional physical and/or chemical analysis may be conducted based on the determination of the technician operator to provide evidence of suspected illicit connections or discharges. Results of analyses will be recorded and kept on file.

3. **Illicit Discharge Source Investigation:** Where the results of an inspection or analysis indicate an illicit discharge, the Township will conduct an investigation to determine the source or location of the discharge or connection. Investigations will include review of illicit discharge indicator parameter analysis results, dye tracing, smoke testing, video camera inspection, and documented visual observations. Trained technicians will use the applicable testing or tracing methods to investigate upstream conveyances to locate the source of the discharge. Illicit discharge investigations will commence within five (5) days of verifying the presence of an illicit discharge.
4. **Illicit Discharge or Connection Elimination:** Illicit discharges from Township facilities will be corrected using the most expedient method possible based on the type and configuration of the discharge or connections. Illicit connections will be immediately capped, closed, or temporarily re-routed to the sanitary sewer or other collection system until permanent repairs can be completed. Other illicit discharges or releases of polluting materials will be corrected through administrative measures including employee training, placement of signs or markings, policy revisions, or any other steps necessary to eliminate the continued release of polluting materials to the MS4.

Evidence of illicit discharges traced to other MS4 jurisdictions will be provided to the responsible MS4 operator along with any collected data to assist the MS4 operator in completing their investigations to correct the illicit discharge or connection. Delta Township will cooperate with the MS4 operator in determining the source or type of illicit discharge and/or connection and will follow up to ensure that appropriate action has been completed by the MS4 operator to eliminate the discharge.

Any release of polluting materials from the Township's MS4 to the surface waters or groundwaters of the State, unless it is determined that the release is not in excess of the threshold reporting quantities in the Part 5 Rules, will be immediately reported by

calling the EGLE's Lansing District Office at 517-373-7660. Or, if after regular business hours, by calling the EGLE's 24-Hour Pollution Emergency Alerting System at 800-292-4706.

5. **Illegal Dumping/Spills:** For the most part the Township's owned and operated MS4 is not readily accessible by members of the general public. Township employees will be trained in the proper operational procedures and BMPs to avoid illicit discharges. Should the Township become aware of an illegal dumping/spill incident, it will be promptly investigated utilizing the same procedures outlined above. If necessary the Emergency Response Procedures outlined below and also in the Township's Good Housekeeping and Pollution Prevention Manual found in Appendix D will be employed.
6. **Emergency Spill Response Procedures:** Each facility having the potential for the release of a hazardous material or substance shall have trained and knowledgeable personnel to respond and implement response procedures for that facility. Spill containment materials, such as absorbent pigs, pads, brooms, diking materials, storm drain covers, etc. are to be stored and maintained at all applicable facilities for used by trained employees in the event of a spill or accidental release.

The following general guidelines are to be implemented as applicable in managing spills and accidental releases:

**For spills in which there is no immediate dangers to employees or the general public and does not represent a danger of contamination to a sanitary sewer, storm sewer, of the ground:**

- Contain spill to the smallest area possible.
- Review the Material Safety Data Sheet for determination of proper spill handling, and appropriate personal protective equipment selection.
- Place compatible absorbent material or spill pads on the area.
- Clean up and containerize the absorbent materials.
- Properly dispose of waste materials.
- Determine and perform any additional cleaning requirements.

**For a spill that represents an immediate danger to employees or the general public and/or has the potential to impact the sanitary sewer, storm sewer, or the ground:**

- Notify the Departmental Supervisor on duty.
- If there is the treat of fire, explosion, or if any person(s) exhibit severe symptoms of exposure, contact 911 to initiate local emergency services.

- Alert anyone in the area and begin evacuation procedures.
- Use booms or other absorbents to dike the spill area if safe to do so, and secure the area from unauthorized personnel. Refer to the Material Safety Data Sheet to determine the proper personal protective equipment.
- Remove all sources of ignition for releases of flammable or combustible materials.
- The Departmental Supervisor will initiate all notification procedures and contact the contracted emergency response company to mitigate and remediate the release.
- The Departmental Supervisor will assess the spill and notify all agencies as required.

**Reporting:**

- Spills will be reported in accordance with applicable reporting laws. Spills that pose an immediate threat to human health or the environment must be reported immediately to 911 (the on-site Delta Township Fire Department HAZMAT personnel may be mobilized via 911), the Pollution Emergency Alerting System (PEAS) at 800-292-4706 and the National Response Center (NRC) at 800-424-8802, as is applicable.
- Spills that pose an immediate threat to human health or the environment may also need to be reported within 24 hours to the Local Emergency Planning Committee (LEPC), State Emergency Response Center (SERC), Michigan Department of Agriculture (MDA), various divisions of EGLE, and the Department of Labor and Economic Growth (DLEG).
- After the spill has been contained and cleaned up, a detailed report about the incident will be generated and kept on file. The incident may also be used in briefing staff about proper procedures.

**7. IDEP Training & Evaluation of Program Effectiveness:** The Township will develop a program to train staff involved with illicit discharge related activities which would include, but not be limited to, the following:

- Proper Storage, handling, and use of pesticides, herbicides, and fertilizers
- Good housekeeping and pollution prevention activities
- The definition of an illicit discharge, an illicit connection, and sanitary seepage
- Techniques for locating illicit discharges
- Methods for eliminating illicit discharges
- Proper procedures for responding to spills and emergency situations

Maintenance staff will be trained on stormwater pollution prevention once per permit cycle. New employees will be trained within the first year of employment. Employees will be trained using an EXCAL training DVD specific for municipal operations and staff. All topics related to stormwater pollution prevention/good housekeeping of

municipal facilities and activities will be covered during the training. Mastery of the subject matter may be tested.

The Township will maintain a record of any inspection and incident reports; and the response measures taken in the event of suspected illicit discharge occurrences. These records will be reviewed annually to determine adherence to the aforementioned guidelines and procedures, and the adequacy of these in resolving identified issues in a satisfactory manner. Procedures will be modified as necessary to achieve and maintain program effectiveness.

8. **Illicit Discharge Ordinance:** The Township's MS4 only includes Township owned and operated facilities. Outside of these facilities stormwater regulation falls to the Eaton County Drain Commissioner's Office, the Eaton County Road Commission, and or the Michigan Department of Transportation. The Township works cooperatively with these agencies in ensuring stormwater quality. Illicit discharges into the Township's MS4 are avoided via employee training and periodic system inspections.

Other applicable Township ordinances (Appendix C, pp. 1-3) result in reducing the potential for illicit discharges. Section 40-260 of the Delta Township Code of Ordinances states:

*"Where a public sanitary sewer is not available, the building sewer shall be connected to a private sewage disposal facility constructed in compliance with state law, regulations of the county, the state and local health departments, and the regulations of the township. The owner shall operate and maintain the private sewage disposal facility in a sanitary manner at all times, at no expense to the township."*

Section 40-261 of Delta Township's Code of Ordinances states:

*"At such time there is an available public sewer within 200 feet of a structure served by private sewage disposal facilities, the supervisor of the township shall cause appropriate notice to be served upon the owner of such property, that a public sewer is ready and available to receive connections thereto and that within 18 months from the service of such notice the use of a private sewage disposal facility for the structure shall be discontinued, and the following will be completed:*

- 1) *The plumbing shall be disconnected therefrom;*
- 2) *All underground structures shall be filled with fresh earth, in accordance with the Barry- Eaton District Health Department; and*
- 3) *All plumbing shall be connected with the public sewer."*

Section 40-264 of Delta Township's Code of Ordinances states:

*"It shall be unlawful to discharge into any waters of the state or any storm sewer within the township any sanitary sewage, industrial waste, or other polluted waters, except where suitable treatment has been provided and the*

*direct discharger has a National Pollutant Discharge Elimination System (NPDES) permit issued by the state department of environmental quality.”*

These regulations serve to reduce the potential for illicit stormwater discharges throughout the Township.

## ***Section VI – Construction Stormwater Runoff Control***

### **Qualifying Local Soil Erosion & Sedimentation Control Programs**

Delta Township is a Part 91 Authorized Public Agency (APA) for soil erosion and sedimentation control compliance for its own projects regardless of size. Soil Erosion & Sedimentation Control for all other development within the Township is regulated by the Eaton County Drain Commissioner's Office. Even though the Township acts as an APA for its own projects, site plans still must meet the requirements of the Eaton County Drain Commissioner's Office. During construction, contractors are advised of the necessary soil erosion and sedimentation control measures that must be implemented for the project in question. Township construction inspectors ensure that all measures are established and remain in place throughout the construction phases of the project.

Application for Part 91 permits for non-Township owned construction projects involving earth disturbances one acre greater in size are required to be made to the Eaton County Drain Commissioner's Office. Compliance with ECDC's rules and regulations is required as a prerequisite to site plan approval under the terms of Chapter 6 of the Delta Township Zoning Ordinance (Appendix C, pp. 14-15, excerpted from *Chapter 6 Site Plan Review*).

### **Construction Stormwater Runoff Control**

Township construction or redevelopment projects are implemented in a manner such that runoff from the site is reduced to the greatest extent possible. Measures utilized may include holding basins, diverting water through grassed swales, etc. Waste such as building materials, concrete washout, chemicals, litter, and sanitary waste is controlled to prevent infiltration into the MS4. Consideration is given to phasing projects to limit the amount of exposed soils. Interim soils stabilization methods such as temporary seeding, mulching, etc. may be utilized as applicable.

Trained inspectors visit Township construction project sites on a frequent basis to enforce required Soil Erosion and Sedimentation Control measures ensuring that discharges into the MS4 do not occur. All contractors are provided with contact information for the Township's inspectors. Should a soil, sediment, or pollutant discharge occur, the contractors are required to contact a Township inspector notifying him/her of the event so that remedial action can be prescribed and implemented in an expedient manner. In the event of a discharge into a connecting MS4, the applicable jurisdiction will be notified by the Township inspectors. For projects not conducted by the Township, the Eaton County Drain Commissioner's Office is the regulating authority.

Should pollutants such as pesticides, petroleum derivatives, construction chemicals or solid waste penetrate the MS4, the EGLE's Lansing District Office will be contacted at 517-373-7660. Or, if after regular business hours, by calling the EGLE's 24-Hour Pollution Emergency Alerting System at 800-292-4706.

Complaints regarding Township construction activities will be relayed to the on-site inspector for investigation, employing the procedures set forth in Section III of this document. Complaints involving connecting MS4s will be addressed using these same procedures.

Delta Township is the landowner or recorded easement holder in the case of its own construction projects and is cognizant of the State of Michigan Permit by Rule (Rule 323.2190).

## ***Section VII – Post-Construction Stormwater Control for New Developments and Redevelopment***

### **Regulatory Mechanisms**

The Eaton County Drain Commissioner's Office is the regulating and enforcing authority for post-construction stormwater control for all new developments and redevelopment projects within the Township, including the Township's own construction projects. Any improvements to the Township's facilities, or any new facilities, would have to be reviewed and approved by the Drain Commissioner's Office, which would include post-construction quality and quantity controls. This is the case for all projects throughout the Township; and would apply to projects that disturb one or more acres, including projects less than an acre that are part of a larger development. The Township's new projects, along with private development projects, are subject to the site plan review process specified in Chapter 6 of the Delta Township Zoning Ordinance (Appendix C, p. 6). Chapter 6.08 B. 5. (Appendix C, p. 15) of the Delta Township Zoning Ordinance requires the approval of the Eaton County Drain Commissioner's Office prior to the issuance of site plan approval. The ECDC's post-construction requirements begin on Page 47 of the 2016 *Eaton County Stormwater Management Manual*.

In designing stormwater management systems, the Township will consider all relevant and appropriate factors, such as:

- Public health, safety, welfare, and the environment
- The long-term impact of stormwater runoff on, from, and beyond the property boundaries
- The natural drainage pattern of the land
- The impact of construction activity on affected watersheds
- The extent of downstream improvements necessary for proper stormwater drainage

The Township will identify and determine appropriate structural and non-structural controls to reduce water runoff volume and improve water quality. Whenever possible, the Township will strive to minimize the use of paved surfaces, preserve natural vegetation, and use grassy swales or other natural vegetation to slow and/or absorb runoff and increase nutrient and water uptake.

### **Water Quality Treatment Performance Standard**

The Eaton County Drain Commissioner's Office is the regulating and enforcing authority for post-construction stormwater quality associated with all new developments and redevelopment projects within the Township, including the Township's own construction projects. The 2016 *Eaton County Stormwater Management Manual* (Appendix C, p. 20) specifies minimum water quality post-construction requirement as:

*A minimum treatment volume (first flush) standard of one inch of precipitation runoff from the entire catchment area, or one-half inch of runoff from the entire catchment area provided treatment of the entire amount in excess of one-half inch is included in an already approved watershed management plan or constructed drainage system design.*

In designing its own projects, the Township will adhere to the standard of: *“a minimum treatment volume (first flush) standard of one inch of precipitation runoff from the entire catchment area”*,



and will not employ alternative options for maintaining post-construction water quality standards as may otherwise be permitted by the 2016 *Eaton County Storm Management Manual*.

With regard to the reduction of post-development total suspended solids (TSS), the 2016 *Eaton County Storm Management Manual* (Appendix C, p. 37) states:

*The NPDES permits adhere to a philosophy of removing pollutants to the “maximum extent practicable” through the use of a percentage removal or effluent limit performance goal. DEQ has established a performance goal of 80% reduction of suspended solids from construction sites as measured on an annual basis, or a discharge concentration of not more than 80 mg/liter measured during a runoff event. This performance standard is based upon U.S. EPA guidelines and has been adopted by state and local agencies nationwide.*

Township treatment methods will be designed on a site specific basis to reduce the discharge of sediment from the site. If approved by the Eaton County Drain Commissioner’s Office, such methods may include:

- Stand pipe filters in stormwater detention basins
- Sediment filter tanks
- Catch basin sumps
- Aqua-Swirls®
- Rain Gardens
- Pervious pavement systems

#### **Channel Protection Performance Standard**

The Eaton County Drain Commissioner’s Office is the regulating and enforcing authority for post-construction channel protection associated with all new developments and redevelopment projects within the Township, including the Township’s own construction projects. The 2016 *Eaton County Stormwater Management Manual* (Appendix C, p. 35) specifies minimum water quality post-construction requirement as:

*The accepted criteria for channel protection requires that runoff volume and peak flow rates from a development site be limited to the existing levels for all storms up to the 2-year, 24-hour event. However, Eaton County reserves the right to enforce more stringent discharge limits if downstream conditions warrant.*

#### **Site Specific Requirements**

As the ECDC’s Office is the enforcing authority, all new development and redevelopment, be it a private or Township initiative, must comply with the standards contained in the 2016 *Eaton County Stormwater Management Manual*. The ECDC has numerous rules and procedures throughout the manual addressing proposed projects in areas of soil or groundwater contamination and potential hotspots. There is no Township owned land with areas of soil or groundwater contamination within the urbanized area. The Township does not expect to construct any Township facilities with the potential to be a hot spot during the term of the current permit.

The Township requires the submission of an Environmental Checklist (Appendix C, pp. 18-19) for each development or redevelopment project to be submitted by the developer as part of the

required site plan review application. The checklist aids in identifying potential hotspots and environmentally sensitive areas that would trigger reviews by the EGLE.

**Long-Term Operation & Maintenance of BMPs**

The Eaton County Drain Commissioner's Office is the regulating and enforcing authority for long-term maintenance of BMPs associated with all new developments and redevelopment projects within the Township, including the Township's own construction projects. The 2016 *Eaton County Stormwater Management Manual* (Appendix C, pp. 20-25) addresses maintenance covenants and plans.

## ***Section VIII – Pollution Prevention / Good Housekeeping for Municipal Operations***

### **Municipal Facility & Structural Stormwater Control Inventory**

An inventory of Delta Township’s owned and operated facilities appear in Appendix A, Table A-1. Further descriptions of these facilities appear in the Township’s Good Housekeeping and Pollution Prevention Manual (Appendix D, pp. 4-9).

### **Facility-Specific-Stormwater Management**

The Township will implement a procedure for assessing each of its facilities within the regulated defined urbanized area for the potential to discharge pollutants to surface waters of the State. This assessment will typically be updated/revised at minimum of 30 days prior to discharging stormwater from a new facility and within 30 days of determining a need to update/revise the facility assessment.

The following factors will be considered when assessing each facility:

- Amount of urban pollutants stored at the site (e.g., sediment, nutrients, metals, hydrocarbons, pesticides, fertilizers, herbicides, chlorides, trash, bacteria, or other site-specific pollutants)
- Identification of improperly stored materials
- The potential for polluting activities to be conducted outside (e.g., vehicle washing)
- Proximity to waterbodies
- Poor housekeeping practices
- Discharge of pollutants of concern to impaired waters

Poor housekeeping practices discovered during an assessment will be corrected in an expedient manner.

The following table lists the Township’s facilities currently located within the regulated defined urbanized area and classifies the potential pollutant risk from each as high, medium, or low.

<b>FACILITY NAME</b>	<b>FACILITY TYPE</b>	<b>ADDRESS</b>	<b>POLLUTANT RISK</b>
Belaire Hills Lift Station	San. Sew. Lift Stn.	6575 Willow Hwy.	Low
Cambridge Manor Lift Station	San. Sew. Lift Stn.	5626 River Ridge	Low
Church Site (Demolished)	N/A	N/A	N/A
Delta Center Cemetery	Cemetery	7301 W. St. Joe Hwy.	Low
Delta Community Center	Rental Halls/Class Meeting Rooms	755 W. Willow Hwy.	Low
Delta Enrichment Center	Classrooms/ Meeting Rooms	4538 Elizabeth Rd.	Low
Delta Fire Station No. 3	Fire Station	215 Snow Rd.	Low

Delta Market Lift Station	San. Sew. Lift Stn	8432 Delta Market Dr.	Low
Delta Mills Park	Park	7001 Old River Trail	Low
Delta Recycling Center	Building	5717 Millett Hwy	Low
East – West Pathway	Non-Motorized Pathway	½ Mile Point Between M-43 & Willow Hwy. Extending From Canal Rd. to Elmwood Rd.	Low
Hillside Cemetery	Cemetery	6415 Delta River Dr.	Low
Lootens Park	Park	Willow Hwy.	Low
Hawk Meadow Park	Park	6160 Delta River Drive	Low
Hunter’s Park	Park	7242 Old River Trail	Low
Mt. Hope Lift Station	San. Sew. Lift Stn.	4100 Old Lansing Rd.	Low
River Ridge Lift Station	San. Sew. Lift Stn.	5220 River Ridge	Low
Snow Road Ground Water Storage Tank	Ground Storage Tank	209 Snow Rd.	Low
Snow Road Elevated Water Tank	Elevated Storage Tank	495 Snow Road	Low
Thomas L. Parkway Lift Station	San. Sew. Lift Stn.	426 W. Willow Hwy.	Low
Well No. 4	Municipal Well Site	5735 W. Willow Hwy.	Low
Well No. 5	Municipal Well Site	1707 Elmwood Rd.	Low
Well No. 6	Municipal Well Site	6325 W. Willow Hwy.	Low
Well No. 9	Municipal Well Site	1505 N. Creyts Rd.	Low
Well No. 10	Municipal Well Site	2210 Marstoga Dr.	Low
Well No. 11	Municipal Well Site	1232 Garfield Ave.	Low
Well No. 12	Municipal Well Site	4444 Delta River Dr.	Low
Willow Lift Station	San. Sew. Lift Stn.	7170 Willow Hwy.	Low
Delta Township Administration Complex	Municipal Offices	7710 W. Saginaw Hwy.	Medium

Delta Fire Station No. 1	Fire Station	811 N. Canal Rd.	Medium
Delta Township Library	Library/Classrooms/ Meeting Rooms	5130 Davenport Dr.	Medium
Grand Woods Park	Park	4500 W. Willow Hwy.	Medium
Player's Club Park	Park	925 S. Canal Rd.	Medium
Sharp Park	Park	1401 Elmwood Rd.	Medium
Lake Iris	Park	Iris Avenue	High
Sharp Park (Overflow Pipe)	Park	1401 Elmwood Rd.	High
Water Operations	Office, Equipment Storage	7812 W. Willow Hwy.	High

Lake Iris, Sharp Park and Water Operations facilities are identified as having the highest potential pollutant risk. The Township's standard operating procedures (SOPs) and Best Management Practices (BMPs) described in its Good Housekeeping and Pollution Prevention Manual (Appendix D) are implemented at all of its facilities, as applicable.

**Structural Stormwater Control Operation & Maintenance Activities**

The Township maintains a total of 38 catch basins on its properties as follows:

- Delta Township Administration Complex - 14
- Delta Fire Station No. 1 - 1
- Delta Township Library - 6
- Snow Road Ground Water Storage Tank - 3
- Delta Fire Station No. 3 - 2
- Snow Road Elevated Water Tank - 1
- Water Operations - 9
- Delta Recycling Center - 1
- Player's Club Park - 1

The Township maintains a total of 11 storm sewer manholes on its properties as follows:

- Delta Township Administration Complex - 3
- Delta Township Library - 5
- Water Operations - 3

Catch basin inspection cleaning procedures are detailed of the Delta Township Good Housekeeping and Pollution Prevention Manual (Appendix D, p. 33). Procedures addressing detention pond maintenance are also contained with the manual (Appendix D, p. 34).

### **Municipal Operations & Maintenance Activities**

The entirety of the Township's Delta Township Good Housekeeping and Pollution Prevention Manual (Appendix D) addresses the Townships operations and maintenance activities with regard parking lot maintenance, cold weather operations, vehicle washing, etc.

### **Managing Vegetated Properties**

The BMPs and SOPs associated with maintain the Township's vegetative properties appear on page 26 of the Delta Township Good Housekeeping and Pollution Prevention Manual (Appendix D).

### **Employee Training**

Maintenance staff will be trained on stormwater pollution prevention once per permit cycle. New employees will be trained within the first year of employment. Employees will be trained using an EXCAL training DVD specific for municipal operations and staff. All topics related to stormwater pollution prevention/good housekeeping of municipal facilities and activities will be covered during the training.

### **Contractor Requirements & Oversight**

Contractors hired by the Township to perform municipal operation and maintenance will be contractually required to comply with all pollution prevention and good housekeeping BMPs as are applicable to the activities performed. Township staff/inspectors are typically on-site to ensure contractual obligations have been met.

## ***Section IX – Total Maximum Daily Load (TMDL) Implementation***

A TMDL is a study or analysis that calculates the maximum amount of a pollutant that a water body can receive and still meet water quality standards. The TMDL establishes a pollutant budget and then allocates portions of the overall budget to the pollutant's sources.

The following TMDLs have been established for waterbodies within the Delta Township MS4 Permit limits:

### **Carrier Creek - Sediment**

The Carrier Creek Watershed is contained entirely within Delta Township on the east side of Eaton County, Michigan. The creek begins as two agricultural drains. The Holly Drain begins in Section 34 and the Moon and Hamilton Drain begins in section 33. Both drains flow in a northerly direction and join to form Carrier Creek in Section 22, immediately south of I-496. The creek flows an additional 4 miles north to its confluence with the Grand River in Section 3.

Historic channelization and more recent urban runoff had resulted in eroding stream banks, high sedimentation rates, and degraded aquatic habitat for fish and macroinvertebrate communities.

The Carrier Creek is solely under the jurisdiction of the Eaton County Drain Commissioner's Office. Delta Township's MS4 does not have any known outfall points into the Carrier Creek within the defined urbanized area. Since the establishment of the TMDL, the Eaton County Drain Commissioner's Office has implemented BMPs to improve the creek's water quality. The Township relies on the BMPs implemented by the Drain Office to satisfy the requirements of the TMDL.

### **Grand River – E. coli**

The Total Maximum Daily Load for E. coli in Portions of the Red Cedar River and Grand River Watersheds; including Sycamore, Sullivan, Squaw, and Doan Creeks; Ingham, Eaton, Clinton, Jackson, and Livingston Counties, Michigan, August 2012 applies to Delta Township's permitted MS4 sites.

#### **1. The procedure to identify and prioritize BMPs implemented to make progress toward achieving E. coli reduction will be as follows:**

- a) Delta Township will continue its involvement with the Greater Lansing Regional Committee (GLRC) for Stormwater Management and cooperate with those developing a collaborative plan to address the regional issue of the E. coli TMDL.
- b) Delta Township will also work with local stakeholder groups which are involved in the ongoing work with the Grand River Watershed Management Plan (WMP) to identify BMPs to implement within economically feasible implementation parameters.
- c) Delta Township will review existing WMPs to determine which BMPs these plans have identified to address the E. coli TMDL which is evaluated in the WMPs.
- d) Delta Township will review the existing E. coli TMDL adopted by the EGLE in August 2012 for recommended BMPs.

- e) The above mentioned TMDL document will also be used to assist in prioritizing BMPs to address the E. coli TMDL on the identified sub-watersheds or sections of the Grand River which are in the Urbanized Area of Delta Township.
- f) Delta Township will cooperate with the GLRC and others to revise this TMDL procedure to assure it can be realistically implemented. This will be done at least once per permit cycle.
- g) Once a BMP is implemented it will be reviewed at least once a permit cycle to determine effectiveness.
- h) Criteria for review, updates or revisions of a BMP will be completed by year three of a permit cycle.
- i) Any changes in identification of BMPs or prioritization of BMPs will be reported in a scheduled progress report during a permit cycle.

**2. List of Prioritized BMPs currently being implemented during the permit cycle to make progress towards achieving a load reduction.**

The potential sources and prioritized BMPs that are already implemented or will be implemented during the permit cycle for the reduction of E. coli discharge from the Delta Township MS4 system are tabulated below:

Priority	Source – Cause	BMPs or Strategies currently in place	Tasks	Application to Delta MS4 System
1	Human – Illicit Connections	Illicit Discharge Elimination Program (IDEP)	- Illicit connection identification and elimination - Continued dry weather screening - Continued implementation of PEP - Continued participation w/ GLRC activities	- Identification and removal of any illicit connections to Township-owned stormwater systems
2	Pet Waste	Pet Waste Management	- Educational programs - Township ordinance Sec. 14-23 - Pet waste disposal products at Township parks and pathways	- Delta Library - Delta Community Center - Sharp Park
3	Wildlife Waste	Wildlife / Waterfowl Management	- Discourage the congregation of geese/ducks in riparian areas using tall and dense vegetation where possible or other applicable methods	- Sharp Park - Water Operations
4	Human – On-site Sewage Disposal Systems	On Site Sewage Systems (OSSS) Program	- Program administered by Barry-Eaton District Health Department	- Township will refrain from construction of any OSSS on Township properties



The above table is prioritized as indicated. If this priority changes when the table is reviewed during the permit cycle or before the first progress report of this permit period, then the table will be revised and an updated table with the new priority ranking will be submitted with the progress report.

As other BMPs or strategies are identified and implemented; or are already being implemented, they will be added to this list and reported during a scheduled progress report submitted for the NPDES MS4 permit during the permit cycle.

### **3. Monitoring plan for assessing the effectiveness of the BMPs in reducing E.coli**

Delta Township proposes the following plan for monitoring the effectiveness of the BMPs to reduce E. coli pollutant load to the Grand River.

Delta Township will take the following approach to meet the TMDL goals. First, Delta Township will continue to work with other communities and entities within the Grand River Watershed to monitor the overall health of the watershed within the urbanized area.

Delta Township's MS4 permit jurisdiction is limited to Township owned properties within the urbanized area of Delta Township, the remainder of storm water systems being under the control of the Eaton County Drain Office, Eaton County Road Commission and Michigan Department of Transportation.

The permitted Delta Township MS4 storm water system consists of 13 discharge/outfall points from Township-owned stormwater systems, none of which discharge directly to the Grand River. Each of the 13 discharge/outfall points discharges to Eaton County Drain Office controlled facilities.

The second component of the Delta Township MS4 E. coli monitoring plan will consist of end of pipe wet weather sampling and testing.

Wet-weather sampling will be conducted as follows:

- Sampling will be completed between May 1 and October 31
- Sampling will occur after it has been dry for a period of time, such that the rain event represents a "first flush"
- Sampling will focus on the "first flush" within the first 30 minutes, but not longer than the first 60 minutes, after the beginning of a rain event
- The rain event shall be greater than 0.25" in 24-hours or as needed to generate run-off sufficient for obtaining a sample
- Laboratory analysis of the sample will occur within 6 hours of collection of the sample

The following schedule is proposed for conducting wet weather sampling/testing of the discharge/outfall points that have been determined to have the highest likelihood of exposure to the identified E. coli sources.

### TMDL Wet Weather Sampling Program Schedule

Activity	Year
Perform Initial Wet Weather Sampling and Testing at Discharge/Outfall #1A, 1B, 2B, 4, 5, 10, 16, 17, 18	2020
Perform Follow-Up Testing/Investigation at identified Discharge/Outfall Points and Evaluate Need for Additional/Revised BMPs	2021
Implement Additional/Revised BMPs	2022
Maintain Additional/Revised BMPs	2023
Perform Secondary Wet Weather Sampling and Testing at identified Discharge/Outfall points	2024

Delta Township will collect monitoring grab samples from the outfall/discharge points as indicated above. Discharge/Outfall points 2A, 6, 8, 14, and 15 were evaluated and determined to have little to no potential exposure to identified E. coli sources and therefore are not included in the monitoring plan. Wet weather sampling will be performed on all 9 Discharge/Outfall Points in year one, during Years 3 - 4 the Township will implement BMPs. During Year 5 wet-weather sampling will be performed on the identified Discharge/Outfall Points to demonstrate the effectiveness of additional BMPs, if needed. The E. coli data will be recorded and analyzed to attempt to equate characteristics of the drainage district with the E. coli levels recorded.

If after wet weather sampling, sites exhibit low levels of E. coli (less than 300 cts/100ml, full body contact standard), demonstrating that the drainage area/system is not a significant contributor to E. coli pollutant load, they will fall out of future sampling rotation. If there is a higher level of E. coli (greater than 1,000 cts/ml, partial body contact standard) found at an individual discharge than in others, the drainage area will be investigated further to attempt to determine the likely source and inform the selection and implementation of corrective BMPs. If a specific, identifiable event or issue is found and corrected, follow up wet weather sampling will be completed within the same year to demonstrate that the event/issue was resolved and that the previous testing was not representative of the typical discharge. If no specific, identifiable event or issue is found a locations exceeding 1,000 cts/100ml, microbial source tracking method may also be used to try to differentiate the E. coli as being from human, pet or wildlife source.

The information gathered from the sampling and evaluation of the E. coli levels at the individual drainage areas will direct the Townships efforts in establishing BMPs; ordinances; policy and procedures; and other stormwater control efforts to ensure progress toward achieving the required E. coli reductions. Those efforts will be compared to with future results of the wet weather sampling in Year 5 to determine which efforts have a discernable relationship to the E. coli levels generated.

## ***Section X – Action Plan***

Delta Township in collaboration with the GLRC and the Tri-County Regional Planning Commission has developed an action plan (Appendix E) to guide in the implementation of this SWMP. A great many of the action items will be implemented as a group by the GLRC, especially those pertaining to public education. Phase II communities are required to develop and implement a stormwater management plan with the following six minimum control measures:

- **Public Education and Outreach** - Distributing educational materials and performing outreach to inform citizens about the impacts polluted stormwater runoff discharges can have on water quality.
- **Public Involvement and Participation** - Providing opportunities for citizens to participate in program development, implementation, and review, including effectively publicizing public hearings or participation.
- **Illicit Discharge Detection and Elimination** - Developing and implementing a plan to detect and eliminate illicit discharges to the storm drain system including illicit connections and illegal dumping.
- **Construction Site Runoff Control** - Developing, implementing, and enforcing an erosion and sediment control program for construction activities that disturb one or more acres of land.
- **Pollution Prevention / Good Housekeeping for Municipal Operations** - Developing and implementing a program to prevent or reduce pollutant runoff from municipal operations. (This is a primary focus of this handbook.)
- **Post-Construction Stormwater Management in New Development and Redevelopment** - Developing, implementing, and enforcing a program to address discharges of stormwater runoff from new and redevelopment areas.

The action plan summarizes the implementation activities necessary to meet these measures.

# **DELTA CHARTER TOWNSHIP**

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## **Stormwater Management Program (SWMP)**



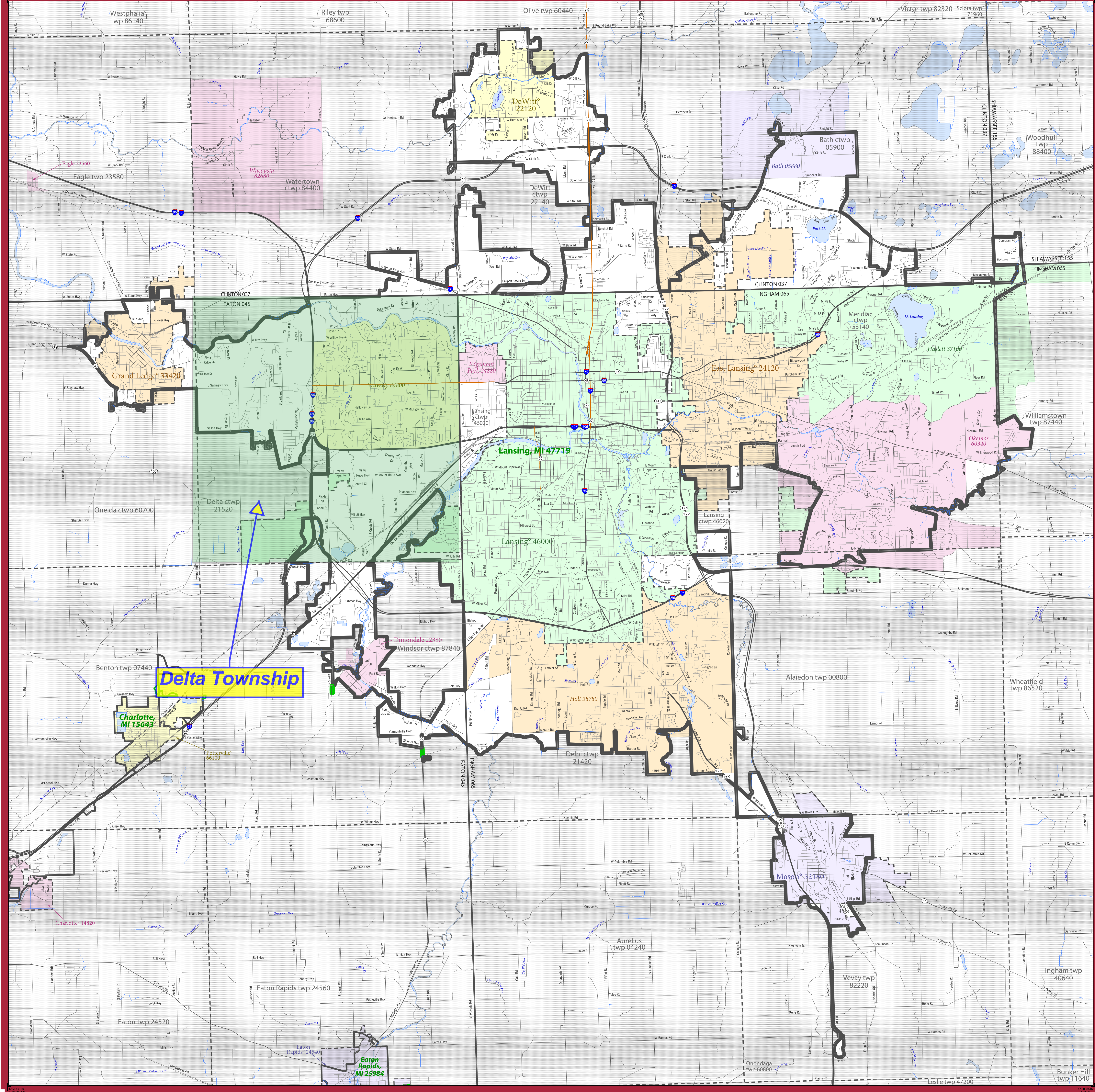
# **DELTA**

## **T O W N S H I P**

### **APPENDIX A**

- **Map A-1**                      **Lansing Urbanized Area Map**
- **Map A-2**                      **Delta Township Urbanized Area & Discharge Points**
- **Maps A-3 to A-12**        **Discharge Point Sites Aerial Maps**
- **Table A-1**                    **List of Delta Township Facilities within Urbanized Area & MS4 Outfall/Discharge Point Locations**

# 2010 CENSUS - URBANIZED AREA REFERENCE MAP: Lansing, MI



**LEGEND**

SYMBOL DESCRIPTION	SYMBOL	SYMBOL	SYMBOL	SYMBOL
International	---	CANADA		
Federal American Indian Reservation	■	L'ANSE RES 1880		
Off-Reservation Trust Land	■	T1880		
Urbanized Area	■	Dover, DE 24580		
Urban Cluster	■	Toolee, VT 88057		
State (or statistically equivalent entity)	---	NEW YORK 36		
County (or statistically equivalent entity)	---	ERIE 029		
Minor Civil Division (MCD) <sup>1,2</sup>	---	Bristol town 07485		
Consolidated City	●	MILFORD 47500		
Incorporated Place <sup>1,3</sup>	■	Davis 18100		
Census Designated Place (CDP) <sup>2</sup>	■	Incline Village 35100		
Interstate	—	Water Body	■	Pleasant Lake
U.S. Highway	—	Military	■	Fort Belvoir
State Highway	—	Outside Subject Area	■	
Other Road	—			
Railroad	—			
Perennial Stream	—			
Intermittent Stream	—			

Where international, state, county, and/or MCD boundaries coincide, the map shows the boundary symbol for only the highest-ranking of these boundaries.

1 A "\*" following an MCD name denotes a false MCD. A "\*" following a place name indicates that a false MCD exists with the same name and FIPS code as the place; the false MCD label is not shown.

2 MCD boundaries are shown in the following states in which some or all MCDs function as general-purpose governmental units: Connecticut, Illinois, Indiana, Kansas, Maine, Massachusetts, Michigan, Minnesota, Missouri, Nebraska, New Hampshire, New Jersey, New York, North Dakota, Ohio, Pennsylvania, Rhode Island, South Dakota, Vermont, and Wisconsin. (Note that Illinois and Nebraska have some counties covered by nongovernmental precincts and Missouri has some counties covered by nongovernmental townships.)

3 Place label color corresponds to the place fill color.

Label colors: Davis Davis Davis Davis Davis

**SUBJECT AREA COUNTIES ON MAP SHEET**

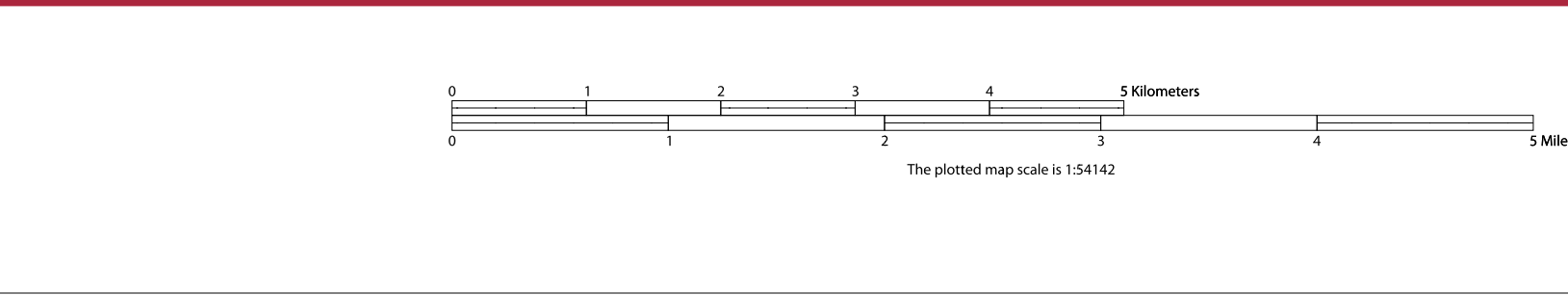
- 26037 Clinton
- 26045 Eaton
- 26065 Ingham
- 26155 Shiawassee

MAP A-1

All legal boundaries and names are as of January 1, 2010. Urban areas are based on results from the 2010 Decennial Census. The boundaries shown on this map are for Census Bureau statistical data collection and tabulation purposes only; their depiction and designation for statistical purposes does not constitute a determination of jurisdictional authority or rights of ownership or entitlement.

Geographic Vintage: 2010 Census (reference date: January 1, 2010)  
 Data Source: U.S. Census Bureau's MAI/TIGER database (TAB10)  
 Map Created by Geography Division: March 09, 2012

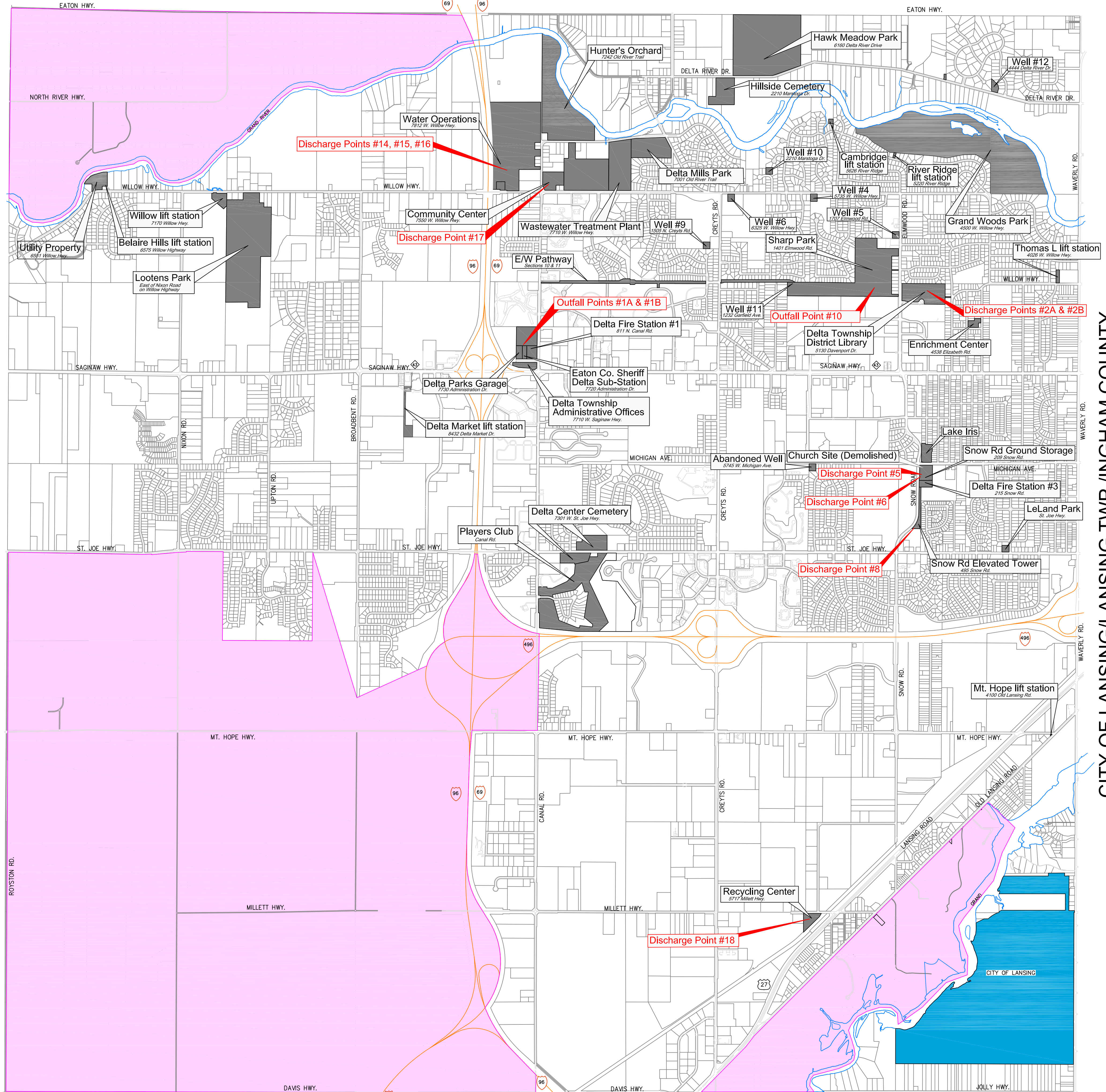
Projection: Albers Equal Area Conic  
 Datum: NAD 83  
 Spheroid: GRS 80  
 1st Standard Parallel: 42 47 51  
 2nd Standard Parallel: 47 12 16  
 Central Meridian: 86 16 13  
 Latitude of Projection's Origin: 41 41 45  
 False Easting: 0  
 False Northing: 0



PARENT SHEET 1  
 Total Sheets: 1  
 Index Sheets: 0  
 Parent Sheets: 1

UA NAME: Lansing, MI  
 UA CODE: 47719  
 ENTITY TYPE: Urbanized Area (UA)  
 ST: Michigan (26)

WATERTOWN TWP./CLINTON COUNTY



ONEIDA TOWNSHIP

CITY OF LANSING/LANSING TWP./INGHAM COUNTY

WINDSOR TOWNSHIP

MAP A-2

# DELTA CHARTER TOWNSHIP

## STORMWATER DISCHARGE & OUTFALL POINTS MAP

Outfall No.	Screening Year	Map No.	Location
1A	2017	A-3	DELTA TOWNSHIP ADMIN. COMPLEX
1B	2017	A-3	FIRE STATION #1
2A	2018	A-4	DELTA TWP. LIBRARY N. DISCHARGE
2B	2018	A-4	DELTA TWP. LIBRARY S. DISCHARGE
10	2018	A-9	SHARP PARK
14	2019	A-10	WATER OPERATIONS
15	2019	A-10	WATER OPERATIONS
16	2019	A-10	WATER OPERATIONS
17	2019	A-11	COMMUNITY CENTER
5	2020	A-6	SNOW ROAD GROUND STORAGE
6	2020	A-7	FIRE STATION #3
8	2020	A-8	SNOW ROAD ELEVATED STORAGE
18	2021	A-12	DELTA RECYCLING CENTER
3			Not Used (removed)
4			CHURCH SITE (Demolished, Discharge Pt. removed)
7			Not Used (removed)
9			Not Used (removed)
11, 12, 13			Not Used (removed)

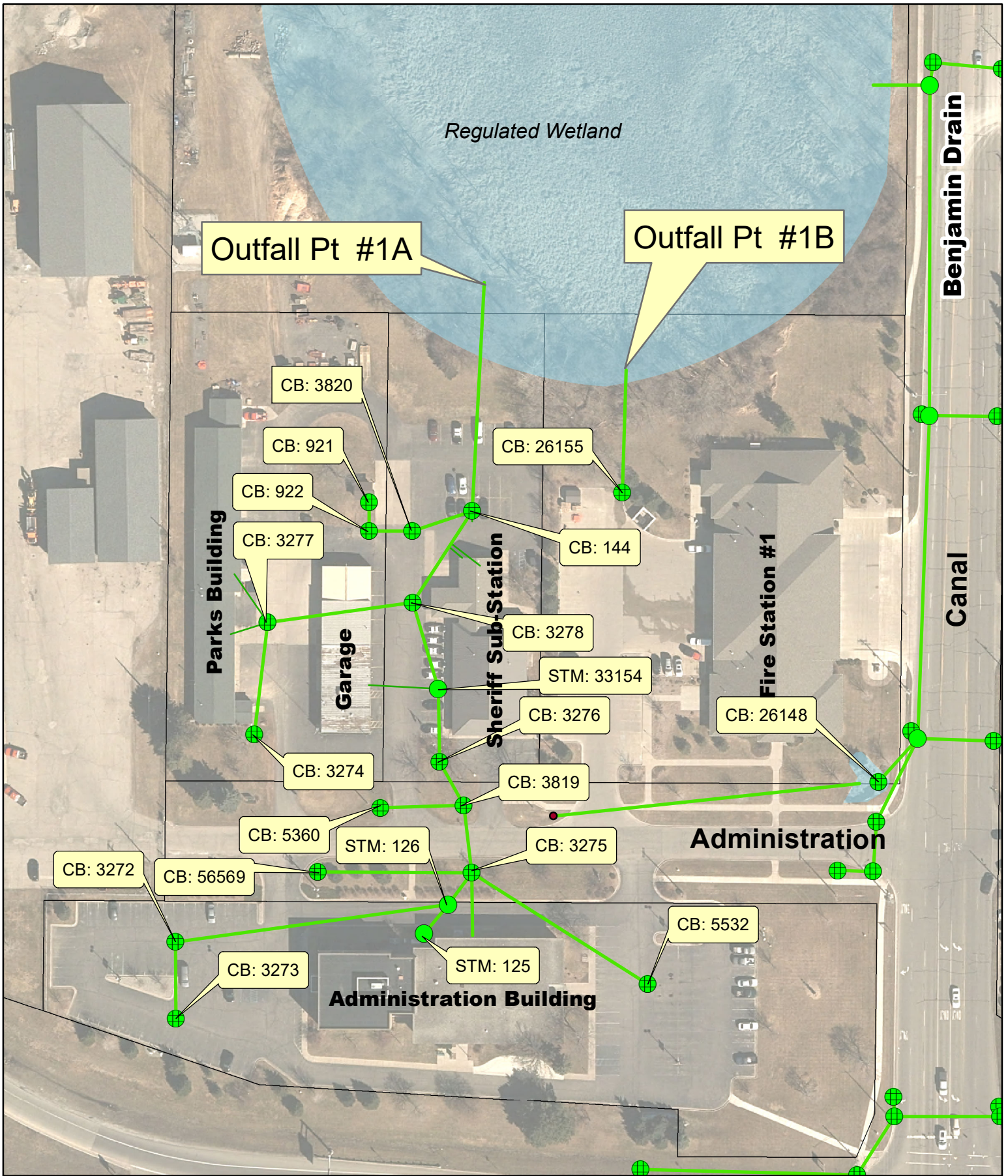
### KEY

- DELTA TOWNSHIP OWNED PROPERTIES
- CITY OF LANSING
- NON-URBANIZED AREA (2010 U.S. Census)
- URBANIZED AREA (2010 U.S. Census)

Revised Novmber 2017 under Permit M10059725  
Revised April 1, 2017



No Scale



**Delta Township Administration Complex  
& Fire Station #1  
Township Outfall Points No. 1A & 1B  
MAP A-3**

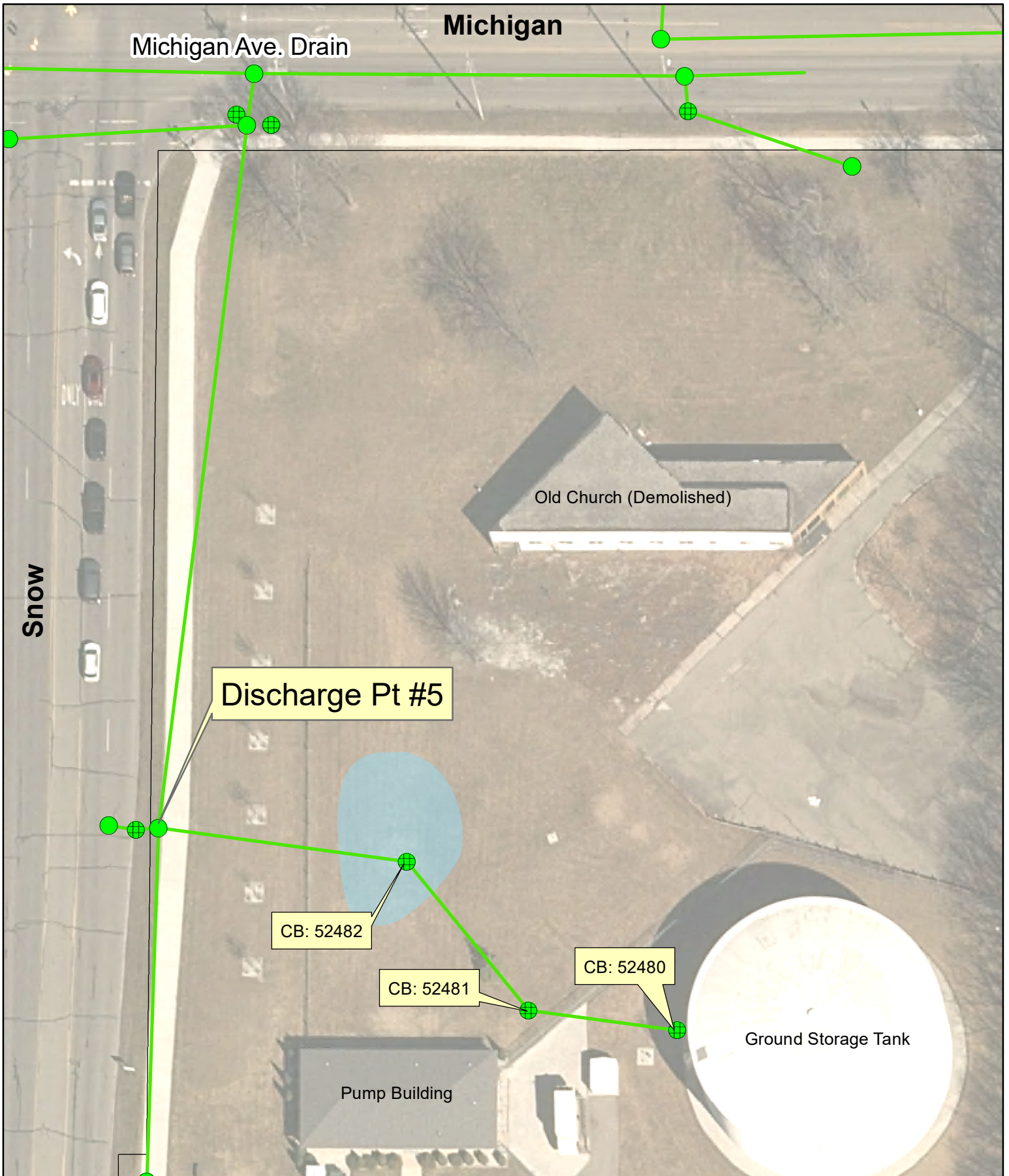




**Delta Twp. Library  
Township Discharge Points No. 2A & 2B  
MAP A-4**

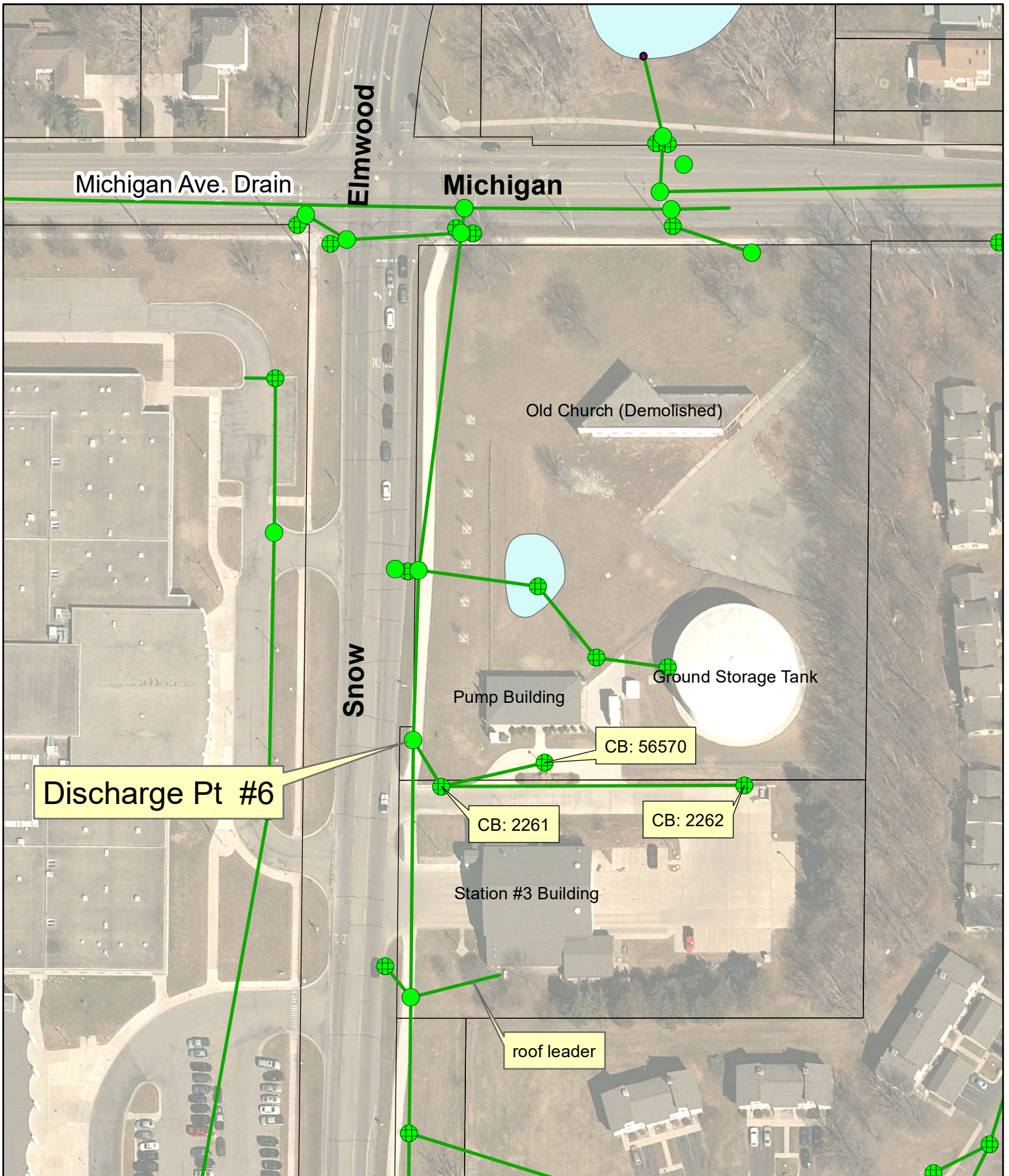






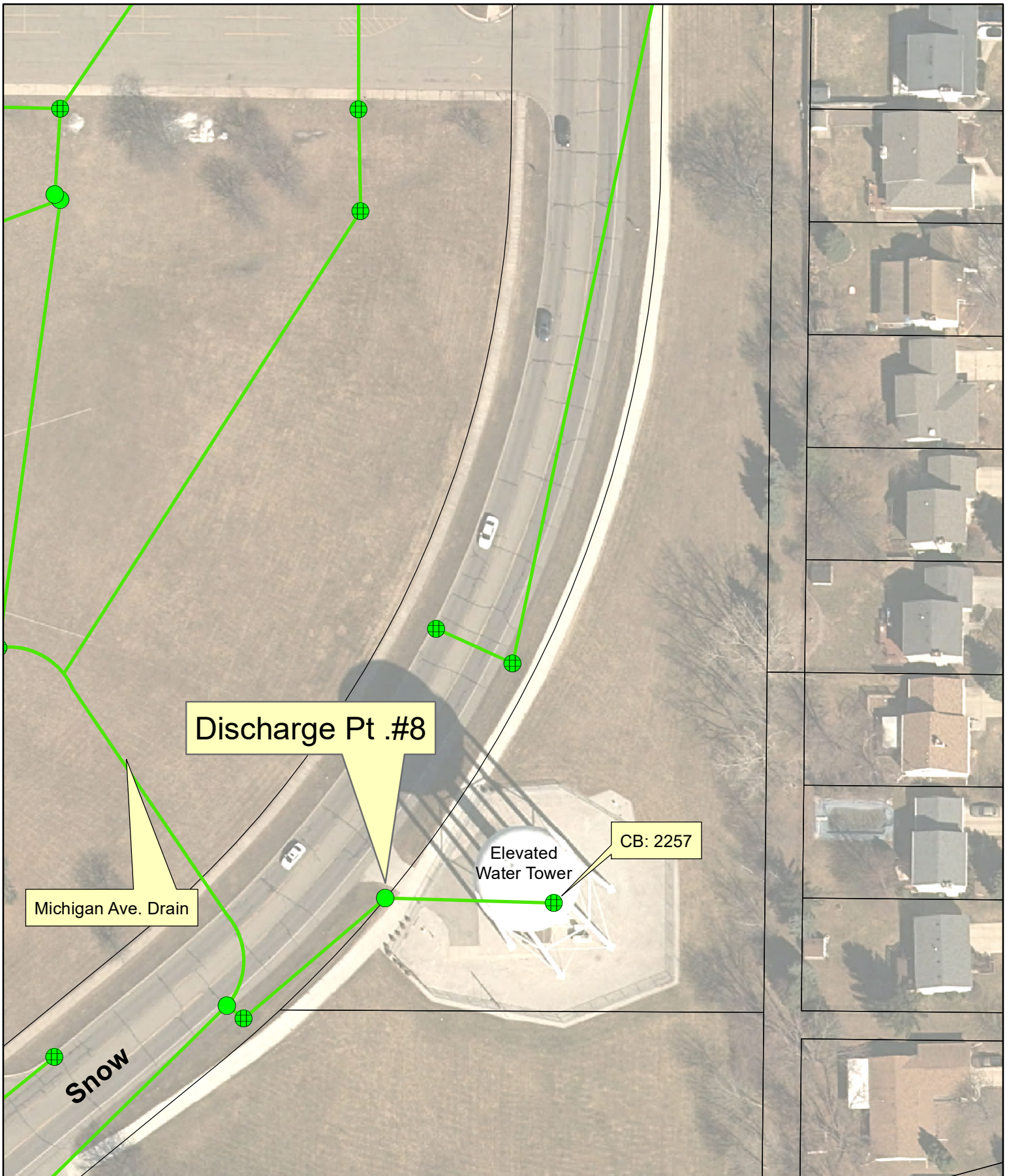
**Snow Road Ground Storage  
Township Discharge Point No. 5  
MAP A-6**





**Fire Station #3**  
**Township Discharge Point No. 6**  
**MAP A-7**

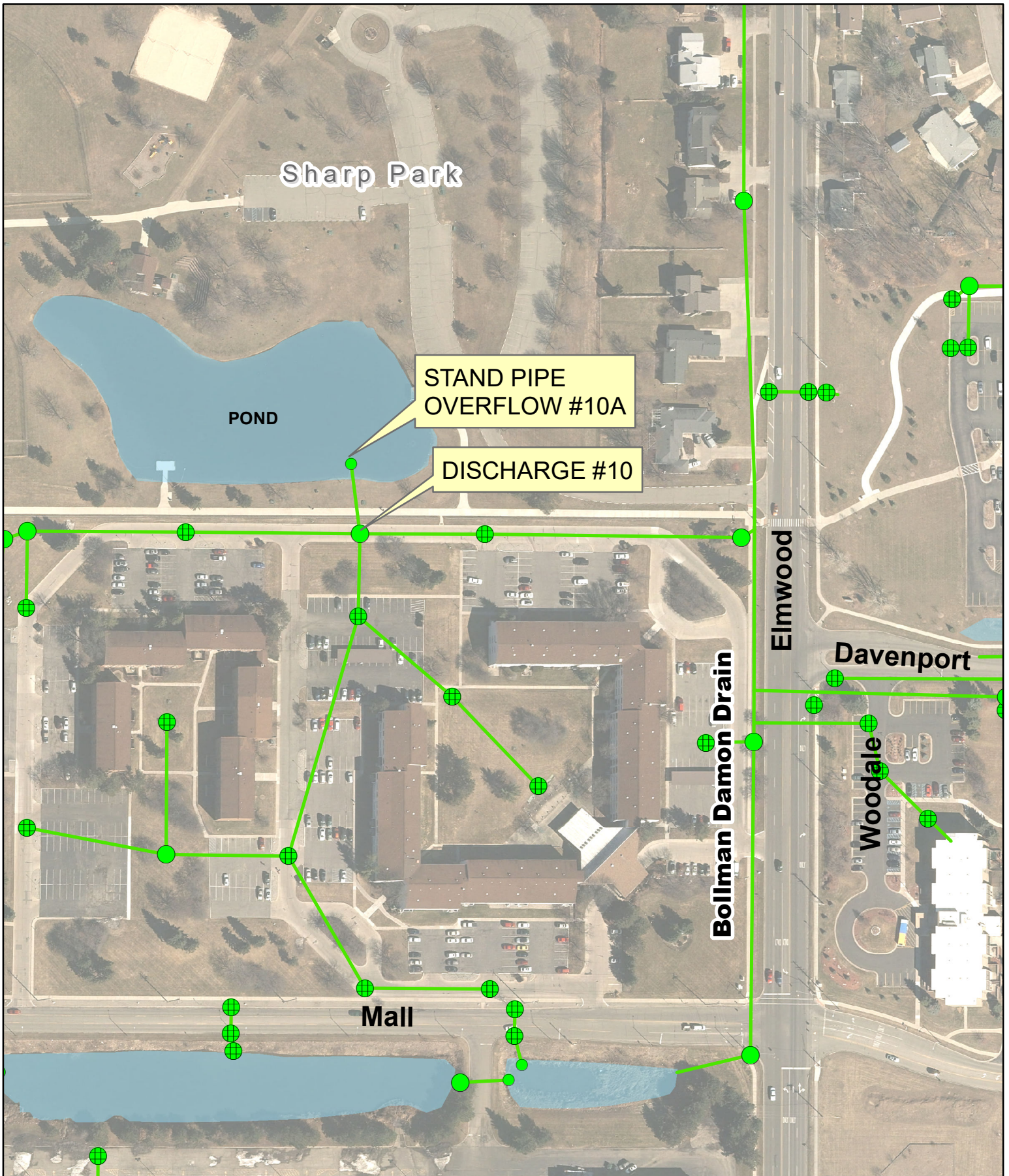




**Snow Road Elevated Storage  
Township Discharge Point No. 8  
MAP A-8**



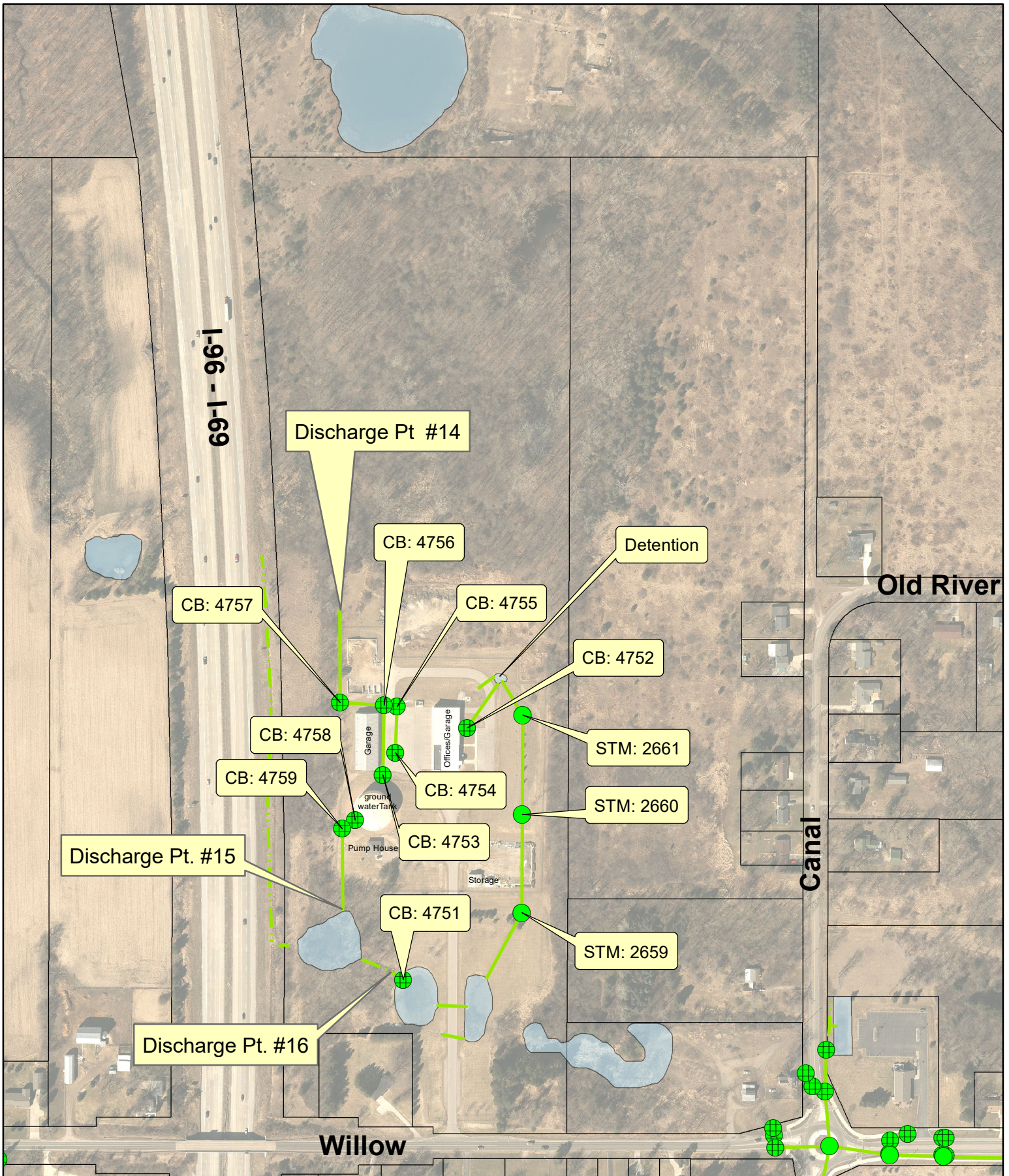
Revised: 03/09/2020



**Sharp Park  
Township Discharge No. 10  
MAP A-9**



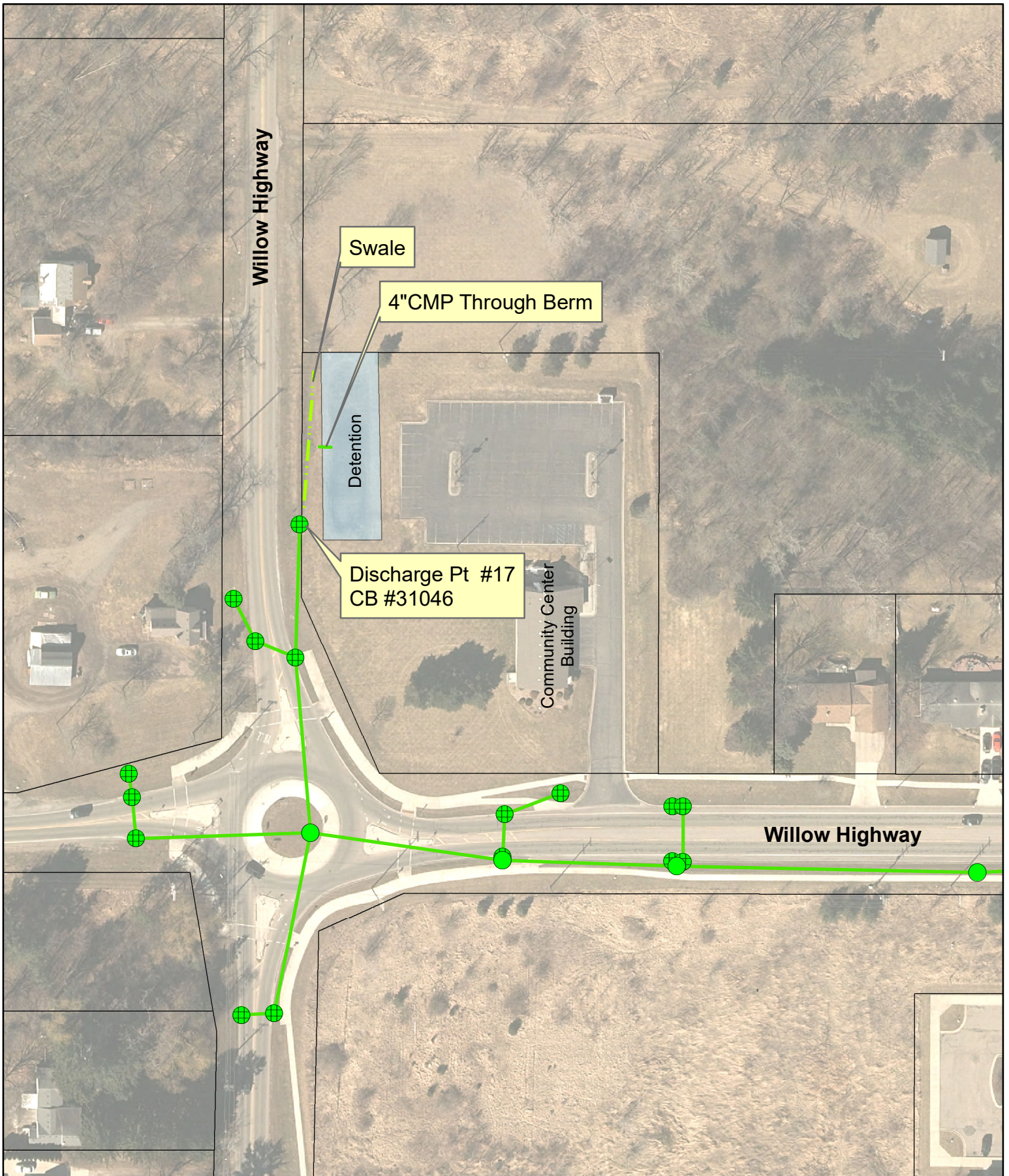
Revised: 03/09/2020



**Water Operations**  
**Township Discharge No. 14, 15 & 16**  
**MAP A-10**



Revised: 03/11/2020



**Community Center  
Township Discharge No. 17  
MAP A-11**



Revised: 03/11/2020



**Delta Recycling Center  
Township Discharge Point No. 18  
MAP A-12**



Revised: 03/10/2020

**TABLE A-1  
DELTA TOWNSHIP FACILITIES WITHIN URBANIZED AREA  
& MS4 OUTFALL/DISCHARGE POINT LOCATIONS**

OUTFALL POINT NO.	DISCHARGE POINT NO.	FACILITY NAME	FACILITY TYPE	ADDRESS	# of CBs/STMHs	LATITUDE & LONGITUDE	RECEIVING COUNTY DRAIN	SURFACE WATER OF THE STATE DISCHARGED TO
#1A	-	Delta Township Administration Complex	Municipal Offices	7710 W. Saginaw Hwy.	14/3	N 42°44'35" W 84°39'47"	Benjamin Drain	The Grand River
#1B	-	Delta Fire Station No. 1	Fire Station	811 N. Canal Rd.	1/0	N 42°44'35" W 84°39'46"	Benjamin Drain	The Grand River
-	#2A #2B	Delta Township Library	Library/Classrooms/ Meeting Rooms	5130 Davenport Dr.	4/3 2/2	N 42°44'52" W 84°37'13" N 42°44'50" W 84°37'12"	Bollman & Damon Drain	The Grand River
-	#5	Snow Road Ground Water Storage Tank	Ground Storage Tank	209 Snow Rd.	3/0	N 42°43'58" W 84°37'13"	Michigan Ave. Drain	The Carrier Creek
-	#6	Delta Fire Station No. 3	Fire Station	215 Snow Rd.	2/0	N 42°43'57" W 84°37'13"	Michigan Ave. Drain	The Carrier Creek
-	#8	Snow Road Elevated Water Tank	Elevated Storage Tank	495 Snow Road	1/0	N 42°43'43" W 84°37'15"	Michigan Ave. Drain	The Grand River
#10	-	Sharp Park	Park	1401 Elmwood Rd.	Overflow Pipe	N 42°44'50" W 84°37'28"	Bollman & Damon Drain	The Grand River
-	#14	Water Operations	Office, Equipment Storage	7812 W. Willow Hwy.	5/0	N 42°45'34" W 84°39'58"	Flow Over Land	The Grand River
-	#15				2/0	N 42°45'25" W 84°39'59"	Flow Over Land	The Grand River
-	#16				2/3	N 42°45'44" W 84°39'56"	Flow Over Land	The Grand River
-	#17	Delta Community Center	Rental Halls/Class Meeting Rooms	7550 W. Willow Hwy.	-	N 42°45'23" W 84°39'42"	Flow Over Land	The Grand River
-	#18	Delta Recycling Center	Building	5717 Millett Hwy	1/0	N 42°41'51" W 84°37'58"	Hunter Drain	The Carrier Creek
-	-	Belaire Hills Lift Station	San. Sew. Lift Stn.	6575 Willow Hwy.	-	-	-	-
-	-	Cambridge Manor Lift Station	San. Sew. Lift Stn.	5626 River Ridge	-	-	-	-
-	-	Delta Center Cemetery	Cemetery	7301 W. St. Joe Hwy.	-	-	-	-
-	-	Delta Enrichment Center	Classrooms/ Meeting Rooms	4538 Elizabeth Rd.	-	-	-	-
-	-	Delta Market Lift Station	San. Sew. Lift Stn.	8432 Delta Market Dr.	-	-	-	-
-	-	Delta Mills Park	Park	7001 Old River Trail	-	-	-	-
-	-	East – West Pathway	Non-Motorized Pathway	½ Mile Point Between M-43 & Willow Hwy. Extending From Canal Rd. to Elmwood Rd.	-	-	-	-
-	-	Grand Woods Park	Park	4500 W. Willow Hwy.	4/0	-	River Ridge Drain	The Grand River
-	-	Grand Woods Park	Park	4500 W. Willow Hwy.	Open Ditch	-	Grand Woods Drain	The Grand River
-	-	Grand Woods Park	Park	4500 W. Willow Hwy.	6/9	-	Garlock & Foster Drain	The Grand River



OUTFALL POINT NO.	DISCHARGE POINT NO.	FACILITY NAME	FACILITY TYPE	ADDRESS	# of CBs/STMHs	LATITUDE & LONGITUDE	RECEIVING COUNTY DRAIN	SURFACE WATER OF THE STATE DISCHARGED TO
-	-	Hawk Meadow Park	Park	6160 Delta River Drive	-	-	-	-
-	-	Hillside Cemetery	Cemetery	6415 Delta River Dr.	-	-	-	-
-	-	Hunter's Park	Park	7242 Old River Trail	-	-	-	-
-	-	Lake Iris	Park	Iris Avenue	1/0	-	Briggs Drain	The Grand River
-	-	Lootens Park	Park	Willow Hwy.	-	-	-	-
-	-	Mt. Hope Lift Station	San. Sew. Lift Stn.	4100 Old Lansing Rd.	-	-	-	-
-	-	Player's Club Park	Park	925 S. Canal Rd.	1/0	-	Players Club Branch Drain	The Carrier Creek
-	-	River Ridge Lift Station	San. Sew. Lift Stn.	5220 River Ridge	-	-	-	-
-	-	Sharp Park	Park	1401 Elmwood Rd.	1/1	-	Bollman & Damon Drain	-
-	-	Thomas L. Parkway Lift Station	San. Sew. Lift Stn.	426 W. Willow Hwy.	-	-	-	-
-	-	Well No. 4	Municipal Well Site	5735 W. Willow Hwy.	-	-	-	-
-	-	Well No. 5	Municipal Well Site	1707 Elmwood Rd.	-	-	-	-
-	-	Well No. 6	Municipal Well Site	6325 W. Willow Hwy.	-	-	-	-
-	-	Well No. 9	Municipal Well Site	1505 N. Creyts Rd.	-	-	-	-
-	-	Well No. 10	Municipal Well Site	2210 Marstoga Dr.	-	-	-	-
-	-	Well No. 11	Municipal Well Site	1232 Garfield Ave.	-	-	-	-
-	-	Well No. 12	Municipal Well Site	4444 Delta River Dr.	-	-	-	-
-	-	Willow Lift Station	San. Sew. Lift Stn.	7170 Willow Hwy.	-	-	-	-

\*\*Note: Previously listed Discharge & Outfall Nos 3, 7, 9, 11, 12 and 13 have been removed because they are under the jurisdiction of the Eaton County Drain Commissioner. Newly identified Discharge & Outfall Nos 14, 15, 16, 17 and 18 are included now because of the update to the urbanized area from the 2010 Census Data. In 2017, previously listed Discharge No 4 was physically removed and the point was eliminated.

**TABLE A-1  
DELTA TOWNSHIP FACILITIES WITHIN URBANIZED AREA  
& MS4 OUTFALL/DISCHARGE POINT LOCATIONS**

OUTFALL POINT NO.	DISCHARGE POINT NO.	FACILITY NAME	FACILITY TYPE	ADDRESS	# of CBs/STMHs	LATITUDE & LONGITUDE	RECEIVING COUNTY DRAIN	SURFACE WATER OF THE STATE DISCHARGED TO
#1A	-	Delta Township Administration Complex	Municipal Offices	7710 W. Saginaw Hwy.	14/3	N 42°44'35" W 84°39'47"	Benjamin Drain	The Grand River
#1B	-	Delta Fire Station No. 1	Fire Station	811 N. Canal Rd.	1/0	N 42°44'35" W 84°39'46"	Benjamin Drain	The Grand River
-	#2A #2B	Delta Township Library	Library/Classrooms/ Meeting Rooms	5130 Davenport Dr.	4/3 2/2	N 42°44'52" W 84°37'13"  N 42°44'50" W 84°37'12"	Bollman & Damon Drain	The Grand River
-	#5	Snow Road Ground Water Storage Tank	Ground Storage Tank	209 Snow Rd.	3/0	N 42°43'58" W 84°37'13"	Michigan Ave. Drain	The Carrier Creek
-	#6	Delta Fire Station No. 3	Fire Station	215 Snow Rd.	2/0	N 42°43'57" W 84°37'13"	Michigan Ave. Drain	The Carrier Creek
-	#8	Snow Road Elevated Water Tank	Elevated Storage Tank	495 Snow Road	1/0	N 42°43'43" W 84°37'15"	Michigan Ave. Drain	The Grand River
#10	-	Sharp Park	Park	1401 Elmwood Rd.	Overflow Pipe	N 42°44'50" W 84°37'28"	Bollman & Damon Drain	The Grand River
-	#14	Water Operations	Office, Equipment Storage	7812 W. Willow Hwy.	5/0	N 42°45'34" W 84°39'58"	Flow Over Land	The Grand River
-	#15				2/0	N 42°45'25" W 84°39'59"	Flow Over Land	The Grand River
-	#16				2/3	N 42°45'44" W 84°39'56"	Flow Over Land	The Grand River
-	#17	Delta Community Center	Rental Halls/Class Meeting Rooms	7550 W. Willow Hwy.	-	N 42°45'23" W 84°39'42"	Flow Over Land	The Grand River
-	#18	Delta Recycling Center	Building	5717 Millett Hwy	1/0	N 42°41'51" W 84°37'58"	Hunter Drain	The Carrier Creek
-	-	Belaire Hills Lift Station	San. Sew. Lift Stn.	6575 Willow Hwy.	-	-	-	-
-	-	Cambridge Manor Lift Station	San. Sew. Lift Stn.	5626 River Ridge	-	-	-	-
-	-	Delta Center Cemetery	Cemetery	7301 W. St. Joe Hwy.	-	-	-	-
-	-	Delta Enrichment Center	Classrooms/ Meeting Rooms	4538 Elizabeth Rd.	-	-	-	-
-	-	Delta Market Lift Station	San. Sew. Lift Stn.	8432 Delta Market Dr.	-	-	-	-
-	-	Delta Mills Park	Park	7001 Old River Trail	-	-	-	-
-	-	East – West Pathway	Non-Motorized Pathway	½ Mile Point Between M-43 & Willow Hwy. Extending From Canal Rd. to Elmwood Rd.	-	-	-	-
-	-	Grand Woods Park	Park	4500 W. Willow Hwy.	4/0	-	River Ridge Drain	The Grand River
-	-	Grand Woods Park	Park	4500 W. Willow Hwy.	Open Ditch	-	Grand Woods Drain	The Grand River
-	-	Grand Woods Park	Park	4500 W. Willow Hwy.	6/9	-	Garlock & Foster Drain	The Grand River

OUTFALL POINT NO.	DISCHARGE POINT NO.	FACILITY NAME	FACILITY TYPE	ADDRESS	# of CBs/STMHs	LATITUDE & LONGITUDE	RECEIVING COUNTY DRAIN	SURFACE WATER OF THE STATE DISCHARGED TO
-	-	Hawk Meadow Park	Park	6160 Delta River Drive	-	-	-	-
-	-	Hillside Cemetery	Cemetery	6415 Delta River Dr.	-	-	-	-
-	-	Hunter's Park	Park	7242 Old River Trail	-	-	-	-
-	-	Lake Iris	Park	Iris Avenue	1/0	-	Briggs Drain	The Grand River
-	-	Lootens Park	Park	Willow Hwy.	-	-	-	-
-	-	Mt. Hope Lift Station	San. Sew. Lift Stn.	4100 Old Lansing Rd.	-	-	-	-
-	-	Player's Club Park	Park	925 S. Canal Rd.	1/0	-	Players Club Branch Drain	The Carrier Creek
-	-	River Ridge Lift Station	San. Sew. Lift Stn.	5220 River Ridge	-	-	-	-
-	-	Sharp Park	Park	1401 Elmwood Rd.	1/1	-	Bollman & Damon Drain	-
-	-	Thomas L. Parkway Lift Station	San. Sew. Lift Stn.	426 W. Willow Hwy.	-	-	-	-
-	-	Well No. 4	Municipal Well Site	5735 W. Willow Hwy.	-	-	-	-
-	-	Well No. 5	Municipal Well Site	1707 Elmwood Rd.	-	-	-	-
-	-	Well No. 6	Municipal Well Site	6325 W. Willow Hwy.	-	-	-	-
-	-	Well No. 9	Municipal Well Site	1505 N. Creyts Rd.	-	-	-	-
-	-	Well No. 10	Municipal Well Site	2210 Marstoga Dr.	-	-	-	-
-	-	Well No. 11	Municipal Well Site	1232 Garfield Ave.	-	-	-	-
-	-	Well No. 12	Municipal Well Site	4444 Delta River Dr.	-	-	-	-
-	-	Willow Lift Station	San. Sew. Lift Stn.	7170 Willow Hwy.	-	-	-	-

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**DELTA CHARTER TOWNSHIP**

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**Stormwater Management Program (SWMP)**



**DELTA**  
T O W N S H I P

**APPENDIX B**

**Public Education Plan (PEP)**  
*(includes. Public Participation/Involvement Procedure)*

**Greater Lansing Regional Committee  
for Stormwater Management**

**Public Education Plan**



**GREATER LANSING  
REGIONAL COMMITTEE**  
FOR STORM WATER MANAGEMENT

[www.mywatersheds.org](http://www.mywatersheds.org)

**FOR:**



**DELTA CHARTER TOWNSHIP  
7710 WEST SAGINAW HIGHWAY  
LANSING, MI 48917**

**REVISED: JULY 2018**

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## INTRODUCTION

The Public Education Plan (PEP) is being prepared for the communities of the Greater Lansing Regional Committee for Stormwater Management (GLRC) to comply with the National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) Permit requirements. This creates a concise document for members and the PEP Committee to work from throughout the permit cycle (2018-2023).

The original PEP was completed in 2003, updated in 2006, 2010, and 2013, and this current version of the PEP will be submitted to the Michigan Department of Environmental Quality (MDEQ) in the summer of 2018. The PEP was written for all GLRC members to guide the development and implementation of strategies aimed at educating the public on a regional and watershed level. However, each permittee will take their specific watershed and community characteristics into consideration throughout PEP implementation. Where applicable, each member has included their specific individual efforts throughout the PEP.

GLRC members participating in the PEP are as follows:

City of DeWitt	Lansing Charter Township
City of East Lansing	Meridian Township
City of Grand Ledge	Lansing School District
City of Lansing	Clinton County
City of Mason	Eaton County
Delhi Charter Township	Ingham County
Delta Charter Township	Michigan State University
DeWitt Charter Township	Waverly Community Schools

### A. PUBLIC PARTICIPATION PROCEDURE – GLRC WEBSITE/SOCIAL MEDIA

As required, permittees commit to keeping their Stormwater Management Plan (SWMP) current and publicly available on their community website. Local public notice requirements will be met as appropriate, and both the SWMP and contact information will be provided to encourage public review. The public will be invited to participate in the implementation and periodic review of the SWMP, which will be accomplished through each community website and the GLRC website. When the progress reports are submitted to MDEQ, they will be posted on the GLRC and community websites. This will update the public and invite them to participate or provide input related to the implementation of the SWMP if they choose to.

In addition, the PEP, progress reports and other appropriate supporting documents will be posted on the GLRC website. The GLRC website serves as one of our strongest tools for information sharing with the public. All GLRC documents (template manuals, progress reports, implementation materials, brochures, quarterly newsletters, annual reports, etc.) are available on the GLRC website. The GLRC maintains a calendar that announces public meeting information, workshops, trainings and events.

The GLRC also recognizes the importance of social media. Our existing Facebook and Twitter accounts help us to reach out to different demographics and reach larger audiences. By purchasing Facebook's

“boosted posts”, the GLRC can geographically target the audiences within the urbanized zone and ensure consistent messaging to the residents of all GLRC jurisdictions. The GLRC will continue to annually support the purchase of paid posts from the GLRC Facebook account and track the results using social media analytics. Social media has proven to be an effective tool for outreach communication, and the responsibility of creating and sharing content related to the Required Topic Areas is the GLRC Coordinator’s, indicated by the “social media” Delivery Mechanism in Section D.

## **B. EVALUATION AND PRIORITIZATION PROCEDURES**

The GLRC conducted a water quality survey of residents during the fall of 2006. The purpose of the survey was to provide a benchmark to gauge the effectiveness of regional and local public outreach campaigns on water quality issues in the Greater Lansing Region. The survey results provided a baseline for evaluating the effectiveness of regional and local water quality initiatives over time. These results have been used by the GLRC and other organizations in the region to prioritize and implement public education programs through the most effective and efficient methods possible.

The 2006 survey results can be found here:

[Greater Lansing Regional Water Quality Survey Findings Report 2006](#)

Since a baseline for evaluating the effectiveness of current (and past) water quality initiatives was completed in 2006, the GLRC committed to conducting the survey again in 2012 to identify successes related to the ongoing public education efforts and areas for improvement. The 2012 survey was conducted in the exact same manner as the 2006 survey; both statistically valid surveys ensure the GLRC is effective and efficient in our public education efforts.

The 2012 survey results can be found here:

[Greater Lansing Regional Water Quality Survey Findings Report 2012 \(with comparison data\)](#)

The GLRC PEP Committee conducted another follow up survey in 2018. The survey was conducted in the same manner as the 2006 and 2012 surveys, and will be used to evaluate successes, challenges and to determine the overall effectiveness of the PEP. The PEP Committee will also explore the following options for assessing PEP effectiveness in the new permit cycle: a duplicate of the previous surveys (conducted either in-house or contracted out); the utilization of an online survey; conducting focus groups; or conducting targeted interviews of individuals in the region. This will be completed by the end of the permit cycle, scheduled for October 2023.

During the Progress Report submittal, general evaluation and effectiveness will be discussed and changes could be made based on initial results, as adaptive management is an important part of public education. Evaluation mechanisms are essential to gauge implementation status and assess the effectiveness of the overall program. Identification of quantifiable measures provides both measurability and accountability within the program.

The PEP Committee meets frequently to discuss progress of ongoing activities, review current priorities, track measurable goals and to explore new educational opportunities based on the survey results. The PEP Committee has completed the prioritization at the GLRC level and categorized topics areas as: high, medium and low. The PEP Committee met and reviewed the survey results in detail to determine the priority topic areas. Many factors were considered in this process including the survey results, available resources, cost effective outreach methods, existing public knowledge levels and collaborating with other programs currently underway. Examples of High priority topics areas are: **B. Inform and educate**



the public about the connection of the MS4 to area watersbodies and potential impacts discharges have on surface waters; C. Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MS4; I. Educate the public on, and promote the benefits of, green infrastructures and low impact development. The GLRC will report on the measurable goals achieved during the regular Progress Report submissions.

The GLRC also continues to work with several partners in the larger surrounding area to accomplish a variety of public education efforts. In 2013-2014, the Middle Grand River Organization of Watersheds (MGROW) developed "Pollution Isn't Pretty", a regional public education campaign to provide educational resources for smaller watershed groups (including the GLRC, friends groups, Middle Grand River Watershed Management Planning Project (319) and the Red Cedar River Watershed Management Planning Project (319)). The GLRC continues to utilize Pollution Isn't Pretty materials and work with MGROW, conservation districts, and local watershed groups to develop consistent, meaningful public education messages and delivery mechanisms that will benefit the entire region. This effort has and will continue to incorporate the GLRC survey results and several other survey results in the region. The GLRC is confident that our collaborative and individual PEP accomplishments and efforts will continue to be successful and we will work in the most effective, efficient way possible.

### **C. REQUIRED TOPIC AREAS**

The PEP follows the format recommended by the MDEQ and includes the ten topic areas required in the permit.

*An adequate PEP will implement a sufficient amount of educational activities to ensure that the targeted audiences are reached with the appropriate message(s) for the following topics:*

- (A) *Promote public responsibility and stewardship in the applicant's watershed(s).*
- (B) *Inform and educate the public about the connection of the MS4 to area watersbodies and the potential impacts discharges could have on surface waters of the state.*
- (C) *Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MS4.*
- (D) *Promote preferred cleaning materials and procedures for car, pavement, and power washing.*
- (E) *Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers.*
- (F) *Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter into the MS4.*
- (G) *Identify and promote the availability, location, and requirements of facilities for collection or disposal of household hazardous waste, travel trailer sanitary wastes, chemicals, yard wastes, and motor vehicle fluids.*

- (H) *Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure.*
- (I) *Educate the public on, and promote the benefits of, green infrastructure and Low Impact Development.*
- (J) *Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to stormwater runoff.*

**D. PUBLIC EDUCATION PLAN IMPLEMENTATION**

Activities listed here correspond directly with the ten topic areas A - J for compliance. The GLRC action plan, as part of each community’s SWMP details the activities below and includes a schedule and general evaluation mechanisms.

**(A) Promote public responsibility and stewardship in the applicant’s watershed(s).**

**Activity:** Continue to maintain watershed signage at road and river crossings.

**Corresponding topic area:** A

**Priority:** Medium

**Target audience:** Public

**Key message:** Promoting local water resources, connecting the public to their surrounding environment. Signs read “You are in the Grand River, Looking Glass, or Red Cedar River Watershed”.

**Delivery mechanism:** Passing vehicles, people biking, walking or running will view the signs.

**Year and frequency of implementation:** The signs were originally posted between 2005 -2006. They will be maintained indefinitely with help from the local Road Commissions and communities.

**Responsible party:** Delta Charter Township in cooperation with Eaton County Road Commission and Eaton County Drain Commissioner.

**Evaluation:** Indicate that the signs are still there in Progress Reports.



**Activity:** Use “Do you know your watershed?” brochure and update as appropriate. An update occurred in 2018.

**Corresponding topic area:** B

**Priority:** Medium

**Target audience:** Public

**Key message:** The brochure educates the public about what a watershed is, our local watersheds and general information about watershed protection.

**Delivery mechanism:** Posted on the GLRC website, handed out at public events, available in community lobbies, available during use of the GLRC display.

**Year and frequency of implementation:** The brochure will be used at all public events (Adopt A River, Quiet Water Symposium, Michigan Water Environment Association (MWEA) Watershed Summit), update as appropriate. Delta Township's Boards and Commissions are scheduled for 82+ meetings per year. These educational materials are available to the interested members of the public as they enter the Township's meeting venues.

**Responsible party:** PEP Committee, GLRC Coordinator and Delta Charter Township.

**Evaluation:** Number of brochures provided throughout the year and website link traffic to digital versions.

**Activity:** Promote the Mid-Michigan Environmental Action Council (Mid-MEAC) volunteer stream monitoring efforts.

**Corresponding topic area(s):** C, J

**Priority:** Medium

**Target audience:** Public – recruiting volunteers for action.

**Key message:** Promote Mid-MEAC volunteer stream monitoring events that educate the public (volunteers) about macroinvertebrates and why they are an important indicator of water quality. This provides an opportunity to discuss pollutant sources and reporting of illicit discharges and riparian buffer purpose and management.

**Delivery mechanism:** GLRC Website and social media.

**Year and frequency of implementation:** Macroinvertebrate collections are done annually in the spring and fall, identification is completed in the fall.

**Responsible party:** GLRC Coordinator

**Evaluation:** Website traffic, potential volunteers reached through social media.

**Activity:** GLRC Educational Display

**Corresponding topic area(s):** B, C, D, E, F, G, H, I, J (all)

**Priority:** Medium

**Target audience:** Public and businesses

**Key message:** General watershed education; promoting action of the public about what they can do to reduce pollution.

**Delivery mechanism:** The display is used at the annual Quiet Water Symposium, annual Adopt-A-River event, Michigan Water Environment Association Watershed Summit, and various regional events. The display is used at least annually within each community.

**Year and frequency of implementation:** Continuous use at annual events. Panels were updated in 2014 to relate more specifically to the minimum control measures and target audiences, and an additional scroll style banner was designed in 2018 to be used in members' municipal lobbies, libraries, and public spaces and created to address knowledge gaps identified by the 2012 public survey. Displays will be updated as needed in the future.

**Responsible party:** GLRC Coordinator, PEP Committee and Delta Charter Township.

**Evaluation:** Number of events, use in municipal lobbies, event attendance.



**Activity:** Update basic educational graphic with tag line and GLRC website

**Corresponding topic area(s):** B, C, D, E, F, G, H, I, J (all)

**Priority:** Medium

**Target audience:** Public

**Key message:** The tag line was updated to read “Pollution Isn’t Pretty” and “We All Live In A Watershed”, demonstrating that what we put on land effects the water. The website is also listed which directs the public to information that covers all topic areas listed in this plan.

**Delivery mechanism:** Trail signage, brochures, social media, website content, events/lobby displays

**Year and frequency of implementation:** Ongoing

**Responsible party:** PEP Committee, GLRC Coordinator, and Delta Charter Township.

**Evaluation:** Website link traffic, social media analytics, brochures handed out at events, event attendance.



**Activity:** Utilize existing news articles and update them to be more flexible with different media outlets (Twitter, shorter columns, etc.).

**Corresponding topic area(s):** B, C, D, E, F, G, H, I, J (all)

**Priority:** Medium

**Target audience:** Public, elected officials

**Key message:** Articles cover the following topics:

What is a Watershed?	Pet Waste and the Environment
Wetlands: An Overview	Storm Vs. Sanitary Sewer Systems
Who/What is the GLRC	Responsible Car Washing
Septic System Maintenance	Adopt Your Catch Basin
Safe Fertilizer Use	Illicit Discharge
Vehicle Maintenance	

**Delivery mechanism:** Articles are posted on the GLRC website, Delta Charter Township website and community newspapers. Similar educational content posted on social media.

**Year and frequency of implementation:** Continue to maintain articles on the GLRC website. Update/reformatting occurred in 2017. Educational content will be posted monthly on GLRC social media throughout the permit cycle. A posting timeline guide is also used. Delta Charter Township’s website has a link to the GLRC website. Informational items regarding Delta’s household hazardous waste and recycling programs is posted to the website. Timely pertinent information will also be published in the Township’s quarterly magazine at least two times annually.

**Responsible party:** GLRC Coordinator, PEP Committee and Delta Charter Township

**Evaluation:** Number of articles (or similar) posted, including the number of residents receiving a publication from Delta Charter Township. The GLRC Coordinator tracks GLRC website and social media analytics

***(B) Inform and educate the public about the connection of the MS4 to area waterbodies and the potential impacts discharges could have on surface waters of the state.***

**Activity:** GLRC webpage titled “Stormwater Basics” and “What’s a Watershed?”

**Corresponding topic area:** A, C

**Priority:** High

**Target audience:** Public, elected officials

**Key message:** This section of the website promotes watershed health information, describes what citizens can do, how our water is impacted, etc.

**Delivery mechanism:** GLRC website and social media, community website links to the GLRC webpage

**Year and frequency of implementation:** Continuous presence on the website, update as appropriate.

**Responsible party:** GLRC Coordinator

**Evaluation:** Website link traffic, social media analytics

**Activity:** GLRC quarterly newsletters and annual report

**Corresponding topic area(s):** A, C, D, E, F, G, H, I, J (all)

**Priority:** High

**Target audience:** Public, elected officials

**Key message:** The newsletters and annual report provide information on specific GLRC activities/events related to the six minimum measures. It also provides information related to relevant partner events and activities. It serves to educate municipal staff, elected officials, and the public.

**Delivery mechanism:** GLRC website, social media, Delta Charter Township website and Delta Charter Township community facilities’ lobbies.

**Year and frequency of implementation:** Ongoing, newsletters are completed quarterly, and the annual report is completed after the first of the calendar year.

**Responsible party:** GLRC Coordinator, Delta Charter Township.

**Evaluation:** Website link traffic, number of newsletters/annual reports distributed at events, number of people reached through email.

***(C) Educate the public on illicit discharges and promote public reporting of illicit discharges and improper disposal of materials into the MS4.***

**Activity:** Maintain the GLRC and Delta Charter Township website to include information on illicit discharges and contacts for reporting illicit discharges and acts of pollution.

**Corresponding topic area:** A

**Priority:** High

**Target audience:** Public

**Key message:** To report illicit discharges (description provided), illegal dumping, etc.

**Delivery mechanism:** GLRC website and social media, Delta Charter Township website

**Year and frequency of implementation:** Continuous posting on GLRC website and social media and Delta Charter Township website. As needed, the PEP committee will explore different delivery methods (language, etc.) to make this more relatable to the public.

**Responsible party:** GLRC Coordinator, PEP Committee, Delta Charter Township

**Evaluation:** Website link traffic and social media analytics

***(D) Promote preferred cleaning materials and procedures for car, pavement, and power washing.***

**Activity:** Series of posters and brochures covering: car washing, pet waste, motor oil and fertilizer reduction.

**Corresponding topic area(s):** A, B, F, G

**Priority:** Medium

**Target audience:** Public

**Key message:** Posters and brochures describe the impact that bad practices related to car washing, pet waste disposal, motor oil disposal and fertilizer application can have on water quality. They also provide alternatives or best management practices for each of the four topics.

**Delivery mechanism:** Posters and brochures are available in community lobbies, brochures are handed out at public events, etc. Similar information is posted to the GLRC website and GLRC social media. Delta Charter Township will display/distribute GLRC educational materials in a similar fashion at its public facilities, during meetings (82+ annually) and maintain links to the GLRC website on the Delta Charter Township website.

**Year and frequency of implementation:** Continuous use at public events (Adopt A River, Quiet Water Symposium, MWEA Watershed Summit, Delta Rocks! Family Festival, Touch a Truck Day and on website/social media, etc., update as appropriate.

**Responsible party:** GLRC Coordinator, PEP Committee and Delta Charter Township.

**Evaluation:** Number of brochures provided throughout the year, website link traffic, and social media analytics

***(E) Inform and educate the public on proper application and disposal of pesticides, herbicides, and fertilizers.***

See corresponding topic area G below.

***(F) Promote proper disposal practices for grass clippings, leaf litter, and animal wastes that may enter into the MS4.***

**Activity:** Promote existing materials related to grass clippings and leaf litter.

**Corresponding topic area(s):** A

**Priority:** Medium

**Target audience:** Public, small businesses

**Key message:** Use the best management practices for management of grass clippings and leaf litter.

**Delivery mechanism:** Promoted through the GLRC educational display. Posted to GLRC social media and website.

**Year and frequency of implementation:** 2013, continuous

**Responsible party:** GLRC Coordinator and Delta Charter Township.

**Evaluation:** Number of flyers/brochures handed out, website link traffic, social media analytics

**Activity:** Continue to maintain pet waste reduction watershed signage at parks or designated dog areas and post pet waste reduction information on social media and website

**Corresponding topic area(s):** A, D

**Priority:** Medium

**Target audience:** Public

**Key message:** Promoting pet waste reduction for watershed protection, connecting the public to their surrounding environment.

**Delivery mechanism:** Passing vehicles, people biking, walking or running, and pet owners will view the signs. Website and social media

**Year and frequency of implementation:** The signs will be maintained indefinitely with help from the local Road Commissions. Pet waste information will be present on mywatersheds.org indefinitely, with at least two GLRC social media posts per year. The signs will be inspected annually and maintained as necessary with help from the Eaton County Road Commission.

**Responsible party:** Delta Charter Township and GLRC Coordinator.

**Evaluation:** Signs posted, maintenance activities, website traffic, social media analytics



***(G) Identify and promote the availability, location, and requirements of facilities for collection or disposal of household hazardous waste, travel trailer sanitary wastes, chemicals, yard wastes, and motor vehicle fluids.***

**Activity:** Promote local Household Hazardous Waste Collection and Recycling Events. Delta Charter Township participates in and promotes regional special collection events. Delta Charter Township accepts yard waste April through the beginning of December and has yard waste recycling and de-leafing programs.

**Corresponding topic area(s):** D, E

**Priority:** Medium

**Target audience:** Public, small businesses

**Key message:** Pollution prevention by using available resources for appropriate disposal of waste.

**Delivery mechanism:** GLRC website, GLRC social media, Delta Charter Township website.

**Year and frequency of implementation:** Continuous, updates as necessary and as events are scheduled.

**Responsible party:** GLRC coordinator and Delta Charter Township.

**Evaluation:** Website link traffic, social media analytics

***(H) Inform and educate the public on proper septic system care and maintenance, and how to recognize system failure.***

**Activity:** Promote information on proper septic system care.

**Corresponding topic area:** A

**Priority:** Low

**Target audience:** Public

**Key message:** Maintain your septic system; it could be contaminating local water bodies through stormwater runoff.

**Delivery mechanism:** GLRC website and social media, Delta Charter Township website.

**Year and frequency of implementation:** Continuous

**Responsible party:** GLRC coordinator and Delta Charter Township.

**Evaluation:** Website link traffic, social media analytics, brochures handed out.

***(I) Educate the public on, and promote the benefits of, green infrastructure and Low Impact Development.***

**Activity:** Promote Green Infrastructure and Low Impact Development brochure, update as appropriate.

**Corresponding topic area:** A

**Priority:** High

**Target audience:** Public, elected officials, small businesses

**Key message:** Promote the use of LID and Green Infrastructure (GI) as a tool for reducing polluted runoff from developments and homes. The brochure explains what LID and GI are and provides examples and resources (links).

**Delivery mechanism:** GLRC website, GLRC social media, use with GLRC educational display, lobbies, etc. Delta Charter Township website and brochures available at public entrances/lobbies of community buildings.

**Year and frequency of implementation:** Continuous, will use at events (Adopt A River, Quiet Water Symposium and MWEQ Watershed Summit) and update as appropriate.

**Responsible party:** GLRC Coordinator and Delta Charter Township.

**Evaluation:** Number of brochures handed out, website traffic, social media analytics



**Activity:** GLRC local Green Infrastructure projects webpage  
**Corresponding topic area:** A  
**Priority:** High  
**Target audience:** Public, small businesses  
**Key message:** The webpage highlights various local LID and GI projects in the region to help encourage others to pursue projects in their own neighborhood or community. Promotes Networked Neighborhood for Eco-Conservation Online (NECO) (LID map and sharing system).  
**Delivery mechanism:** GLRC website and social media, Delta Charter Township  
**Year and frequency of implementation:** Continuous, will update as needed, initial revision July 2013.  
**Responsible party:** GLRC Coordinator  
**Evaluation:** Website link traffic.

**Activity:** Green Infrastructure educational programming  
**Corresponding topic area:** A  
**Priority:** High  
**Target audience:** GLRC members, elected officials, public  
**Key message:** Educate public, members, and elected officials on several different best management practices (examples include: snow management, Green Infrastructure project highlights, Green Infrastructure monitoring results, pervious pathways and tree preservation techniques, etc.)  
**Delivery mechanism:** GLRC website, social media, newsletter distribution, presentations  
**Year and frequency of implementation:** Continuous presence of GI information on website and social media, GLRC to host two GI presentations per permit cycle.  
**Responsible party:** GLRC Coordinator, PEP Committee  
**Evaluation:** Number of people reached by email, website traffic, and social media analytics. Attendance at programs.

**Activity:** Promote Greening Mid-Michigan (GMM) Project (regional GI vision) videos  
**Corresponding topic area:** A  
**Priority:** High  
**Target audience:** Public  
**Key message:** A 27-minute video was produced with WKAR, promoting Green Infrastructure techniques and demonstrating how they lead to improved land use, water resource management, etc. The GLRC also received 3-4 shorter sound bites specifically related to stormwater management.  
**Delivery mechanism:** GLRC website, GLRC social media, video distribution.  
**Year and frequency of implementation:** Video development occurred in 2013-2014. GLRC has and continues to post video segments to website, social media.  
**Responsible party:** GLRC Coordinator  
**Evaluation:** Number of video views, website traffic, social media analytics

***(J) Identify and educate commercial, industrial, and institutional entities likely to contribute pollutants to stormwater runoff.***

**Activity:** Educate business community on MS4 and pollution prevention. Will outreach to entities such as car wash facilities, lawn care companies, food establishments, and industrial and institutional entities to share information on how these operations can impact the MS4 or to partner with them in educating their customers.

**Corresponding topic area(s):** A

**Priority:** Medium

**Target audience:** Businesses, industries, institutions

**Key message:** Improve stormwater management to reduce pollution.

**Delivery mechanism:** Sharing educational materials with businesses, presentations to business groups, and/or utilizing business publications.

**Year and frequency of implementation:** The GLRC Coordinator will outreach to local businesses twice per permit cycle.

**Responsible party:** PEP Committee, GLRC Coordinator

**Evaluation:** Number of connections made with local businesses, etc.

**DELTA CHARTER TOWNSHIP**

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**Stormwater Management Program (SWMP)**



**DELTA**  
**T O W N S H I P**

**APPENDIX C**

**TOWNSHIP ORDINANCES &  
EATON COUNTY STORMWATER  
MANAGEMENT MANUAL EXCERPTS**

**Delta Charter Township, (Eaton Co.), Michigan, Code of Ordinances >> - CODE OF ORDINANCES >> Chapter 40 - UTILITIES >> ARTICLE IV. - WASTEWATER SYSTEM USE >> DIVISION 2. - STANDARDS, RULES AND REGULATIONS >>**

**DIVISION 2. - STANDARDS, RULES AND REGULATIONS**

- Sec. 40-257. - Scope.**
- Sec. 40-258. - Unlawful discharge.**
- Sec. 40-259. - Disposal facilities.**
- Sec. 40-260. - Unavailability of public sewer.**
- Sec. 40-261. - Availability of public sewer.**
- Sec. 40-262. - Availability of capacity.**
- Sec. 40-263. - Utility agreement.**
- Sec. 40-264. - Water pollution.**
- Sec. 40-265. - General prohibited discharge standards.**
- Sec. 40-266. - Pollutant limitations on wastewater discharges.**
- Sec. 40-267. - Reject, surcharge, or require pretreatment.**
- Sec. 40-268. - Federal categorical pretreatment standards (EPA).**
- Sec. 40-269. - Township right to revision.**
- Sec. 40-270. - State requirements.**
- Sec. 40-271. - Dilution.**
- Sec. 40-272. - Notification of changed discharges.**
- Sec. 40-273. - Treatment bypass conditions.**
- Sec. 40-274. - Accidental discharge.**
- Sec. 40-275. - Notification.**
- Sec. 40-276. - Written notice.**
- Sec. 40-277. - Notice to employees.**
- Sec. 40-278. - Fats, oils, grease and sand interceptors; installation and maintenance.**
- Sec. 40-279. - Pretreatment facilities.**
- Sec. 40-280. - Construction of pretreatment facilities.**
- Sec. 40-281. - Maintenance of pretreatment facilities.**
- Sec. 40-282. - Control manholes.**
- Sec. 40-283. - Removal credits.**
- Sec. 40-284. - Measurements and analyses.**
- Sec. 40-285. - Inspection; powers and authority of inspectors.**
- Sec. 40-286. - Surcharge.**
- Sec. 40-287. - Waste discharged from external sources.**
- Secs. 40-288—40-307. - Reserved.**

**Sec. 40-257. - Scope.**

The standards, rules and regulations established in or pursuant to this article are deemed to be the absolute minimum consistent with the preservation of the public health, safety and welfare, to prevent pollution of the environment, and to fulfill the obligations of the township with respect to state and federal law and all rules and regulations adopted in conformance hereto. The discharge into the sewage disposal system of any substance which exceeds the limitations contained herein,

or in any manner fails to conform hereto, is hereby declared to be a public nuisance and a violation of this article.

(Code 1992, § 18-136; Ord. No. 284.2, § 2.1, 4-15-1991)

**Sec. 40-258. - Unlawful discharge.**

It shall be unlawful for any person to place or deposit or permit to be deposited in any unsanitary manner upon any public or private property within the township, any human or animal excrement, garbage or other objectionable waste.

(Code 1992, § 18-137; Ord. No. 284.2, § 2.2, 4-15-1991)

**Sec. 40-259. - Disposal facilities.**

Except as hereinafter provided, it shall be unlawful to construct or maintain any private sewage disposal facility in the township, or in any area under the jurisdiction of the township.

(Code 1992, § 18-138; Ord. No. 284.2, § 2.3, 4-15-1991)

**Sec. 40-260. - Unavailability of public sewer.**

Where a public sanitary sewer is not available, the building sewer shall be connected to a private sewage disposal facility constructed in compliance with state law, regulations of the county, the state and local health departments, and the regulations of the township. The owner shall operate and maintain the private sewage disposal facility in a sanitary manner at all times, at no expense to the township.

(Code 1992, § 18-139; Ord. No. 284.2, § 2.4, 4-15-1991)

**Sec. 40-261. - Availability of public sewer.**

(a) At such time there is an available public sewer within 200 feet of a structure served by private sewage disposal facilities, the supervisor of the township shall cause appropriate notice to be served upon the owner of such property, that a public sewer is ready and available to receive connections thereto and that within 18 months from the service of such notice the use of a private sewage disposal facility for the structure shall be discontinued, and the following will be completed:

- (1) The plumbing shall be disconnected therefrom;
- (2) All underground structures shall be filled with fresh earth, in accordance with the Barry-Eaton District Health Department; and
- (3) All plumbing shall be connected with the public sewer.

(b) Such notice shall be served by first class United States mail, postage prepaid, in sealed envelopes addressed to the owner at his regular place of residence and by publication in a newspaper of general circulation in the township. This section shall be supplemental to such

provisions of law and the public health code as may exist and shall not be construed to limit enforcement of connection requirements to the provisions hereof.

(Code 1992, § 18-140; Ord. No. 284.2, § 2.5, 4-15-1991)

**Sec. 40-262. - Availability of capacity.**

No connection to the system will be permitted unless there is capacity available in all downstream sewers, lift stations, force mains, and the sewage treatment plant, including capacity for treatment of the BOD, suspended solids and other contaminants.

(Code 1992, § 18-141; Ord. No. 284.2, § 2.6, 4-15-1991)

**Sec. 40-263. - Utility agreement.**

Any municipality outside the jurisdiction of the township requesting the use of the township public sewers shall grant the township legal authority to administer and enforce this article, within the municipality, including the industrial pretreatment program. This may include the adoption of an ordinance by the municipality equivalent to this Code of Ordinances. In addition, whenever substantive changes are made to this Code of Ordinances, any municipality operating under an equivalent ordinance or code shall be required to adopt equivalent modification within 180 days of the required modifications approval by the township board.

(Code 1992, § 18-142; Ord. No. 284.2, § 2.7, 4-15-1991; Ord. No. 97-2, § 3, 10-6-1997)

**Sec. 40-264. - Water pollution.**

- (a) It shall be unlawful to discharge into any waters of the state or any storm sewer within the township any sanitary sewage, industrial waste, or other polluted waters, except where suitable treatment has been provided and the direct discharger has a National Pollutant Discharge Elimination System (NPDES) permit issued by the state department of environmental quality.
- (b) No person shall discharge or cause to be discharged any stormwater, surface water, groundwater, roof runoff, subsurface drainage, uncontaminated cooling water or unpolluted waters into any sanitary sewer under the jurisdiction of the township.
- (c) The discharge of groundwater into the sanitary sewer is prohibited except in cases where such a discharge is regulated under the terms of a wastewater discharge permit issued by the wastewater division of the utility department of the township.

(Code 1992, § 18-143; Ord. No. 284.2, § 2.8, 4-15-1991; Ord. No. 97-2, § 4, 10-6-1997)

**Sec. 40-265. - General prohibited discharge standards.**

Except as hereinafter provided, no commercial, domestic or industrial user shall discharge or cause to be discharged any of the following described waters or wastes into any public sewer:



# Zoning Ordinance

Adopted by the Delta Township Board on August 21, 2107  
Effective Date: September 3, 2017

**Prepared by:**



**Carlisle | Wortman**  
ASSOCIATES, INC.

***[Appendix C - Page 5]***



CHAPTER 6

SITE PLAN REVIEW

SECTION 6.01 PURPOSE

The [site plan](#) review requirements of this Chapter are intended to provide a consistent and uniform method of review of proposed [development](#) plans, to ensure full compliance with the regulations in this Ordinance, other applicable ordinances, and state and federal laws. The intent is to encourage a harmonious relationship of buildings and uses both within a site and in relation to adjacent uses; achieve efficient [use](#) of the land; encourage innovative design solutions; protect natural resources; ensure safety for both internal and external vehicular and pedestrian users; and prevent adverse impacts on adjoining or nearby properties. It is the intent of these provisions to encourage cooperation and consultation between the Township and the applicant to facilitate [development](#) in accordance with the Township’s land use objectives.

SECTION 6.02 BUILDINGS, STRUCTURES AND USES SUBJECT TO SITE PLAN REVIEW

A. **Site Plan Review Requirement.** The following buildings, structures, and uses require [site plan](#) review:

1. All proposed and permitted uses and related buildings, except [single-family](#) and [two-family dwellings](#).
2. All proposed Special Land Uses and related buildings except that home occupations, [functional family](#) dwellings, bed and breakfast establishments, group child care homes, foster care group homes, and farm markets shall only be required to provide the following information for preliminary [site plan](#) review:
  - a. [Site Plan](#) application form supplied by the [Zoning Administrator](#).
  - b. A Site Plan containing the following information:
    - i. Legal description of site dimensions of site boundary lines, total site area, water courses and water bodies. Locations of all buildings, driveways, parking areas; and other structures on adjacent properties within one hundred (100) feet of the property, including those located across the street from the property.
    - ii. Required and proposed building setbacks, and if applicable, distances between buildings on the site.
    - iii. Location of abutting streets and proposed alignment of streets, drives and easements serving the [development](#), including existing rights-of-way and pavement widths.
    - iv. The [Planning Commission](#) and/or [Zoning Administrator](#), as applicable, may require written statements relative to the impact on existing utilities, [natural features](#), or the environment.



3. Any [alteration](#), addition, or expansion of an existing permitted or [Special Land Use](#) and/or related building;
4. Any building or [use](#) for which [site plan](#) review is required by this Ordinance; and
5. Any parking lot or addition thereto.

### B. Status of Site Improvements.

1. The [Zoning Administrator](#) shall not issue a [certificate of zoning compliance](#) and the Township [Building Official](#) shall not issue a [building permit](#) for [construction](#) of, or addition to, any one of the above listed buildings or structures until a final [site plan](#) has been approved. A [use](#) not involving a building or [structure](#), as above listed, shall not be commenced or expanded, nor shall the Zoning Administrator issue a Certificate of Zoning Compliance until a final site plan has been approved.
2. The clearing, grading, and balancing of land may commence absent [site plan](#) review if all necessary permits have been obtained from the appropriate State or local agencies. The property owner(s) or developer(s) proceed at their own risk despite having a Soil Erosion Permit, due to the fact that subsequent reviews may necessitate modifications to the grades. If deemed necessary, a Soil Erosion and Sedimentation Permit shall be obtained from the Eaton County Drain Commissioner. If regulated floodplains and/or [wetlands](#) are located on the property, the applicable permits shall be obtained from the Michigan Department of Environmental Quality.

## SECTION 6.03 PRE-APPLICATION CONFERENCE (Optional)

Any [site plan](#) review applicant may schedule an informal conference with the [Zoning Administrator](#).

## SECTION 6.04 SITE PLAN REVIEW

- A. **Application and Fee for a Site Plan.** An application for [site plan](#) review shall be filed with the [Zoning Administrator](#) and include the required fee, the information specified in [Section 6.06](#), and other data exhibits, and information hereinafter required. The application, fees, and supporting documentation as specified herein shall generally be filed a minimum of thirty (30) days prior to a regularly scheduled meeting of the [Planning Commission](#).
- B. **Planning Commission Review of a Site Plan.** If the [Zoning Administrator](#) determines that the [site plan](#) includes the required information set forth in this Chapter, he/she shall transmit the application, site plans and other information to the [Planning Commission](#) prior to its next regularly scheduled meeting. The Planning Commission shall review the same and shall, within sixty (60) days from the date of the first Planning Commission meeting at which the application and site plan are received from the [Zoning Administrator](#), issue an approval or disapproval of the site plan unless mutually agreed upon by both the applicant and the Planning Commission to extend the review period. The Planning Commission shall inform the applicant in writing of any changes or modifications to the proposed site plan which are needed to achieve conformity to the standards specified in this Ordinance.



C. **Variance Requests.** [Site plan](#) review applicants who intend to seek a [variance](#) from the [Zoning Board of Appeals](#) shall first file an application with the Zoning Board of Appeals prior to the [Planning Commission](#) reviewing the site plan.

D. **Zoning Administrator Review of a Site Plan.**

1. After the [Planning Commission](#) conducts their review of a [site plan](#), the [Zoning Administrator](#) shall review the site plan to ensure that it reflects any changes or modifications as mandated by the Planning Commission.
2. The [Zoning Administrator](#) shall approve, approve with conditions, or deny the submitted plan. If denied, the Zoning Administrator shall cite the reasons for denial and transmit them in writing to the applicant. The Zoning Administrator shall inform the Township [Building Official](#) of the [site plan](#) approval.
3. The applicant shall submit a PDF copy and three (3) paper copies of the final [site plan](#), which shall be signed, sealed, and drafted by the professional (licensed in the State of Michigan) responsible for the accuracy of the plan.
4. The [Zoning Administrator](#) shall affix a stamp and signature to the approved [site plan](#).

E. **Effective Term of Site Plan Approval.**

1. Approval of a [site plan](#) by the [Zoning Administrator](#) is valid for two (2) years. If actual physical [construction](#) of a substantial nature of the on-site utility systems and/or building improvements included in the approved [site plan](#) has not commenced and proceeded meaningfully toward completion during that period, the approval of the site plan shall be null and void. Site plans whose approval has expired shall be required to be resubmitted and processed as an original application.
2. Upon written application, filed prior to the termination of the two (2) year review period, stated in [Section 6.04 E.1.](#), the [Zoning Administrator](#) may authorize a single extension of the [site plan](#) approval for one (1) year. Such extension shall only be granted based on evidence from the applicant that the [development](#) has a likelihood of commencing [construction](#) within the one (1) year extension period.

## SECTION 6.05 ADMINISTRATIVE SITE PLAN REVIEW

- A. **Authority.** The [Zoning Administrator](#) shall have the authority to conduct an Administrative Review of a [Site Plan](#), provided all other standards of this Ordinance are met as set forth in [Section 6.07](#). The Zoning Administrator may seek the review and comments of applicable Township staff and/or consultants, County, State, and Federal agencies; and reserve the right to refer the matter to the [Planning Commission](#), if necessary.
- B. **Projects to be Reviewed Administratively.** Administrative review of a [site plan](#) may be conducted for the following projects or under the following circumstances:
1. Properties less than two (2) acres in size.



2. Minor changes, as determined by the [Zoning Administrator](#) during [construction](#) that are required by outside governmental agencies.
3. Increase in parking area up to twenty-five percent (25%) or ten thousand (10,000) square feet in area without any building changes.
4. Changes to the [building height](#) that do not add additional floor area nor exceed the maximum height requirements of the district.
5. An increase in floor area of up to twenty-five percent (25%) of the existing floor area.
6. A change in [use](#) to a similar or less intense use.
7. Accessory buildings associated with a non-residential [use](#).
8. Aesthetic and architectural changes to a non-residential [structure](#).
9. Site improvements such as installation of walls, fences, lighting, or [landscaping](#) consistent with the Ordinance standards.
10. Temporary uses, sales, and seasonal events.
11. [Construction](#) of a [Wind Energy Conversion System](#) where such construction is considered an [accessory use](#) in the district.
12. Construction of Solar Collection Systems where such [construction](#) is considered an [accessory use](#).

### SECTION 6.06 DATA REQUIRED FOR SITE PLANS

Site Plans shall include the information set forth in [Table 6.06-A.1](#).



**TABLE 6.06-A.1. DATA REQUIRED FOR SITE PLANS**

DATA REQUIRED FOR SITE PLANS	
<b>1. Application Form</b>	
a.	Name and address of the applicant and property owner.
b.	Address and common description of property and complete legal description.
c.	Dimensions of land and total acreage.
d.	Zoning on the site and all adjacent properties
e.	Description of proposed project or <a href="#">use</a> , type of building or structures, and name of proposed <a href="#">development</a> , if applicable.
f.	Name and address of firm or individual who prepared the <a href="#">site plan</a> .
g.	Proof of ownership of the property.
<b>2. Site and Zoning Data</b>	
a.	Existing <a href="#">lot lines</a> , structures, parking areas and other improvements on the site and within 100 feet of the site.
b.	Proposed <a href="#">lot lines</a> , lot dimensions, property lines, <a href="#">setback</a> dimensions, structures, parking areas, and other improvements to the site and within 100 feet of the site.
c.	All existing and proposed easements including type.
d.	<a href="#">Zoning district</a> of site and all adjacent properties.
e.	Land <a href="#">use</a> of site and all adjacent property.
f.	Proposed use of site.
g.	Gross and <a href="#">net lot area</a> , and areas in proposed rights-of-way, <a href="#">access</a> easements, <a href="#">wetlands</a> , and bodies of water (including streams, ponds, lakes).
h.	Ground floor and total floor area to be constructed.
i.	<a href="#">Lot coverage</a> (ground floor area divided by <a href="#">net lot area</a> )
j.	<a href="#">Impervious surface</a> (total impervious area and percentage of impervious area to total <a href="#">net lot area</a> )
k.	Number and type of dwelling units and <a href="#">density</a> , for residential projects
l.	Required yards/setbacks.
<b>3. Natural Features</b>	
a.	General location of existing plant materials, with identification of materials to be removed, and materials to be preserved.
b.	Topography on the site and within 100 feet of the site at two (2)-foot contour intervals, referenced to a U.S.G.S. Benchmark.
c.	Location of existing <a href="#">drainage</a> courses, floodplains, lakes and streams, and <a href="#">wetlands</a> .



**DATA REQUIRED FOR SITE PLANS**

d. Existing wetland areas must be shown for each wetland. All impacted areas and mitigation areas shall be shown with calculations provided.
e. General soils information, location, and extent of soils that are unbuildable in their natural state because of organic content or water table level, based on the Eaton County Soil Survey or equivalent information.
<b>4. Access and Circulation</b>
a. Dimensions, curve radii and centerlines of existing and proposed <a href="#">access</a> points, roads and road rights-of-ways or access easements.
b. Driveways and intersections within 100 feet of the site.
c. Location of proposed roads, driveways, parking lots. Sidewalks and non-motorized pathways.
d. Cross-section details of proposed roads, driveways, parking lots, sidewalks and non-motorized pathways.
e. Dimensions of acceleration, deceleration and passing lanes.
f. Calculations for required number of parking spaces including location and layout.
g. Dimensions of parking spaces, islands, circulation aisles and loading zones.
h. Designation of fire lanes.
i. Traffic regulatory signs and pavement markings.
<b>5. Landscape Plans</b>
a. General landscape plan, including location and type of all proposed shrubs, trees, and other live <a href="#">plant material</a> .
b. Existing live plant materials to remain, and if materials will be applied to <a href="#">landscaping</a> requirements.
c. Existing and proposed topography, by contours, correlated with the grading plan.
d. Location of all proposed landscape improvements.
e. Planting list for proposed landscape materials with caliper size or height of material, botanical and common names, and quantity.
f. Irrigation system plan for watering and draining landscape areas.
g. Cross-sections and details for required landscape improvements including berms, walls, fences, retaining walls, etc.
<b>6. Building, <a href="#">Structure</a>, and Miscellaneous Site Information</b>
a. Location, height, number of floors, and outside dimensions of all proposed buildings and structures.
b. Building floor plans and total floor area.
c. Details on accessory structures and any screening
d. Location of proposed free-standing signs such as billboards, pole signs, and ground signs.
e. Location of exterior lighting (site and building lighting).



**DATA REQUIRED FOR SITE PLANS**

- f. Lighting details, including height, initial lumen rating, type of lamp, method of shielding, and depiction of lighting pattern for all site and building lighting.
- g. Lighting photometric grid overlaid on proposed [site plan](#) showing light intensity (in foot candles) on site and ten (10) feet beyond the property lines of the subject [parcel](#). Sites which have parking lots with twenty (20) parking spaces or less or which do not abut a residentially zoned property are exempt from the photometric grid overlay requirement.
- h. Location of trash receptacle(s) and transformer pad(s) and method of screening.
- i. Location of any outdoor sales or display area.

**7. Information Concerning Utilities, [Drainage](#) and Related Issues.**

- a. Location and size of existing and proposed sanitary sewers and/or septic systems
- b. Location and size of existing and proposed water mains, well sites, water service and fire hydrants.
- c. Site grading, [drainage](#) patterns and other stormwater management measures.
- d. Stormwater retention and detention ponds.
- e. Location and size of storm sewers and drains.
- f. Location of above and below ground gas, electric and telephone lines, existing and proposed.
- g. Location of transformers and utility boxes.

**8. Additional Information Required for Multiple Family Residential Development**

- a. The number and location of each type of residential unit (one bedroom units, two bedroom units, etc.).
- b. [Density](#) calculations by type of residential unit (dwelling units per acre).
- c. [Garage](#) and / or carport locations and details, if proposed.
- d. Location, dimensions, and floor plans of common building(s) (E.G., recreation, laundry, etc.), if applicable.
- e. Swimming pool fencing detail, including height and type of [fence](#), if applicable.
- f. Location and size of recreation and [open space](#) areas.
- g. Indication of type of recreation facilities proposed for recreation area.

**9. Additional Studies/Information**

- a. Traffic Impact Study (as described in [Section 10.03](#))
- b. State & County Environmental Permits Checklist for Eaton County Communities
- c. Delta Township Fire Department Chemical Survey
- d. Description, identification, and location of any existing or proposed areas, whether above or below ground, for the storage, [use](#), loading/unloading of hazardous substances or hazardous wastes.
- e. Delineation of areas which have been contaminated, as determined by a State or Federal agency, and submittal of a report as to the status of the cleanup.
- f. Other Studies as may be required by the [Planning Commission](#) or [Zoning Administrator](#)



**SECTION 6.07 STANDARDS FOR SITE PLAN REVIEW**

- A. **Compliance with all Regulations.** In reviewing a [site plan](#), the [Planning Commission](#) and the [Zoning Administrator](#) shall determine that the proposed site plan complies with all applicable regulations herein.
  
- B. **Standards.** Prior to approving a [site plan](#), the [Planning Commission](#) and/or [Zoning Administrator](#) shall require that the following standards be met:
  - 1. The proposed [use](#) will not be injurious to the general health, safety, welfare, and character of the Township and surrounding neighborhood.
  - 2. The proposed [development](#) is consistent with the [Comprehensive Plan](#).
  - 3. There is a proper relationship between public thoroughfares and proposed service drives, driveways, and parking areas.
  - 4. The proposed [development](#) provides for proper development of roads, easements, and public utilities.
  - 5. All buildings or groups of buildings shall be arranged so as to permit necessary emergency [vehicle access](#) as required by the Fire Department.
  - 6. Site [access](#) and circulation shall be designed to ensure the safe and convenient movement of vehicles, bicycles, pedestrians and transit, where applicable. Where possible, [separation](#) of pedestrian and vehicular traffic shall be provided to avoid conflicts and unsafe conditions. Further, the arrangement of public or common ways for vehicular and pedestrian circulation shall be connected to existing or planned streets and pedestrian or bicycle pathways in the area. Accessibility to the development shall be provided for persons of all abilities, in accordance with all applicable federal, state, and local regulations. Streets and drives which are part of an existing or planned street pattern serving adjacent development shall be of a width appropriate to the traffic volume they will carry and shall have a dedicated right-of-way as required by this Ordinance, the Eaton County Road Commission, and/or the Michigan Department of Transportation, as is applicable.
  - 7. Site planning and design of specific improvements will accomplish the preservation and protection of existing natural resources and features to the extent reasonably possible.
  - 8. All streets shall be developed in accordance with the Eaton County Road Commission’s or the Michigan Department of Transportation’s specifications, as is applicable; unless developed as a [private road](#) in accordance with the requirements of [Section 10.02](#). Properties abutting streets which have right of way deficiencies, as determined by the Eaton County Road Commission or the Michigan Department of Transportation shall provide additional right of way to the appropriate agency as determined by the [Zoning Administrator](#). The additional right of way shall be provided to the appropriate agency via the appropriate written instrument and documentation prior to final [site plan](#) approval by the Zoning Administrator.
  - 9. Non-motorized transportation improvements, beyond the traditional sidewalk system which provides walks in front of homes and non-residential uses adjacent to roadways may





be required. The improvements could include trails, shared [use](#) paths, and traditional sidewalks.

- a. Many items, including but not limited to the following, shall be considered when siting non-motorized transportation improvements in new developments:
  - i. The Delta Charter Township Non-Motorized Transportation Plan, the Delta Township Parks & Recreation Plan, and the Delta Township [Comprehensive Plan](#), as amended. However, non-motorized transportation improvements may be required even if such improvements are not specifically recommended in the aforementioned documents.
  - ii. Providing safe routes to schools, creating recreational trails, and developing connections to retail/office areas, residential neighborhoods, community buildings, recreational areas, and similar land uses.
  - iii. Proximity to [natural features](#) such as woodlots, water bodies, [open space](#) areas, etc.
  - iv. Potential connection to other existing non-motorized transportation facilities, including those in adjacent communities.
  - v. The demand created for non-motorized transportation facilities by residents/customers of the proposed development.
  - vi. Taking advantage of existing easements and publicly owned lands.
  - vii. By providing a sidewalk/path, residents may be able to substitute a pedestrian movement for a vehicular movement.
- b. During the [site plan](#) review process the [Planning Commission](#) and [Zoning Administrator](#) shall determine whether the need for non-motorized transportation improvement(s) on the subject [parcel](#) is necessitated by the [development](#) itself, or if the improvements would primarily serve the public at large.
- c. Easements shall be provided for non-motorized transportation facilities as required by the [Planning Commission](#) and [Zoning Administrator](#). Easements may be required in anticipation of future [construction](#) of a trail, shared [use](#) path, and/or sidewalk.

10. The design of storm sewers, stormwater facilities, water mains, sanitary sewers, and other improvements shall meet the design and [construction](#) standards of the Township and other appropriate agencies.

11. On-site stormwater facilities shall be provided as follows:

- a. Appropriate measures shall be taken to ensure that stormwater runoff will not adversely affect neighboring properties or the public storm [drainage](#) system as determined by the Eaton County Drain Commissioner.



- b. Stormwater detention, retention, transport, and [drainage](#) facilities shall be designed to prevent the pollution of surface or groundwater resources, on-site or off-site. On-site stormwater management facilities shall be reviewed, approved, constructed, and maintained in accordance with the applicable rules, regulations, and specifications of the Eaton County Drain Commissioner’s (ECDC) Office. Said facilities shall also conform to the requirements of the ECDC’s current standards for post-[construction](#) controls for channel protection and water quality as described in the ECDC’s current MS4 Stormwater Discharge Permit issued by the Michigan Department of Environmental Quality (MDEQ).
- 12. Wastewater systems, including on-site septic systems, shall be located to minimize any potential degradation of surface water or ground water quality, and be designed in accordance with applicable Township, County, and/or State standards
- 13. Sites which include storage of hazardous waste, fuels, salt, or chemicals will be designed to prevent spills and discharges of pollution materials to the surface or the air, or to the ground, groundwater, or nearby water bodies in accordance with applicable Township, County, State, and/or Federal standards; and any applicable permits shall be obtained.
- 14. [Landscaping](#), including grass, trees, shrubs, and other vegetation, shall be provided to maintain and improve the aesthetic quality of the site and area, as per the standards contained in this Ordinance.
- 15. The [site plan](#) shall comply with all applicable Township Ordinances and any other applicable laws.

**SECTION 6.08      CONDITIONS OF APPROVAL**

A. As part of an approval to any [site plan](#), the [Planning Commission](#) or [Zoning Administrator](#) may impose any additional conditions or limitations as in its judgment may be necessary for protection of the public interest. Such conditions shall be related to and ensure that the review standards of [Section 6.07](#) are met.

B. The [Zoning Administrator](#) shall not approve the [site plan](#) until the plan has been reviewed and approved by all applicable Township, County, State and Federal personnel and agencies. Such personnel and agencies may include, but shall not be limited to, the following:

- 1. Township Engineer
- 2. Township Fire Chief
- 3. Township Utilities Director
- 4. Eaton County Road Commission
- 5. Eaton County Drain Commissioner
- 6. Barry-Eaton District Health Department



- 7. Michigan Department of Transportation
  - 8. Michigan Department of Natural Resources
  - 9. Michigan Department of Environmental Quality
  - 10. Michigan Department of Public Health
- C. Approval of a [site plan](#), including conditions made as part of the approval, is attached to the property described as part of the application and not to the owner of such property.
- D. A record of the decision of the [Planning Commission](#), the reason for the decision reached, and any conditions attached to such decision shall be kept and made a part of the minutes of the Planning Commission. The conditions shall remain unchanged unless an amendment to the [site plan](#) is approved.
- E. Installation of public water or private water mains, public sanitary sewer lines, or private septic systems, shall not be commenced prior to the [Zoning Administrator](#)'s approval of the [site plan](#).
- F. The [Zoning Administrator](#) may make periodic investigations of developments for which site plans have been approved. Non-compliance with the requirements and conditions of the approved site plan shall constitute grounds to terminate said approval.

**SECTION 6.09 CERTIFICATION OF COMPLIANCE**

- A. [Certificate of Zoning Compliance](#). An issuance of a Certificate of Zoning Compliance, as set forth in [Section 3.03](#), shall be required prior to issuance of a certificate of occupancy or building permits, as applicable.
- B. **Commencement of Site Work.** Upon issuance of all appropriate approvals and permits, the applicant may begin site work.

**SECTION 6.10 AMENDMENTS, REVISIONS TO APPROVED SITE PLANS**

- A. Any person who has been granted site plan approval shall notify the Zoning Administrator of any proposed amendments to such approved plan. The Zoning Administrator shall determine whether the proposed amendment constitutes a minor or major amendment based on, but not necessarily limited to, the following:
- 1. The addition of land area to the legal description of the original approved site plan.
  - 2. The establishment of another use or uses.
  - 3. The addition of more sales or service area, or the addition of dwelling units.
  - 4. An expansion or increase in intensity of the use.
- B. A major amendment to an approved [site plan](#) shall comply with the same [filing](#) and review procedures of the original approval, including site plan review by the [Planning Commission](#) if



originally required for the [development](#). A minor amendment may be approved by the Zoning Administrator.

## SECTION 6.11 APPEALS OF SITE PLAN APPROVAL

- A. **Right to Appeal.** Any person aggrieved by the decision of the [Planning Commission](#) or the [Zoning Administrator](#) in granting or denial of [site plan](#) approval, shall have the right to appeal the decision to the [Zoning Board of Appeals](#). The appeal shall state the aggrieved parties' grounds for appeal and shall be filed with the Zoning Administrator within seven (7) days of the decision of the Planning Commission or Zoning Administrator.
- B. **Aggrieved Party.** An aggrieved party must prove to the satisfaction of the [Zoning Board of Appeals](#) that they have suffered, or may suffer, special damages not common to other property owners similarly situated. The mere increase in traffic in the area, proof of general economic and aesthetic losses, or the mere fact that the appellant owns adjacent property are not sufficient grounds to show special damages.
- C. **Stay.** The [filing](#) of a [site plan](#) appeal shall act to stay the issuance of site plan approval or issuance of a [Certificate of Zoning Compliance](#) authorizing improvements on the property which is the subject of the appeal.



# STATE & COUNTY ENVIRONMENTAL PERMITS CHECKLIST FOR USE IN EATON COUNTY COMMUNITIES

Name of Business: \_\_\_\_\_

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

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

Type of Business: \_\_\_\_\_

Facility Owner or Manager: \_\_\_\_\_

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

*Note: For assistance with permits and approvals from the Michigan Department of Environmental Quality, including permit coordination among MDEQ divisions, contact the Permit Coordinator, 517/335-4235.*

**Circle (Y/N) the items that may pertain to your project or facility; then contact the office(s) listed to determine specific requirements. Return a copy of this checklist to the municipality as part of your site plan submittal -- even if state and county approvals have not yet been obtained. An updated copy should be submitted prior to occupancy.**

**This list includes the most common permits and approvals related to waste, water quality, and air quality. Other permits and approvals, including local approvals, may also be needed.**

1. Y N Will the project involve the discharge of any type of wastewater to a storm sewer, drain, lake, stream, wetland or other surface water? **Contact:** MI Dept. of Environmental Quality, Surface Water Quality Division, Permits Section: 517/373-8088.
2. Y N Will the project involve the direct or indirect discharge of waste, waste effluent, wastewater, pollutants, and/or cooling water into the groundwater or on the ground? **Contact:** MI Dept. of Environmental Quality, Waste Management Division, Groundwater Program Section: 517/373-8148.
3. Y N Will the project involve construction or alteration of any sewage collection or treatment facility? **For facilities discharging to surface waters, contact the MI Dept of Environmental Quality, Surface Water Quality Division, District Office: 517/625-4647. For facilities discharging to groundwater, contact the MI Dept. of Environmental Quality, Waste Management Division, District Office: 517/625-5515.**
4. Y N Will the project or facility store or use chemicals, petroleum products, or salt? Depending on the type of substance, secondary containment and a Pollution Incident Prevention Plan (PIPP) may be required. **Contact:** MI Dept. of Environmental Quality, Waste Management Division, District Office: 517/625-5515.
5. Y N Will the project involve the installation, operation, or removal of an underground or aboveground storage tank containing a petroleum product or a hazardous substance? **Contact:** MI Dept. of Environmental Quality, Storage Tank Division: 517/373-8168.
6. Y N Will the project involve liquefied petroleum gas storage tanks or container filling locations? **Contact:** MI Dept. of Environmental Quality, Storage Tank Division: 517/373-8168.
7. Y N Does the project involve the installation of a compressed natural gas dispensing station with storage? **Contact:** MI Dept. of Environmental Quality, Storage Tank Division: 517/373-8168.
8. Y N Will the project involve the generation of hazardous waste? **Contact:** MI Dept. of Environmental Quality, Waste Management Division, District Office: 517/625-5515.
9. Y N Will the project involve the on-site treatment, storage or disposal of hazardous waste? **Contact:** MI Dept. of Environmental Quality, Waste Management Division, Hazardous Waste Permit Unit: 517/373-9875.
10. Y N Will the project involve the transport of hazardous waste or non-hazardous liquid industrial waste? **Contact:** MI Dept. of Environmental Quality, Waste Management Division, Hazardous Waste Program Section: 517/373-9875.
11. Y N Will the project involve land filling, transferring or processing solid non-hazardous wastes on-site? **Contact:** MI Dept. of Environmental Quality, Waste Management Division; District Office: 517/625-5515.

12. Y N Will the project involve the installation, construction, reconstruction, relocation, or alteration of any process or process equipment (including air pollution control equipment) which has the potential to emit air contaminants? **Contact:** MI Dept. of Environmental Quality, Air Quality Division, Permit Section: 517/373-7023.
13. Y N Will the project or facility involve the storage, mixing or distribution of pesticides or fertilizers in bulk quantities? **Contact:** MI Dept. of Agriculture, Pesticide and Plant Pest Management Division: 517/373-1087.
14. Y N Will the project involve any man-made change in the natural cover or topography of land, including cut and fill activities which may contribute to soil erosion and sedimentation? Will the earth change disturb an area of one acre or more, or occur within 500 feet of a lake or stream? If the answer to both of these questions is yes, a soil erosion and sedimentation control permit is required. **Contact:** Eaton County Drain Commissioner : 517/485-6444. In addition, a permit may be required from the DEQ. **Contact:** MI Dept. of Environmental Quality, Land & Water Management Division, Soil Erosion & Sedimentation: 517/373-3178.
15. Y N Will the project involve dredging, filling, or construction in, across or under (1) a river, stream, creek, ditch, drain, lake, pond or swamp? (2) wetlands? (3) floodplain (area that may have or ever had either standing or flowing water)? **Contact:** MI Dept. Environmental Quality, Land and Water Management Division, Permit Consolidation Unit, 517/373-9244.
16. Y N Will the project involve any dredging proposed within 500 feet of a lake, river, stream, creek or ditch? **Contact:** MI Dept. Environmental Quality, Land and Water Management Division, Permit Consolidation Unit: 517/373-9244.
17. Y N Will an on-site wastewater treatment system or septic system be installed?
- For subsurface sanitary sewage disposal in quantities of 10,000 gallons per day or less:** Barry-Eaton District Health Dept., Environmental Health Division, 517/541-2615. For any subsurface discharge of sanitary sewage in quantities equal to or greater than 10,000 gallons per day – **Contact:** MI Dept. of Environmental Quality, Waste Management Division: 517/373-8148.
- For subsurface disposal of sanitary sewage in quantities of 6,000 to 10,000 gallons per day:** In addition to obtaining a construction permit from the Barry-Eaton District Health Department, submit a state wastewater discharge notification form. Flow monitoring and reporting are required – **Contact:** MI Dept. of Environmental Quality, Waste Management Division, Groundwater Permits Unit: 517/373-8148.
- For industrial or commercial wastewater (other than sanitary sewage) in any quantity – Contact:** MI Dept. of Environmental Quality, Waste Management Division, Groundwater Permits Unit: 517/373-8148.
18. Y N Will the project involve the construction of a water supply well or the extension of a water supply service from an existing water system? **Contact:** MI Dept. Environmental Quality, Drinking Water Program, District office 517/625-5515; and Barry-Eaton District Health Dept., Environmental Health Division: 517/541-2615.
19. Y N Are there out-of-service wells, abandoned wells, or cisterns on the site? (drinking water, irrigation, & monitoring wells). **Contact:** Barry-Eaton District Health Dept., Environmental Health Division: 517/541-2615.
20. Y N Will the project involve a subdivision or site condominium project utilizing individual on-site subsurface disposal systems or individual wells? **Contact:** Barry-Eaton District Health Dept., Environmental Health Division: 517/541-2615.
21. Y N Will the project involve the on-site storage of sanitary sewage prior to transport and disposal off-site (pump and haul)? **Contact:** MI Dept. of Environmental Quality, Waste Management Division, Groundwater Program Section: 517/373-8148.
22. Y N Has the property or facility ever been subject to a remedial action, limited closure, or other environmental cleanup response under Part 201, Natural Resources and Environmental Protection Act (NREPA)? Is the property currently subject to a response action? Has a Baseline Environmental Assessment (BEA) been completed for the property? **Contact:** MI Dept. of Environmental Quality, Environmental Response Division: 517/373-9893 and/or MI Dept. of Environmental Quality, Storage Tank Division: 517/373-8168.

NOTE: The general telephone number for the Shiawassee DEQ District office (which covers Eaton, Eaton and Clinton Counties, among others) is 517-625-5515. The office is located at 10650 Bennett Drive, Morrice, MI 48857-9792. The fax number is 517-625-5000.

## MAINTENANCE COVENANTS and PLANS

To comply with its NPDES Stormwater Permit, Eaton County requires that the Owner of a property undergoing development or redevelopment enter into a binding agreement guaranteeing maintenance of approved stormwater facilities for as long as they remain integral components of an overall stormwater management plan. A maintenance covenant addresses individual BMPs (structural and non-structural) as well as the overall stormwater structure of a site. Maintenance covenants are prepared in a form acceptable for recording in the office of the Eaton County Register of Deeds. All agreements, covenants and easements attendant to this Manual, including legal documents required under the drain commissioner's Act 40 Drain Manual, will be prepared by Eaton County, subject to review by corporation counsel. The signature of the Drain Commissioner or other county official shall be proof that all requirements of the document in question have been addressed. The covenant example found under Documents in this section of the Manual will be the basis for completing all covenants.

A maintenance covenant consists of three components: a formal agreement binding current and future owners to a process assuring perpetual maintenance of storm water treatment facilities, permanent easements granting Eaton County access over a site for inspections and emergency operations, and an operations and maintenance plan (O&M plan) that details requirements for adhering to the agreement.

### **1. Requirements for Privately Maintained Facilities**

Prior to final approval of a Maintenance Covenant by Eaton County, the owner must submit a *Site Inventory Checklist* (see Appendix D). A blank copy of the Inventory checklist will also be distributed at the *Concept Meeting*. This document must be completed and submitted with the preliminary design plan. Eaton County requires an attentive document as a condition for initiating formal review.

The site Inventory brings together physical characteristics and legal information about the land, and identifies the parties and individuals who will be active in the site development process. Specific items that must be included with a site inventory will be identified during the *Concept Meeting*. Eaton County reserves the right to restrict or to require additional information based on discussions occurring at or after that meeting, and may utilize the information to enhance its GIS or other records for the site.

The Drain Commissioner will prepare a *Stormwater Management Maintenance Covenant* that fulfills requirements of Eaton County's NPDES Stormwater Permit. At minimum, the covenant will provide for:

- Maintenance practices consistent with an approved facility specific O&M plan, including method of financing.
- Perpetual access by the Eaton County Drain Commissioner for inspections and for maintenance enforcement.

- Reimbursement to Eaton County for work performed as a result of an emergency condition or failure by the landowner or association to follow the O&M plan.
- Provision for transferring jurisdiction to the Eaton County Drain Commissioner in the event the landowner or association consistently fails to comply with the approved O&M plan, or the property goes into foreclosure.

An example of a Stormwater Management Maintenance Covenant can be found under *Documents* in this section of the Manual.

## **2. Requirements for Publicly Maintained Facilities**

Unless agreed to in advance, a stormwater management facility that receives runoff from an existing or proposed public right-of-way shall become a publicly- maintained facility (PMF). Although local municipalities may operate and maintain a PMF, in most instances the facilities will be established as public drains through the Michigan Drain Code. Requirements for establishing drainage facilities, including associated BMPs, will be discussed at the *Concept Meeting*.

A preliminary operations and maintenance (O&M) plan shall be submitted with the application. The applicant must demonstrate that the Drain Commissioner can physically achieve O&M objectives. This typically involves construction of maintenance access roads and/or dedication of public access easements.

Landowners building treatment facilities that will eventually be incorporated into the county drainage system will be responsible for maintenance of all storm water BMPs, including associated vegetative components, for a period of one (1) year following final certification by the engineer (i.e. the warranty period). Before the warranty expires, the O&M Plan will be modified by the developer's engineer as needed to address any problems encountered during the ensuing warranty period. Final acceptance of the PMF will be subject to approval of the modified O&M Plan by the Drain Commissioner.

## **3. Operation and Maintenance (O&M) Plans**

An essential part of any successful stormwater management plan is a procedure to maintain the various components of the drainage, control, and conveyance systems. Failure to provide effective maintenance changes hydraulic capacities and pollutant removal efficiencies of BMPs and reduces their service life. It is inevitable that deterioration of the infrastructure will begin to occur when it becomes operational so the question is not whether system maintenance is necessary but rather what must be done and how often. The following items will be helpful for development of an effective stormwater O&M plan.



Operations and maintenance plans are subject to failure. Factors cited most often that negatively influence a site- specific stormwater maintenance plan include:

- Insufficient funding
- Lack of information about the physical locations of system components, or of the components themselves
- Lack of trained and dedicated inspection staff
- Component designs not conducive to easy maintenance
- Lack of enforcement
- Land owners being unaware of maintenance responsibilities

The successful implementation of an O&M plan can be influenced by several factors. The six recognized components of a quality operations and maintenance plan include:

- A quality inspection program during construction
- An accurate site map showing physical location(s) and final details of all BMPs
- Event- based and scheduled maintenance inspections
- Performance evaluation inspections (includes measurable goals)
- Trained personnel and written assignments
- A dedicated source of funding

An effective operation and maintenance plan must include detailed information about everything that is unique to a site. The O&M Plan needs to identify maintenance activities required for control methods, provide a description of the function of each device, and include appropriate schematics when needed.

### **A) Operations and Maintenance Plan Development Guidelines**

#### Basic components of an effective O&M plan

1. An annual budget summarized by task, and including a mechanism for financing (see guidelines below).
2. The names or positions of the individuals who will primarily be responsible for maintenance inspections, and training for new personnel.
3. A copy of the drainage (site) plan delineating facilities and easements, maintenance access routes, and buffer areas.
4. A list of appropriate tasks for each component of the system, and a schedule for their implementation, including descriptions of procedures for both preventive and remedial maintenance.
5. A preventative maintenance component which will include:
  - regularly scheduled inspections for the entire system
  - event- based inspections of critical components
  - general housekeeping inspections for light trash and debris removal, and
  - wet weather and dry weather performance inspections and evaluations.

6. A description of ongoing landscape maintenance needs and provision to assure vegetative buffers will be maintained by landowners, development associations, conservation groups or public agencies.
7. A description of the method that will be used to document all inspections and expense.

Items to consider when addressing site specific components

1. Special structures and areas set aside for infiltration should be clearly marked at the site location and on the plan.
2. Supplement the plan with photographs of specific BMPs. Pictures are effective tools for determining ideal post- construction conditions of structural components, wetland plantings, emergency spillways, downstream outfalls and vehicle access points during subsequent inspections. Photos can also be electronically attached to GIS- based O&M plans.
3. Install benchmarks for any control measure designed to contain sediment between runoff events, including forebays of detention and retention basins and constructed wetlands. Locations of these reference points must be clearly shown on record drawings and are to be treated as part of the permanent installation. When possible, a benchmark should be established at an adjacent permanent structure where they are less susceptible to vandalism (manhole covers, etc.).

**B) Developing an Operation and Maintenance Budget**

Without assured funding for required maintenance activities, systems will deteriorate quickly, often necessitating measures to protect downstream resources. A valuable tool for determining future budget allotment as systems age is the facility inspection report.

Although the maintenance budget for each development will differ, it is important that a realistic dollar amount be established and a mechanism for funding identified. A typical O&M budget might include any of the expense categories listed below. There may be additional costs for facility specific devices. Costs estimates should be generous during the initial years until a record of actual expense can be compiled. At minimum, the projected budget for maintaining BMPs on a site should be 15% of the anticipated cost for normal maintenance of contributing parking lots and lawn areas. Expect costs to be greater in certain years due to scheduled activities (excavating sediment from a basin and restoring vegetative cover for example). As the system matures and the Owner becomes more aware of its impact on overall budgeting, a realistic model will emerge.

Annually and after every major rain storm event:

- inspect basins, filter devices and infiltration trenches for floatables and debris
- inspect waterways and constructed side slopes for erosion
- inspect outlet for erosion or structural failure

Annually:

- measure and document sediment accumulation in basins
- evaluate condition of rip rap at inlets, outlets and in overflow channels
- inspect ground cover
- survey for invasive species in constructed wetlands and basins

Every other year or after major storm events:

- inspect structural elements (may require services of engineer)

Catastrophic event:

- inspect outlets and structural elements for damage (requires professional engineer)

Construction expense:

- remove sediment from basins every two years (this period may be extended as the site becomes completely stabilized)
- mow and maintain basins, basin slopes and surface flow filters
- repair erosion on side slopes and in drainageways

Following is an example of a maintenance budget for a hypothetical commercial retail site with box stores and a single retention (or detention) BMP. Items designated as \$0 are typically conducted by grounds crews during normal facility maintenance operations. Note that some of the items relate directly to how the site is being used.

**Beginning at the outlet:**

- 1) Conduct an annual inspection of the area immediately downstream from the basin outlet for evidence of erosion and dislodging of stone rip rap. **Cost: \$400**
- 2) Extra inspections for storm runoff exceeding capacities of upstream component controls (assume two events per year). **Cost: \$800**
- 3) Conduct sampling as required by permits; prepare reports. **Cost: \$2,000**

**For a retention basin:**

- 1) Inspect outlet device(s) for evidence of premature failure. **Cost: \$400**
- 2) Remove floating and sunken debris to prevent clogging downstream. **Cost: \$0**
- 3) Check for and remove submerged invasive plant species. **Cost: \$1,000**
- 4) Survey embankments for burrowing. **Cost: \$0**
- 5) Evaluate incoming flow concentrations for damage to basin side slopes. **Cost: \$400**
- 6) Visually inspect water surface for oil or other floating contaminants. **Cost: \$0**
- 7) Remove and dispose of floating contaminants with absorbent filters. **Cost: \$1,000**

**For a detention basin:**

- 1) Mow twice during the growing season to control noxious weeds. **Estimated cost: \$0**
- 2) Inspect overflow channel and outflow device(s) for erosion or potential failure. **Cost: \$400**
- 3) Repair erosion caused by surface flow into the basin. **Cost: \$900**
- 4) Scheduled two year cleaning. **Cost: \$6,000**

**Infiltration systems:**

- 1) Remove surface debris. **Cost: \$0**
- 2) Check underdrain if so equipped for signs of an obstructed outlet. **Cost: \$0**
- 3) Identify and remove undesirable vegetation by hand. **Cost: \$0**
- 4) Check and clean filter flow path to trench after every major rainfall event. **Cost: \$0**

**Lawn areas:**

- 1) Limit applications of pesticides and herbicides, especially where flow to BMPs may be concentrated. **Cost: \$0**

**Paved parking areas:**

- 2) Sweep paved parking and driving surfaces annually. **Estimated cost: \$3,600**
- 3) Repair damaged asphalt or concrete. **Cost: \$4,000**
- 4) Manage shopping carts. **Cost: \$0**
- 5) Inspect parking areas monthly for oil spills; follow a clean-up plan. **Cost: \$100** (disposal extra)

**General:**

- 1) Conduct annual training for staff. **Cost: \$1,200**
- 2) Document inspections. **Cost: \$200**

## POST-CONSTRUCTION INSPECTION

A detailed post-construction inspection program addressing each of the listed components is necessary for continued effectiveness of a treatment system. Inspections must be regularly scheduled although frequency may be impacted by the type of BMP, its physical characteristics, and site conditions in the catchment area. Event-based inspections should be conducted after every major storm or snowmelt runoff event for those components deemed critical to overall treatment. For most BMPs, visual observation will suffice although some components may require specialized equipment (remote video, confined entry gear, etc.). The inspection program should be tailored to address operational characteristics of a system.

Inspectors must have knowledge of or experience with treatment systems employed on a site. The DEQ requires that a *Certified Stormwater Operator* or *Stormwater Plan Manager* be employed at all sites subject to NPDES permitting. When an inspection reveals a potential problem affecting structural or hydraulic integrity, a more detailed inspection must be conducted by a professional engineer. An engineer should likewise be consulted for performance evaluations.

The inspection process includes documenting the following:

- Structural integrity of the various components
- General operational conditions
- Hydraulic operational conditions
- Susceptibility to or actual vandalism
- Health of vegetation
- Unsafe or unhealthy conditions

Water quality measurements can also be incorporated into the inspection history. Items to include for specific BMPs in an inspection and maintenance program are listed below.

### 1) Inspection & Maintenance Concerns for Facility Specific BMPs

#### Constructed Treatment Wetlands

1. Inspect inlets to assure unrestricted flow to the wetland. Areas impacted by overland flow (sheet or diffuse drainage) should be inspected for erosion and repaired.
2. Sediment in the forebay should be removed when buildup exceeds 25% of its capacity.
3. Inspect embankments, dikes, side slopes and berms annually for evidence of failure and repair immediately.
4. If an emergency overflow is included in the design, inspect for gullies and remove debris from conveyance structures or channels.
5. Constructed wetlands are considered a component of the treatment train for a site and are not regulated under wetland provisions of the Natural Resources and Environmental Protection Act. When sediment accumulation in the wetland exceeds 12 inches, or

when sediment deposits begin to smother plantings, the wetland should be dredged and wetland vegetation re-established.

6. Inspect annually for noxious weeds. Dead vegetation should be removed periodically when deemed necessary to prevent loss of underlying plant life.

#### Surface detention basin systems

1. Mow grass at least twice each year. Grasses such as tall fescue should be trimmed in early summer after emergence of the heads on cool season grasses. Basins should be mowed again after annual weeds have flowered but before they begin dropping new seeds.
2. If vegetation covers less than 40% of the soil surface, till, lime, fertilize and seed in accordance with current recommendation for new seedlings. If vegetation covers more than 40% but less than 70% of the soil surface, lime, fertilize and over-seed in accordance with current recommendations for existing vegetated surfaces.
3. Remove trash and debris (including dead vegetation) to prevent obstruction of outlets and to prevent the spread of litter to downstream properties, to maintain integrity of the structure, to provide an attractive appearance, and to minimize water pollution.
4. Remove soil deposits in forebays and detention basins before loss exceeds 25% of design capacity.
5. Repair slides, slumps and eroded areas promptly. Trash racks, pipes, headwalls, etc. must be maintained and repaired and/or replaced as needed to maintain integrity of the structure.
6. Conduct scheduled inspections sufficient to document compliance with design and purpose. Additional inspections are required for major runoff events (event- based inspections). Document observations and remedial actions taken.

#### Subsurface detention systems

1. Inspect the control box and the storage pipe after each significant rainfall. If water remains high in both compartments of the control structure more than four (4) hours after the rain has stopped, the outlet should be inspected for obstructions (length of retention will be design dependent). Inspections undertaken shall comply with federal and state confined- entry safety regulations.
2. Remove trash and debris from inlets and inspect control structures during dry weather for blockage to insure the system performs as designed.
3. Use source control methods (street sweeping, etc.) to extend longevity and minimize disruptive maintenance operations.

#### Retention pond systems

1. Mow grass at least twice each year. Grasses such as tall fescue should be trimmed in early summer after emergence of the heads on cool season grasses. Basins should be mowed again after annual weeds have flowered but before they begin to drop new seeds.

2. If vegetation covers less than 40% of the soil surface, till, lime, fertilize and seed in accordance with current recommendation for new seedlings. If vegetation covers more than 40% but less than 70% of the soil surface, lime, fertilize and over-seed in accordance with current recommendations for existing vegetated surfaces.
3. Remove trash and debris (including dead vegetation) to prevent obstruction of outlets and to prevent the spread of trash to downstream properties, to maintain the integrity of the structure, to provide an attractive appearance, and to minimize water pollution.
4. Remove soil deposits in the forebay before loss of capacity exceeds 25%, and in the pool before loss exceeds 10% of design capacity. Control measures must be installed at the outlet during excavation operations and maintained until there is no further evidence of suspended sediments.
5. Dispose of sediment in accordance with current procedures for disposal. Where deemed necessary or desirable the sediment will be tested for appropriate pollutants before it is removed from the site.
6. Repair slides, slumps and eroded areas promptly. Trash racks, pipes, headwalls, etc. must be repaired and/or replaced as inspection warrants.
7. Conduct scheduled inspections in sufficient frequency to document compliance with design and purpose, and additional inspections after every major runoff event.

#### Stormwater infiltration systems

1. Pretreatment areas should be mowed frequently. Grass clippings and trash debris should be removed to prevent transport to the infiltration trench. Vegetation in the infiltration trench itself should be hand cut to a height of no less than four (4) inches to insure continued filtration. Avoid compaction by heavy mowing equipment .
2. Inspect the underlying pipe outlet at regular intervals for signs of obstruction during both wet and dry weather conditions. Check for turbidity at the outfall (a potential sign of failure).
3. Check observation wells if equipped immediately after a rainfall to determine if filters designed to remove sediment and debris before runoff enters the infiltration trench are functioning properly. Routine inspections should be conducted by the same individual when possible to build institutional knowledge of system operations.
4. Repair failures immediately to restore operative condition. Replace the upper 6 to 12 inches of soil and the underlying fabric when necessary.
5. Dispose of sediment, including parking lot sweepings, in accordance with applicable state and local standards.

#### Sand filters (infiltration type)

Sand filters consist of perforated pipe below a layer of sand with a fabric liner separating the filter medium from pipe bedding and backfill. After pretreatment to remove larger debris, runoff water flows through the sand to the pipe which typically outlets to daylight. Inspection activity should be geared toward maintaining percolation in the filter medium.

1. Inspect four times per year during the first two years of operation, and annually thereafter. Also conduct event-based inspections to verify outflow from the outlet pipe meets water quality criteria for turbidity.
2. Before sediment buildup in the entrapment chamber reaches half depth, remove the contents by means of a vacuum truck, replacing sand as needed to restore porosity. Minor accumulations of debris may be removed without full replacement. Dispose of waste in accordance with applicable federal and local regulations.
3. Replace the top six (6) inches of sand if standing water is observed on the surface more than 48 hours after a storm event. Establish a benchmark for the top of the sand filter medium before removing to assure the new content fulfills design parameters. If discolored or contaminated material is found below, additional material must be removed until all signs of contamination are eliminated. Dispose of material in accordance with applicable federal and local regulations.
4. Inspect structural components of the filter system, including the outlet structure or end of pipe, valves, under drain systems, and inlet controls, and report deficiencies to the design engineer for appropriate remedy.

#### Bioretention systems

1. Check observation wells immediately after a major runoff event to verify that pre-filters are functioning effectively. Schedule dry weather inspections. Inspections should be conducted by the same individual to establish institutional knowledge of system operations.
2. Inspect overflow channels annually and clean when 25% of conveyance capacity is lost due to sediment deposition.
3. Remove trash and debris from the surface to promote longevity of vegetative cover; schedule replacement of mulch annually.

#### Porous pavement

1. Vacuum and jet wash porous pavement at least two times per year or as needed to remove grit and sediment.
2. Annually inspect outlet pipes (subdrains) for blockage to prevent freezing and damage to open-graded pavement.
3. Employ knowledgeable contractors and appropriate materials for all repairs.
4. Limit applications of herbicides on adjoining landscape areas to protect water quality.
5. Train employees in spill prevention and response (required for all commercial applications); maintain schematics for reference by emergency management officials.
6. Maintain open drainage beneath the pavement to address mosquito vector concerns. If additional controls are needed, use only environmentally friendly control measures (*Bacillus*) applied by a professional applicator.
7. When a porous pavement application fails due to sedimentation that cannot be removed, partial or total reconstruction of the infiltration component is required.



Open channels

1. Preserve hydraulic and removal efficiency of open channels by:
  - Regular mowing and litter and debris removal;
  - On-going stabilization of eroded side slopes and bottom;
  - Nutrient and pesticide use management;
  - Periodically de-thatch the swale bottom and removal excess vegetation; and
  - Disc or aerate the bottom if the density of vegetation begins to decline or when the soil surface hardens to cement like consistency.
2. Every five years, or when conditions indicate, remove sediment from the channel bottom to restore original cross section and infiltration rates.

*A. Dry swales*

- a) Inspect structural and vegetative components annually and after major runoff events. If standing water is observed on the surface 48 hours after a runoff event, till or de-thatch the bottom to restore porosity.
- b) Mow four times each season to prevent noxious weeds and woody vegetation from becoming established.
- c) Remove sediment accumulations when depth exceeds three (3) inches.

*B. Wet swales or grass- line channel*

- a) Inspect structural and vegetative components annually and after major runoff events, including trash racks, valves and pipes or spillway structures.
- b) Check embankments for stability and woody growth that will impair stability. Remove burrowing animals.
- c) Inspect the bottom of the channel for ponding (re-grading required) and for gullies (severe gullies caused by excess grades should be reviewed by an engineer). Remove sediment accumulations when average depth exceeds three (3) inches.
- d) Mow side slopes and maintenance access roads four times each season.

Rip Rap Lined Channels

1. Inspect annually and after each major runoff event.
2. Repair erosion where concentrated flow enters the channel, and repair bank instability (especially on steep slopes) and scour holes promptly.
3. Where underlain by geotextile fabric, evaluate condition yearly and replace as needed.
4. Replace improperly sized rip rap with appropriate angular stone.

Rock Outfalls

1. Inspect annually and after each major runoff event; reset stone as needed.
2. Check and repair erosion along the sides and ends of the energy dissipation apron.

In Channel Energy Dissipaters

1. Annually inspect condition of structural energy dissipaters for evidence of dislodging.

2. To prevent erosion, evaluate density of vegetation adjacent to the dissipater and reseed as needed.

#### Temporary Slope Drains

1. Inspect earthen brow at top of slope for signs of failure; re-grade as needed.
2. Observe for piping and for blockage which will cause premature failure.
3. Check energy dissipation devices at toe of slopes and repair as needed to prevent gully erosion.
4. After 18 months, or when vegetation is well established, remove slope drain and restore disturbed area.

#### Proprietary Devices

1. Inspect devices designed to remove particular pollutants (i.e. silt, oil, etc) on a regular schedule each month, and after each runoff event that exceeds the treatment capacity of the device.
2. Clean or replace cartridge and filter media annually or as recommended by the manufacturer.
3. Inspect orifices and system bypasses for blockage.
4. Confined space practices may be required for these types of devices.

#### Impervious Area Disconnects

1. Annually inspect and clean level spreaders and energy dissipaters, including access points from impervious areas.
2. Remove surface debris during housekeeping inspections.

#### Eco-roofs and Roof Gardens

1. Conduct inspection of vegetated roof systems monthly during the growing season using personnel trained in this field for visible erosion channels, plant stress, noxious weeds and insect infestations.
2. Trim as needed after vegetation is fully established.
3. Employ a structural engineer to inspect the waterproofing membrane during spring melt and in the fall of each year to prevent structural damage to the building.

## **2) Inspection Documentation**

After construction is complete, an updated site drawing with all field changes ordered by the engineer, plus revised inspection schedules and personnel assignment, must be filed with Eaton County before site completion approval will be granted. See Post-Construction Submittal Requirement in this part of the Manual for detailed information. In addition, one copy of the final approved Operations and Maintenance Manual, updated to reflect all changes made during construction, must be provided to Eaton County and a second maintained on the site by a facility manager.

### **3) Maintenance Records**

Inspection and maintenance logs for private facilities must be compiled and retained for at least three (3) years following the date of inspection. It is strongly recommended however that records be retained for longer periods to assist the landowner in determining frequencies of inspections and for budget purposes. During the initial retention period, Eaton County may request copies of maintenance logs, or may inspect them on site, whichever is more convenient for the landowner. Paper copies in binders are acceptable although electronic files may be easier to compile and retrieve. A standard form of log should be developed and used consistently by inspectors to assure that all approved components of a plan are inspected.

## POST-CONSTRUCTION SUBMITTAL REQUIREMENTS

### A) Engineer's Certificate of Completion

After construction is completed and approved by Eaton County, the engineer shall submit an Engineer's Certificate of Completion. The certificate will be added to the permanent O&M Plan for the site. In the case of a PFM, the certificate shall be filed with the appropriate municipality or agency. The purpose for this certificate is to provide professional assurances that a facility was constructed according to the approved design, and that stormwater management devices inherent to the site are both adequate and functional. An example of an Engineer's Certificate of Completion is found in Appendix D of this Manual.

### B) Post Construction Site Plan Revisions and Certifications

A condition of Eaton County's NPDES permit is the availability of accurate information that can be easily accessed by field personnel during routine inspections, by other governmental utility managers, and by emergency services personnel in the event of a spill or other environmental problem after a project has been completed. An *ftp* site is being created that will eventually include the utility and grading plans for each permit issued. A critical component of that initiative is an accurate depiction of what was actually constructed. After site development is complete, the following items must be addressed to reflect ordered changes that may have occurred during construction:

- a) Plans must be revised to reflect "as-built" construction. A complete re-survey of a property's components is not required but changes in pipe sizes and locations of drains and underground utilities must be noted.
- b) Copies of the revised plan must be submitted in three (3) forms: as a print, as an electronic file prepared using CAD® or another digital program compatible with Eaton County's GIS software, and as a PDF file.
- c) A certificate of completion of construction signed by a registered professional engineer is required.
- d) Maintenance easements previously issued must be checked against as-constructed BMPs and new easements re-issued where needed.
- e) If necessary, the post-construction maintenance plan and agreement must be revised to reflect the final product.

Stormwater management BMPs must be regularly inspected and maintained for continued, proper function. Detailed BMP operation and maintenance checklists are available in Appendix C-2.

**C) Transferring Responsibility for O&M to Eaton County**

If a private landowner wishes to transfer responsibility for maintaining a facility to a public entity, the Drain Commissioner shall first, with the Owner's representative, review the O&M Plan, and make amendments as necessary. If the parties agree that structural BMPs on a site (but not the land immediately surrounding) should be maintained as publicly owned facilities (PMF) the Owner shall file an *Amendment of Declaration of Covenants* referencing the original recorded covenant, the recorded easements, the approved O&M Plan, and final record construction drawings. The covenant amendment shall be recorded in the office of the Eaton County Register of Deeds. A non-refundable maintenance deposit in the amount of \$2,500 is required of the landowner to fulfill requirements of the Michigan Drain Code. Additional requirements pertaining to establishing a special assessment district to maintain the facilities will apply. Thereafter, the parcel shall be treated as a separate drainage district, subject to assessment for maintenance and repair. An example of an Amendment of Declaration of Covenants is found below.

The active channel, however, is not formed by any single event. Its form is the consequence of the sum of forces on the boundary by a range of events, from those that partially fill the active channel to the bankfull event. Mid-bankfull flow, which rarely occurs prior to urbanization because of mitigating forces provided by natural surfaces, occur more frequently following development. The increase suggests they may be the events that actually shape a channel.

The traditional method adopted for controlling erosion potential also fails to address the resistance of boundary materials. It assumes the channel is symmetric and the boundary materials are homogeneous. More typically, channels are asymmetric in form and the boundary materials are heterogeneous deposits. In many cases, the banks are composed of several different layers of material each of which has unique properties that determine its resistance to erosion. Streams tend to impact materials with the least resistance to erosion. If these materials are near the bottom of a bank, the channel will tend to be wider than if the lower materials are more resistant, because maximum erosive force is directed against the lower third of the bank profile.

Erosion control practices often fail to recognize the importance of frequent flow events, the heterogeneity of boundary materials, as well as channel stability. In unstable streams, the innate capacity to absorb a change in the flow regime has been diminished. Consequently, the required degree of control may be greater than for a stable system (a constructed ditch for example).

A design methodology that overcomes the limitations of the traditional approach for control of in-stream erosion potential is obviously preferred. The challenge is to balance the need for a comprehensive characterization of the fluvial system with the need for a relatively simple but universal design procedure that may be applied in circumstances where detailed information may not be available.

## **2. The Correct Design Approach**

The accepted criteria for channel protection requires that runoff volume and peak flow rates from a development site be limited to the existing levels for all storms up to the 2-year, 24-hour event. However, Eaton County reserves the right to enforce more stringent discharge limits if downstream conditions warrant. Appendix G explains watersheds within the county where more stringent criteria apply. The content of this appendix may change as conditions warrant.

Refer to the Act 40 Drain Manual for specific design criteria acceptable to initiate a plan review.

#### **4. Stormwater Credits:**

Incorporating recharge into a site management plan can reduce the size and cost of constructing stormwater BMPs. To maximize recharge potential, designers should explore how to use pervious areas for infiltration early in the site planning process.

Recharge volume may be used to offset a portion of the total water quality volume and can be achieved by incorporating a range of structural BMPs, and through a sensitive approach to site design. Available stormwater credits are discussed in Part II of this Manual.

#### **E. Water Quality**

As land use changes, new or additional pollutants may be added to storm water runoff. The impervious surfaces that typically accompany development also provide for efficient delivery of these pollutants into receiving waterways. Leaves and litter, human and animal waste, sediment, fertilizer and pesticides are all washed from the land. Vehicles and deteriorating urban surfaces deposit trace metals, oil, and grease onto streets and parking lots. These and other toxic substances are conveyed through storm drain to our streams, rivers and lakes.

In short, the ecology of urban streams may be completely reshaped by the extreme shifts in hydrology, morphology and water quality that can accompany the development process. The stresses that these changes place on the aquatic community, although gradual and often not immediately visible, are profound.

##### **1. Water Quality Criteria**

Eaton County's NPDES Phase II Stormwater Permit establishes minimum water quality post-construction requirements.

###### Minimum treatment volume (first flush) standard

- One inch (1.0") of precipitation runoff from the entire catchment area, or
- One-half inch (0.5") of runoff from the entire catchment area provided treatment of the entire amount in excess of 0.5" is included in an already approved watershed management plan or constructed drainage system design.

Hydrologic studies have shown that small, frequently occurring storms account for the majority of precipitation / runoff events. Consequently, runoff from these storms also accounts for a major portion of annual pollutant loadings. By treating these frequently occurring smaller events and a portion of the runoff from larger events, it is possible to effectively mitigate the water quality impacts from a developed area.

A water quality treatment volume (WQV) is specified for sizing structural controls to treat small storms to a maximum depth, and the "first flush" of all larger storm events. The maximum depth is determined by one of the 2 standards listed above, or the 90-percentile non-exceedence storm, and is considered the point of optimization between the ability to remove pollutants and cost-effectiveness. Capturing and treating a larger percentage of the annual stormwater runoff would provide a slight increase in additional pollutant removal, but a considerable increase in cost.

Studies have shown that the first flush generally carries 90 percent of the pollution from a storm (Novotny, 1995). As a result, treatment of the first half inch of runoff was adopted as a water quality volume sizing criterion requirement throughout much of the United States. More recent research has shown that pollutant removal achieved using the half-inch rule drops off considerably as site imperviousness increases.

Eaton County has adopted the 1 inch/24 hour standard for determining water quality volume (WQV). The WQV may be lowered as much as 0.5 inches with the application of non-structural stormwater credits, but may never be less than 0.5 inch/24 hours. The 90<sup>th</sup> percentile annual non-exceedence storm standard is retained for the purpose of addressing bank full flow.

## **2. Total suspended solids (TSS) reduction**

The NPDES permits adhere to a philosophy of removing pollutants to the "maximum extent practicable" through the use of a percentage removal or effluent limit performance goal. DEQ has established a performance goal of 80% reduction of suspended solids from construction sites as measured on an annual basis, or a discharge concentration of not more than 80 mg/liter measured during a runoff event. This performance standard is based upon U.S. EPA guidelines and has been adopted by state and local agencies nationwide.

TSS was chosen as the representative stormwater pollutant for measuring treatment effectiveness for several reasons.

- TSS is well- established as an indicator of pollution.
- Sediment and turbidity, as well as other pollutants of concern that adhere to suspended solids, are a major source of water quality impairment in urban watersheds.
- A large percent of many other pollutants of concern are either removed with total suspended solids, or at rates proportional to TSS removal.
- The 80% TSS removal level is reasonably attainable using well-designed structural stormwater controls.

The developer must certify that the design of a facility will achieve a minimum of 80% removal of TSS compared with uncontrolled runoff, or that the discharge concentrations of TSS do not exceed 80 mg/liter. If TSS reductions cannot be achieved through the capture and detention of the minimum WQV stated above, additional methods for treatment must be provided. These may include increasing minimum treatment volume or adding structural treatment devices.



**DELTA CHARTER TOWNSHIP**

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**Stormwater Management Program (SWMP)**



**DELTA**  
**T O W N S H I P**

**APPENDIX D**

**GOOD HOUSEKEEPING AND POLLUTION  
PREVENTION MANUAL**

**GOOD HOUSEKEEPING AND POLLUTION  
PREVENTION MANUAL FOR  
DELTA CHARTER TOWNSHIP**



January 2013  
*(Rev. December 2017)*

Prepared in partnership with:



With assistance from:

Tri-County Regional Planning Commission



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# Section 1

## 1.0 Introduction

Stormwater runoff is part of a natural hydrologic process. Human activities particularly urbanization and agriculture, can alter natural drainage patterns and add pollutants to rivers, lakes, and streams as well as coastal bays, estuaries, and ultimately, the ocean. Numerous studies have shown urban runoff to be a significant source of water pollution, causing declines in fisheries, restricting swimming, and limiting our ability to enjoy many of the other benefits that water resources provide. Urban runoff in this context includes all flows discharged from urban land uses into stormwater conveyance systems and receiving waters and includes both dry weather non-stormwater sources (e.g., runoff from landscape irrigation, water line and hydrant flushing) and wet weather stormwater runoff. In this handbook, urban runoff and stormwater runoff are used interchangeably.

For many years, the effort to control the discharge of stormwater focused mainly on the quantity (e.g. drainage, flood control) and, only to a limited extent, on the quality of the stormwater (e.g. sediment and erosion control). In recent years, however, awareness of the need to improve water quality has increased. With this awareness, federal, state, and local programs have been established to reduce pollutants contained in stormwater discharges to our waterways. The emphasis of these programs is to promote the concept and the practice of preventing pollution at the source, before it can cause environmental problems. Where further controls are needed, treatment of polluted runoff may be required.

## 1.1 Manual Purpose and Scope

Delta Charter Township, as a member of the Greater Lansing Regional Committee (GLRC) for Stormwater Management, has developed this manual to provide staff and management clear guidance on implementing Best Management Practices (BMPs) to reduce pollutants in runoff from municipal operations. Federal and state programs require selected municipalities to reduce the discharge of pollutants in their stormwater discharges to the maximum extent practicable (MEP) using an array of control measures including BMPs. The SOPs in this manual will be updated within 30 days of any new facilities being constructed to reflect changes in priorities.

## 1.2 Method of BMP Selection

This manual has been developed using the *GLRC Good Housekeeping and Pollution Prevention for Municipalities Handbook* which was primarily designed to assist municipal staff with incorporating pollution prevention controls into their overall stormwater management program and specifically publicly owned/operated facilities (fixed facilities) and field activities (field programs). Users include public and private sector engineers, planners, environmental specialists, and stormwater program managers. Managers and employees of the various municipal facilities and municipal field

programs may find this handbook especially helpful when implementing and evaluating the effectiveness of these stormwater management efforts.

### **1.3 Stormwater Pollutants and Impacts on Water Quality**

Stormwater runoff naturally contains numerous constituents; however, urbanization and urban activities (including municipal activities) typically increase constituent concentrations to levels that may impact water quality. Pollutants associated with stormwater include sediment, nutrients, bacteria and viruses, oil and grease, metals, organics, pesticides, and gross pollutants (floatables). In addition, nutrient-rich stormwater runoff is an attractive medium for vector production when it accumulates and stands for more than 72 hours.

#### **Municipal Activities Generating Pollutants**

Municipalities conduct various activities that are sources of pollutants in stormwater runoff. For the purpose of the manual, these activities are categorized according to whether they occur at a specific location (fixed facility) or across a broader and non-specific area (field programs). These activities must be addressed through the implementation of Standard Operating Procedures (SOPs) to minimize or eliminate the pollutants from entering the local water bodies or drainage system. The Township's Parks, Recreation, Cemeteries and Building & Grounds Department has the responsibility of maintaining the municipal buildings & grounds, as well as the parks and cemeteries facilities. The Township's Utilities Department is responsible for maintaining the Township's utilities installations.

**The Township facilities that are located within the Township's defined urbanized area (see Appendix A, Map A-2 in the *Delta Township Stormwater Management Plan*) are described as follows:**

#### **Municipal Buildings**

Delta Administration Complex (Admin. Office Bldg., Fire Station. No. 1, Eaton County Sheriff's Sub-Station, Parks & Grounds Service Bldgs./Equipment Garages)

7710 West Saginaw Highway

Lansing, MI 48917

Phone: (517) 323-8500

The Township main administration complex is located at the northwest corner of West Saginaw Highway (M-43) and N. Canal Road. It consists of 5 buildings on a total of 15.86 acres. The aggregate building footprints occupy 1.48 acres (9.3%), and the associated paved parking and access drives occupy a total of approximately 3.51 acres (22.1%). The remaining 10.87 acres (68.6%) is either undeveloped or green space. The Parks and Building & Grounds maintenance facilities consist of and two equipment storage and maintenance buildings. All associated parking facilities are paved. The Township's Discharge Point Nos. 1A and 1B are located at the northeast corner of the Township's

property. They discharge into the regulated wetland with overflow to the Benjamin Drain, which is under the jurisdiction of the Eaton County Drain Commissioner's Office.

Delta Township District Library (Library, Classrooms, Offices & Meeting Rooms)

5130 Davenport Drive

Lansing, MI 48917

Phone: (517) 321-4014

The Delta Township District Library is situated on a 16.28 acre parcel of land located at the northeast corner of Elmwood Road and Davenport Drive. The building footprint covers .60 acres (3.7%), and the associated paved parking and access drives occupy a total of approximately 2.0 acres (12.3%). The remaining 13.68 acres (84.0%) is comprised of an undeveloped woodlot and green space. The Township's Discharge Point Nos. 2A and 2B are located approximately mid-site near the southernmost property line. They discharge into onsite rain gardens with overflow to the Bollman & Damon Drain, which is under the jurisdiction of the Eaton County Drain Commissioner's Office.

Delta Township Enrichment Center (Activity Room, Classrooms)

4538 Elizabeth Road

Lansing, MI 48917

Phone: (517) 323-8555

The Delta Township Enrichment Center is situated on 1.78 acre parcel of land located on the north side of Elizabeth Road between Bretton Road and Robins Road. The building footprint covers .30 acres (17.0%), and the associated paved parking and access drive occupy a total of approximately .54 acres (30.0%). The remaining .94 (53.0%) acres is devoted to green space. There are no known Township Discharge Points on this site.

Delta Township Community Center (Rental Halls/Class Meeting Rooms)

7550 West Willow Highway

Delta Township, MI 48917

Phone: (517) 323-8555

The Delta Township Community Center is situated on a 2.3 acre parcel of land located on the Northeast corner of Canal Road and Willow Highway, one mile North of Saginaw Highway. The Community Center is approximately 3,400 square feet, and the associated paved parking and access drive occupy a total of approximately .65 acres (28.0%). The Township's Discharge Point No. 17 is located at the northwest corner of the Township's property. It discharges into an open ditch and flows over land with ultimate discharge to Grand River.

Delta Township Recycling Center (Building)

5717 Millett Highway

Lansing, MI 48917

Phone: (517) 323-8555

The Delta Township Recycling Center is situated on a 3.6 acre parcel of land located at the east end of Millett Highway, south of Sanders Road. The associated paved parking and access drive occupy .85 acres (23%). A 1,200 square foot pole barn is located at the site in addition to large roll off recycling containers. The Township's Discharge Point No. 18 is located at the northwest corner of the property. It discharges into the Hunter Drain, which is the under the jurisdiction of the Eaton County Drain Commissioner's Office.

#### Delta Township Fire Station No. 3

215 Snow Road

Lansing, MI 48917

Phone: (517) 886-1162

Delta Township's Fire Station No. 3 is situated on 1.76 acre parcel of land located on the west side of Snow Road, south of Michigan Avenue, directly opposite of the Waverly High School. The 3 bay fire station building footprint covers .24 acres (14%), and the associated paved parking and access drive occupy .63 acres (36%). The remaining .89 acres (50%) is devoted to green space. The site is south of and adjoins the Township's Ground Storage Tank property (described below). Township Discharge Point No. 6 is located on this site, which discharges into the Michigan Avenue Drain. This drain is under the jurisdiction of the Eaton County Drain Commissioner's Office.

#### Delta Township Fire Station No. 4

5317 Old Lansing Road

Lansing, MI 48917

Delta Township's Fire Station No. 4 is situated on .5 acres that is actually a part of the Township's 146.6 acre Anderson Park. It is located on the southeast side of Old Lansing Road between The 2 bay fire station building covers .05 acres (10%), and the associated paved parking and access drive occupy .13 acres (26%). The remaining .32 acres (64%) is undeveloped. The station is not continuously manned and is used primarily for equipment storage. There are no known Township Discharge Points on this site.

#### **Parks, Cemeteries & Other**

There are seven parks and one cemetery located within Township's defined urbanized area. There is also Lake Iris, which is a community stormwater detention facility. These are described as follows:

##### Anderson Nature Park

3207 Wardell Road

Lansing, MI 48917

Phone: (517) 323-8555

Located at intersection of Old Lake Lansing Road and Wardell Road, Anderson Park consists of 146.6 (net) undeveloped natural wooded acres in Sections 35 and 36 of the Township. The park is bisected by Wardell Road and its southernmost boundary meanders along the Grand River for a distance of over 4,400 feet. The park is intended

to be utilized for passive recreation. There are no buildings or improved parking areas within the park and no known Township Discharge Points on this site.

Delta Mills Park

7001 Old River Trail

Lansing, MI 48917

Phone: (517) 323-8555

Located on the southwest corner of the Webster Road and Old River Trail, 21 acres of Delta Mills Park's 32 acres lies within the defined urbanized area. There are active softball and soccer fields, tennis courts, a pavilion, picnic facilities, and a large playscape on the site. The parking areas and access drives are unpaved. There are no known Township Discharge Points on the site.

Grand Woods Park

4500 W. Willow Highway

Lansing, MI 48917

Phone: (517) 323-8555

The 128 acre Grand Woods Park is owned by the City of Lansing, but leased and operated by Delta Township. It is bordered on the south by the River Ridge and Mar Moor Subdivisions in Section 12 of the Township. It is accessed via Grand Woods Drive to River Ridge off Willow Highway. There is roughly 1.3 miles of river frontage on the Grand River, which comprises the northern border of the park. The majority of the park is undeveloped. The active portions of the park include a softball field, a disk golf course, a remote control car course, a playscape, and picnic facilities. The parking areas and access drives are unpaved. There are no Township controlled discharge points. There are two Eaton County Drain discharge points into the River Ridge Branch Drains, and one discharge point into the Garlock & Foster Drain. All of these are under the jurisdiction of the Eaton County Drain Commissioner's Office and their MS4 permit/program.

Leland Park

St. Joe Highway

Lansing, MI 48917

Phone: (517) 323-8555

Leland Park is a 1.1 acre neighborhood park located on the northwest corner of St. Joe Highway and Leland Place. It is leased from the Lansing Board of Water & Light and operated by the Township. The park consists is primarily greenspace with a small playscape for younger aged children. There are no parking facilities. There are no known Township Discharge Points on the site.

Lootens Park

Willow Highway

Grand Ledge, MI 48837

Phone: (517) 323-8555



The 84 acre Lootens Park property is located in Section 8 of the Township. Its western border is shared with Grand Ledge Schools' Hayes Middle School and Willow Ridge Elementary School. It is currently undeveloped. Its diverse landforms include a Beech-Maple forest, open fields, and a stream corridor (the Miller County Drain). No formal recreation activities take place on the property. There are no developed vehicular or pedestrian access points, no parking facilities, and no structures on the property. There are no known Township Discharge Points on the site.

#### Lake Iris

Iris Avenue

Lansing, MI 48837

Phone: (517) 323-8540

Delta Township owns 3.7 acres of land at the northeast corner of Elmwood Road and Michigan Avenue in Section 13 of the Township. The Township, in coordination with the Eaton County Road Commission, the Eaton County Drain Commissioner, and the Michigan Department of Natural Resources acquired this acreage for the purpose of creating a community detention basin to address frequent flooding at the southern end of Iris Avenue. In 1988/1989, the southern 475 feet of Iris Avenue was abandoned and removed and a community detention basin was constructed in its place. The basin is actually a link between two piped sections of the Briggs Intercounty Drain. To date, the Township has maintained the basin. It is the Township's intention to work with the Eaton County Drain Commissioner's Office to have this facility incorporated into the County's drain system for the purposes of future maintenance. This drain is under the jurisdiction of the Eaton County Drain Commissioner's Office. There are no known Township Discharge Points on the site.

#### Player's Club Park

Canal Road

Lansing, MI 48917

Phone: (517) 323-8555

This 80 acre site is located on the east side of Canal Road, south of St. Joe Highway, abutting the Player's Club Subdivision and Condominiums, in Section 22 of the Township. It was formerly the 9-hole Player's Club Golf Course which was donated to the Township by its developer. It has been allowed to return to its natural state. It is currently utilized for passive recreational purposes, with only a walking trail cut through the property. The Carrier Creek traverses the east side of the property in a north-south direction and there are a number of small ponds on the site that were once water hazards associated with the former golf holes. There is also a small .75 acre paved parking area that serves the facility. There are no known Township Discharge Points on the site.

Sharp Park

1401 Elmwood Road

Lansing, MI 48917

Phone: (517) 323-8555

Sharp Park is a 58 acre active recreation facility located to the north of the Lansing Mall and the Village Green Apartments complex. There are a wide variety of recreational offerings which include: an amphitheater, 4 baseball/softball fields (1 lighted), two hard-surfaced lighted tennis courts, 2 sand volleyball courts, a basketball court, non-motorized pathways/trails, playground equipment, a picnic shelter, a 2 acre 12 to feet deep fishing pond, and a restroom/concession building. 2 acres of paved parking and access drives serve the facility. Township Discharge Point No. 10 is located on this site, which discharges into the Bollman & Damon Drain. This drain is under the jurisdiction of the Eaton County Drain Commissioner's Office.

Utilities Installations

There are seven municipal well sites and nine sanitary sewer lift-stations located within the Township's defined urbanized area. These are relatively very small installations with no structures of significant size and little or no impervious surfaces. Four lift-station sites have small paved parking pads that accommodate one to two service vehicles at most. The Township's Utilities Department maintains all of these well and lift-station sites. The wells are no longer in operation, but are maintained as backup facilities. There are no known Township Discharge Points located on any of these sites, which are listed in the table below:

<b>FACILITY NAME</b>	<b>ADDRESS</b>
Belaire Hills Lift Station	6575 Willow Highway
Cambridge Manor Lift Station	5626 River Ridge
Delta Market Lift Station	8432 Delta Market Drive
Mt. Hope Lift Station	4100 Old Lansing Road
Old Lansing Road Lift Station	4545 Old Lansing Road
Pepper Ridge Lift Station	8124 Redwood Blvd
River Ridge Lift Station	5220 River Ridge
Skyway Lane Lift Station	4747 Old Lansing Road
Thomas L. Parkway Lift Station	426 W. Willow Highway
Willow Lift Station	7170 Willow Highway
Well No. 4	5735 W. Willow Highway
Well No. 5	1707 Elmwood Road
Well No. 6	6325 W. Willow Highway
Well No. 9	1505 N. Creyts Road
Well No. 10	2210 Marstoga Drive
Well No. 11	1232 Garfield Avenue
Well No. 12	4444 Delta River Drive

Additionally, there are two major utilities installations located within the urbanized area, being the Snow Road elevated water storage tank and the Snow Road ground level water storage tank, which are described as follows:

Snow Road Ground Storage Tank

209 Snow Road

Lansing, MI 48917

Phone: (517) 323-8570

This facility situated on a 3.86 acre parcel located at the southeast corner of Michigan Avenue and Snow Road in Section 13 of the Township. It is immediately north and adjacent to Fire Station No. 3. There is a storage tank occupying a 9,325 square foot area, a 2,664 square foot pump house, and 5,459 of paved area adjacent to the pump house. Township Discharge Point 5 is located on this site, which discharges into the Michigan Avenue Drain. This drain is under the jurisdiction of the Eaton County Drain Commissioner's Office.

Snow Road Elevated Storage Tank

495 Snow Road

Lansing, MI 48917

Phone: (517) 323-8570

This facility is situated on a 2.29 acre parcel located on the east side of Snow Road, immediately north of the Waverly Schools Administration Building. The tower sits on a .35 acre concrete pad. Township Discharge Point No. 8 is located on this site, which discharges into the Michigan Avenue Drain. This drain is under the jurisdiction of the Eaton County Drain Commissioner's Office.

Water Operations (Office, Equipment Storage)

7812 W. Willow Highway

Grand Ledge, MI 48837

Phone: (517) 323-8570

This facility is situated on a 45.1 acre parcel located north of Willow Highway along the east side of I-96. The associated paved parking and access drive occupy 2.7 acres (6%). The facility includes a water system ground storage tank, pumping facility, cold storage building and water operations offices, garage and workshop. Township Discharge Points Nos. 14, 15 and 16 are located on this site, which discharge into an open ditch and flows over land with ultimate discharge to Grand River.

## **1.4 Pollutant Impacts on Water Quality**

Sediment is a common component of stormwater, and can be a pollutant. Sediment can be detrimental to aquatic life (primary producers, benthic invertebrates, and fish) by interfering with photosynthesis, respiration, growth, reproduction, and oxygen exchange in water bodies. Sediment can transport other pollutants that are attached to it including nutrients, trace metals, and hydrocarbons. Sediment is the primary

component of total suspended solids (TSS), a common water quality analytical parameter.

Nutrients including nitrogen and phosphorous are the major plant nutrients used for fertilizing landscapes, and are often found in stormwater. These nutrients can result in excessive or accelerated growth of vegetation, such as algae, resulting in impaired use of water in lakes and other sources of water supply. For example, nutrients have led to a loss of water clarity in Lake Tahoe. In addition, un-ionized ammonia (one of the nitrogen forms) can be toxic to fish.

Bacteria and viruses are common contaminants of stormwater. For separate storm drain systems, sources of these contaminants include animal excrement and sanitary sewer overflow. High levels of indicator bacteria in stormwater have led to the closure of beaches, lakes, and rivers to contact recreation such as swimming.

Oil and grease includes a wide array of hydrocarbon compounds, some of which are toxic to aquatic organisms at low concentrations. Sources of oil and grease include leakage, spills, cleaning and sloughing associated with vehicle and equipment engines and suspensions, leaking and breaks in hydraulic systems, restaurants, and waste oil disposal.

Metals including lead, zinc, cadmium, copper, chromium, and nickel are commonly found in stormwater. Many of the artificial surfaces of the urban environment (e.g., galvanized metal, paint, automobiles, or preserved wood) contain metals, which enter stormwater as the surfaces corrode, flake, dissolve, decay, or leach. Over half the trace metal load carried in stormwater is associated with sediments. Metals are of concern because they are toxic to aquatic organisms, can bioaccumulate (accumulate to toxic levels in aquatic animals such as fish), and have the potential to contaminate drinking water supplies.

Organics may be found in stormwater in low concentrations. Often synthetic organic compounds (adhesives, cleaners, sealants, solvents, etc.) are widely applied and may be improperly stored and disposed. In addition, deliberate dumping of these chemicals into storm drains and inlets causes environmental harm to waterways.

Pesticides (including herbicides, fungicides, rodenticides, and insecticides) have been repeatedly detected in stormwater at toxic levels, even when pesticides have been applied in accordance with label instructions. As pesticide use has increased, so too have concerns about adverse effects of pesticides on the environment and human health. Accumulation of these compounds in simple aquatic organisms, such as plankton, provides an avenue for biomagnification through the food web, potentially resulting in elevated levels of toxins in organisms that feed on them, such as fish and birds.

Gross Pollutants (trash, debris, and floatables) may include heavy metals, pesticides, and bacteria in stormwater. Typically resulting from an urban environment, industrial sites and construction sites, trash and floatables may create an aesthetic “eye sore” in waterways. Gross pollutants also include plant debris (such as leaves and lawn-clippings from landscape maintenance), animal excrement, street litter, and other organic matter. Such substances may harbor bacteria, viruses, vectors, and depress the dissolved oxygen levels in streams, lakes, and estuaries sometimes causing fish kills.

Vector production (e.g., mosquitoes, flies, and rodents) is frequently associated with sheltered habitats and standing water. Unless designed and maintained properly, standing water may occur in treatment control BMPs for 72 hours or more, thus providing a source for vector habitat and reproduction (Metzger, 2002).

## **1.5 Regulatory Requirements**

The federal Clean Water Act (CWA), as amended in 1987, is the principal legislation for establishing requirements for the control of stormwater pollutants. Enforcement of the CWA and other laws such as the Endangered Species Act has generated a number of federal, state and local requirements and programs that deal directly or indirectly with controlling stormwater discharges. In the following sections, various programs are discussed in relationship to control of pollutants in stormwater from municipal storm drain systems. These programs are expected to evolve over the next several years and the user is advised to contact local regulatory and/or municipal officials for further information.

### **Municipal NPDES Stormwater Programs**

In Michigan, municipalities were given the option to either have an individual permit (based on jurisdictional boundaries), or to have a watershed based approach, which allows many municipalities within a watershed to work as a group, through a watershed management plan to meet Phase II requirements. Each plan serves as a blueprint for protecting water quality within the various watersheds. The watershed management plans are used in turn to identify more specific controls for discharges (e.g., wastewater treatment plant effluent, urban runoff, and agriculture drainage).

In Michigan, the federal NPDES stormwater permitting program is administered by the Michigan Department of Environmental Quality (MDEQ) by issuing general NPDES permits. Municipalities with a population of over 100,000 or that have been determined to be a significant contributor of pollutants are required to obtain an individual NPDES stormwater permit. These municipalities are classified as Phase I communities and are typically referred to as MS4s (municipal separate storm sewer systems). To meet CWA Section 402(p) requirements, smaller, Phase II communities (fewer than 100,000 in population) are covered by a General Permit. Phase II communities are required to develop and implement a stormwater management plan with the following six minimum control measures:

- **Public Education and Outreach** - Distributing educational materials and performing outreach to inform citizens about the impacts polluted stormwater runoff discharges can have on water quality.
- **Public Involvement and Participation** - Providing opportunities for citizens to participate in program development, implementation, and review, including effectively publicizing public hearings or participation.
- **Illicit Discharge Detection and Elimination** - Developing and implementing a plan to detect and eliminate illicit discharges to the storm drain system including illicit connections and illegal dumping.
- **Construction Site Runoff Control** - Developing, implementing, and enforcing an erosion and sediment control program for construction activities that disturb one or more acres of land.
- **Pollution Prevention / Good Housekeeping for Municipal Operations** - Developing and implementing a program to prevent or reduce pollutant runoff from municipal operations. (This is a primary focus of this handbook.)
- **Post-Construction Stormwater Management in New Development and Redevelopment** - Developing, implementing, and enforcing a program to address discharges of stormwater runoff from new and redevelopment areas.

In addition to the six measures listed above, the stormwater management plan must identify measurable goals (or performance standards) for each minimum control measure. Measurable goals will be used by the Township and the MDEQ to gauge compliance and evaluate the effectiveness of individual BMPs or control measures and the stormwater management program as a whole. Phase II communities must also monitor their efforts and prepare progress reports demonstrating that the community has implemented the minimum control measures and complied with the measurable goals.

## **1.6 Contractor Compliance with Good Housekeeping and Pollution Prevention Program**

Delta Engineering Department requires contractors performing work for the Township to comply with the Delta Township Good Housekeeping and Pollution Prevention Program. Copies of the manual are distributed to the contractor at preconstruction meetings. Additionally, construction contracts include requirements that contractor must abide by the program.

## Section 2 Source Control SOPs

### 2.0 Introduction

This section provides a description of specific source control Standard Operating Procedures (SOPs) for activities related to the Township operations.

As noted in Sections 1, municipal fixed facilities conduct activities that have the potential to generate pollutants. The source control SOPs in this section address these activities (see Table 2-1). In addition, the Township conducts various field programs where activities may occur and create pollutants (see Table 2-2).

#### SOP Fact Sheet

Each SOP fact sheet is a short document that gives all the information about a particular BMP. The fact sheets contain side bar presentations with information on objectives and targeted constituents.

#### Staff Training

Maintenance staff will be trained on stormwater pollution prevention once per permit cycle. New employees will be trained within the first year of employment. Employees will be trained using an EXCAL training DVD specific for municipal operations and staff. All topics related to stormwater pollution prevention/good housekeeping of municipal facilities and activities will be covered during the training.

**Table 2-1 Municipal Fixed Facility SOPs**

2.1	Spill Prevention, Control and Cleanup
2.2	Vehicle and Equipment Fueling
2.3	Vehicle and Equipment Cleaning
2.4	Vehicle and Equipment Repair
2.5	Outdoor Container Storage
2.6	Outdoor Equipment Maintenance
2.7	Outdoor Storage of Raw Materials
2.8	Waste Handling and Disposal
2.9	Building and Grounds Maintenance
2.10	Parking Lot Maintenance
2.11	Safer Alternative Products

**Table 2-2 Municipal Field Program SOPs**

2.12	Road and Street Maintenance
2.13	Salt Application and Storage
2.14	Drainage System Maintenance
2.15	Water and Sewer Utility Maintenance
2.16	Reporting and Recordkeeping

## 2.1 Spill Prevention, Control & Cleanup SOP

### Description

Spills and leaks, if not properly controlled, can adversely impact the storm drain system and receiving waters. Due to the type of work or the materials involved, many activities that occur either at a municipal facility or as a part of municipal field programs have the potential for accidental spills and leaks. Proper spill response planning and preparation can enable municipal employees to effectively respond to problems when they occur and minimize the discharge of pollutants to the environment. Since spill prevention is such a broad topic, many areas related to spill prevention and control are covered throughout the remaining SOP fact sheets.

### **Objectives**

- Contain
- Educate
- Reduce/Minimize
- Product Substitution

### **Targeted Constituents**

Sediment  
Nutrients ✓  
Trash  
Metals ✓  
Bacteria  
Oil and Grease ✓  
Organics ✓  
Oxygen Demanding ✓

### **Pollution Prevention**

- All herbicides and pesticides are stored indoors in locked cabinets located in the Parks maintenance building.
- Storage areas will be inspected daily.
- Herbicides and pesticides are only stored in their original containers, and will not normally be obtained in quantities greater than 3 gallons.
- The least toxic chemical control will be selected and purchased. If a biological or alternative control is available, it will be selected as a first option. Chemicals will be purchased in the amounts projected to be necessary to complete the application cycle. Inasmuch as possible, chemicals will used-up so that long-term storage is not necessary.
- All mixing of herbicides and pesticides will be performed on MDA approved platforms. The mixing of herbicides and pesticides will always be accomplished by trained and certified applicators. Sprayers will never be left unattended during filling operations. Herbicides and pesticides will never be mixed in areas where spillage cannot be controlled. All precautions will be taken to prevent spillage, and mixed on concrete surfaces where any minimal residues can be safely contained utilizing an MDA approved spill kit.
- Spill cleanup material is readily available in the storage and maintenance areas.
- Paints and coatings are stored only indoors in a designated area within the Parks maintenance building. Containers are held within an appropriately designed storage



cabinet. Small quantities of aerosol paints are stored in the maintenance shops areas.

- Whenever possible, the least toxic product will be selected for painting/coating operations. In most cases, paints/coatings are purchased in small easy-to-handle quantities, usually gallon-sized containers; which all for easier handling, less potential spillage, and less waste to dispose of.
- Paint/coating products will be used as completely as possible. Any latex based product remaining in the container will be allowed to harden. The container and residual product can then be disposed of in a landfill. Unusable product that cannot be handled in this manner will be stored until a Township sponsored household hazardous waste disposal day, and then be removed by a contracted waste hauler.

#### ***Protocols***

- All material handling is conducted indoors, under cover, or away from storm drains or sensitive water bodies.
- Spill cleanup materials, such as absorbents are located in areas where they are readily accessible (e.g. near storage and maintenance areas, etc.).

#### ***Spill Cleanup Procedures***

- For spills in which there is no immediate dangers to employees or the general public and does not represent a danger of contamination to a sanitary sewer, storm sewer, of the ground:
  - Contain spill to the smallest area possible.
  - Review the Material Safety Data Sheet for determination of proper spill handling, and appropriate personal protective equipment selection.
  - Place compatible absorbent material or spill pads on the area.
  - Clean up and containerize the absorbent materials.
  - Properly dispose of waste materials.
  - Determine and perform any additional cleaning requirements.
- For a spill that represents an immediate danger to employees or the general public and/or has the potential to impact the sanitary sewer, storm sewer, or the ground:
  - Notify the Departmental Supervisor on duty.
  - If there is the treat of fire, explosion, or if any person(s) exhibit severe symptoms of exposure, contact 911 to initiate local emergency services.
  - Alert anyone in the area and begin evacuation procedures.
  - Use booms or other absorbents to dike the spill area if safe to do so, and secure the area from unauthorized personnel. Refer to the Material Safety Data Sheet to determine the proper personal protective equipment.

- Remove all sources of ignition for releases of flammable or combustible materials.
- The Departmental Supervisor will initiate all notification procedures and contact the contracted emergency response company to mitigate and remediate the release.
- The Departmental Supervisor will assess the spill and notify all agencies as required.

#### *Reporting*

- Spills are reported in accordance with applicable reporting laws. Spills that pose an immediate threat to human health or the environment must be reported immediately to 911 (the Delta Township Fire Department HAZMAT personnel may be mobilized via 911), the Pollution Emergency Alerting System (PEAS) at 800-292-4706 and the National Response Center (NRC) at 800-424-8802.
- Spills that pose an immediate threat to human health or the environment may also need to be reported within 24 hours to the Local Emergency Planning Committee (LEPC), State Emergency Response Center (SERC), Michigan Department of Agriculture (MDA), various divisions of MDEQ, and the Department of Labor and Economic Growth (DLEG).
- After the spill has been contained and cleaned up, a detailed report about the incident will be generated and kept on file. The incident may also be used in briefing staff about proper procedures.

#### *Contact Persons*

- The Parks, Recreation, Cemeteries and Buildings and Grounds Department are responsible for maintaining the majority of the Township's facilities. The primary contact persons for issues regarding these facilities are the Department Director, Mr. Marcus Kilpatrick, at 517-323-8555, or Mr. Pat Schieding, Parks Maintenance Supervisor (517) 323-8555.

## 2.2 Vehicle and Equipment Fueling SOP

### Description

Spills and leaks that occur during vehicle and equipment fueling can contribute hydrocarbons, oil and grease, as well as heavy metals to stormwater runoff.

### Pollution Prevention

- The Township does not conduct any on-site fueling. Properly maintained off-site fueling stations are utilized for all vehicle and equipment fueling with the exception of small gas cans for parks and grounds lawn and landscape maintenance equipment.
- Focus pollution prevention activities on containment of spills and leaks, most of which may occur during liquid transfers.

### Protocols

- "Spot cleaning" of leaks and drips is routinely conducted.
- Maintenance staff is familiar with the site's proper spill cleanup procedures.

### Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

### Targeted Constituents

Sediment  
Nutrients  
Trash ✓  
Metals ✓  
Bacteria  
Oil and Grease ✓  
Organics ✓  
Oxygen Demanding

## 2.3 Vehicle and Equipment Cleaning SOP

### Description

Wash water from vehicle and equipment cleaning activities performed outdoors or in areas where wash water flows onto the ground can contribute toxic hydrocarbons and other organic compounds, oils and greases, nutrients, phosphates, heavy metals, and suspended solids to stormwater runoff.

### Pollution Prevention

- The Township has a properly designed, maintained, and operated vehicle/equipment wash bay at its Water Operations Building that is equipped to handle and properly dispose of the wash waters that drain to the sanitary sewer.
- The fire apparatus and equipment washing at Fire Stations Nos. 1 and 3 are conducted within the vehicle apparatus bays where there are floor drains piped to the Township's sanitary sewer system.

### **Objectives**

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

### **Targeted Constituents**

Sediment ✓  
Nutrients ✓  
Trash ✓  
Metals ✓  
Bacteria  
Oil and Grease ✓  
Organics ✓  
Oxygen Demanding

### Vehicle and Equipment Cleaning/Washing

#### Purpose

The purpose of this policy is to comply with the MDEQ and EPA regulations regarding stormwater runoff. Any dry or liquid product or contaminant that may be on the ground, whether it is on a lawn or hard surface such as pavement, may eventually reach a storm water drain during a rain or when washing apparatus or equipment outside of the fire station. Once that potential runoff reaches the stormwater drain, it will eventually reach a waterway such as a river, lake or pond. This runoff could have a negative effect on the environment. To mitigate the issue, the Township has implemented a policy to eliminate or reduce the potential discharge of such storm water runoff contamination.

#### Policy

It is the Township's policy to take a proactive approach to minimize and eliminate the discharge of potential contaminants produced through the washing and cleaning of vehicles, fire apparatus, and equipment into the storm water drain system.

#### Procedure

##### *Cleaning solutions:*

The Township, inasmuch as possible, will use phosphate-free detergents for washing vehicle as appropriate.

Personnel will follow the manufacturers recommended procedures as printed on the cleaning detergent.

*Vehicles/Equipment/Apparatus:*

All vehicles will be washed within the confines of the vehicle apparatus bays in the case of fire apparatus, or the Water Operations Building wash bay for other Township vehicles and equipment. Runoff of cleaning detergents and water will be squeegeed or diverted to floor drains within the apparatus and wash bays. Runoff within the floor drains will run to the sanitary sewer where it will be treated at a wastewater treatment plant.

*Personnel awareness:*

This policy will be distributed to all affected personnel and will be posted in a conspicuous manner at all Township maintenance buildings and fire stations.

*Maintenance:*

Floor drains will be inspected and clean periodically to remove solid sedimentary collected discharge.

## 2.4 Vehicle and Equipment Repair SOP

### Description

Vehicle or equipment maintenance and repair is potentially a significant source of stormwater pollution, due to the use of materials and wastes created that are harmful to humans and the environment. Engine repair and service (e.g. parts cleaning), replacement of fluids (e.g. oil change), and outdoor equipment storage and parking (dripping engines) can impact water quality if stormwater runoff from areas with these activities occurring on them becomes polluted by a variety of contaminants.

### Pollution Prevention

- The Township performs routine maintenance on its vehicles in a properly outfitted garage located at the Township's Water Operations Facility. The Township Utilities Department employs a certified auto mechanic on its staff.
- Routine maintenance is also performed on lawn and landscape equipment. This operation always occurs inside the Parks maintenance facility.

### **Objectives**

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

### **Targeted Constituents**

Sediment  
Nutrients  
Trash  
Metals ✓  
Bacteria  
Oil and Grease ✓  
Organics ✓  
Oxygen Demanding

## 2.5 Outdoor Container Storage SOP

### Description

Accidental releases of materials from above ground liquid storage tanks, drums, and dumpsters present the potential for contaminating stormwater with many different pollutants. Tanks may store many potential stormwater runoff pollutants, such as gasoline, aviation gas, diesel fuel, ammonia, solvents, syrups, etc. Materials spilled, leaked, or lost from storage tanks may accumulate in soils or on other surfaces and be carried away by rainfall runoff. These source controls apply to containers located outside of a building used to temporarily store liquid materials and include installing safeguards against accidental releases, installing secondary containment, conducting regular inspections, and training employees in standard operating procedures and spill cleanup techniques.

### Pollution Prevention

- The Township does not have outdoor container storage. Dumpsters are covered under waste handling and disposal.

### **Objectives**

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

### **Targeted Constituents**

Sediment  
Nutrients ✓  
Trash  
Metals ✓  
Bacteria  
Oil and Grease ✓  
Organics ✓  
Oxygen Demanding ✓

## 2.6 Outdoor Equipment Maintenance SOP

### Description

Outside process equipment operations and maintenance can contaminate stormwater runoff. Activities, such as grinding, painting, coating, sanding, degreasing or parts cleaning, landfills and waste piles, solid waste treatment and disposal, are examples of process operations that can lead to contamination of stormwater runoff.

### Pollution Prevention

- The Township requires these types of activities to be performed within an enclosed building in order to eliminate the potential for stormwater contamination.

### Protocols

- The Parks maintenance facility contains one parts washer solvent tub. Vesco Oil Corporation holds the contract to deliver clean solvent, change the solvent in the parts washer, and remove the old solvent for recycling. The exchange of clean solvent happens every 2-3 years. Responsibility for cleaning up spilled solvent during the exchange rests with the contracted firm. The contractor's delivery trucks are equipped with the necessary materials to contain and clean up potential spills. The contracted firm's response plan deals directly with the protection of waterways and drains.
- Several types of lubricating oils are used by parks, buildings, and grounds maintenance personnel. The Township recognizes that these can present hazards to the environment and personnel. Oils are stored in 5 gallon drums inside the parks maintenance building. Other smaller amounts may be stored in quart sized containers within designated areas. When necessary for use, the smaller containers. Most spills would occur within a building where it is being used. Small spills would be contained and an absorbent (i.e., oil dry) would be used for cleanup. Residual oil from a spill would be mopped up using a working solution. The contaminated oil dry would be placed into a plastic container and stored for appropriate disposal.
- Waste oil is stored within the park maintenance building within 50 gallon drums, which are removed by a licensed private contractor for proper disposal. The contractor's delivery trucks are equipped with the necessary materials to contain and clean up potential spills. The contracted firm's response plan deals directly with the protection of waterways and drains.

### **Objectives**

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

### **Targeted Constituents**

Sediment ✓  
Nutrients  
Trash ✓  
Metals ✓  
Bacteria  
Oil and Grease ✓  
Organics ✓  
Oxygen Demanding



## 2.7 Outdoor Storage of Raw Materials SOP

### Description

Raw materials, by-products, finished products, containers, and material storage areas exposed to rain and/or runoff can pollute stormwater. Stormwater can become contaminated when materials wash off or dissolve into water or are added to runoff by spills and leaks. Improper storage of these materials can result in accidental spills and the release of materials. To prevent or reduce the discharge of pollutants to stormwater from material delivery and storage, pollution prevention and source control measures, such as minimizing the storage of hazardous materials on-site, enclosing or covering materials, storing materials in a designated area, installing secondary containment, conducting regular inspections, preventing stormwater run-on and runoff, and training employees and subcontractors must be implemented.

### **Objectives**

- Cover
- Contain
- Educate
- Reduce/Minimize

### **Targeted Constituents**

Sediment ✓  
Nutrients ✓  
Trash ✓  
Metals  
Bacteria  
Oil and Grease ✓  
Organics ✓  
Oxygen Demanding ✓

### **Pollution Prevention**

- There is no outdoor storage of raw materials. All materials are stored inside the appropriate maintenance buildings.

## 2.8 Waste Handling & Disposal (solid waste) SOP

### Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, re-use, and recycling; and preventing run-on and runoff.

### Pollution Prevention

- Dumpsters are inspected on a regular basis; trash receptacles at the park facilities are emptied and inspected on a regular basis, replacement is necessary when the receptacle may have a leak or other damage.
- The Township operates its own community recycling center and recycles materials whenever possible.

### Protocols

- Covered storage containers with leak proof lids are used and supplied by Granger.
- Storage containers are checked weekly for leaks and to ensure that lids are on tightly. Any that are leaking, corroded, or otherwise deteriorating are replaced.
- Storage areas are swept and cleaned regularly. In paved areas, a hose is not used to clean the area to avoid runoff to a storm drain.
- Waste from damaged containers is transferred into safe containers and the damaged container is scheduled for replacement.
- Special care is taken when loading or unloading wastes to minimize losses.

### Controlling Litter

- Both “No Littering” and “No Dumping” signs are posted throughout the Township parks and facilities. The Township enforces anti-litter laws.
- A sufficient number of litter receptacles are used for each facility.
- Pet waste is encouraged to be placed in the trash through the use of signage.

### **Objectives**

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

### **Targeted Constituents**

- Sediment ✓
- Nutrients ✓
- Trash ✓
- Metals ✓
- Bacteria ✓
- Oil and Grease ✓
- Organics ✓
- Oxygen Demanding ✓

## 2.9 Building & Grounds Maintenance SOP

### Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, and abnormal pH. The following protocols will prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

### **Objectives**

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

### **Targeted Constituents**

- Sediment ✓
- Nutrients ✓
- Trash ✓
- Metals ✓
- Bacteria ✓
- Oil and Grease ✓
- Organics ✓
- Oxygen Demanding ✓

### ***Pollution Prevention***

- The Township uses safe alternative products when possible (see 2.11 Safer Alternative Practices).
- Proper lawn management and landscaping is practiced, including the use of native vegetation.

### ***Protocols***

#### ***Landscaping Activities***

- Chemicals (insecticide, herbicide, or fertilizer) are not applied directly to surface waters, unless the application is approved and permitted by the state.
- Mulch is used as a control measure on exposed soils.
- Irrigation schedules are set so pesticides will not be washed away and to minimize non-stormwater discharge.
- Temporarily stockpiled material is stored inside the maintenance facility away from watercourses and drain inlets.
- Grass clippings that fall on sidewalks during mowing are blown back on to the mowed area, other grass clippings are left on the mowed area to mulch.
- The least toxic chemical control will be selected and purchased. If a biological or alternative control is available, it will be selected as a first option.

- Chemical controls, such as pesticides and herbicides, are applied by certified applicators that are certified by the State of Michigan as an applicator in the applicable category.
- The boom sprayer will be serviced each year prior to use to insure that all hose and nozzle connections are secure. Any components that have noticeably deteriorated will be replaced. The equipment will be tested and calibrated each year to insure appropriate flow rates and pressures are set prior to application.

*Building Repair, Remodeling, and Construction*

- The Township uses ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly disposes of collected material daily.
- The cleaning of paint brushes and tools covered with water-based paints are conducted in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials are cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.

*Inspection*

- Irrigation systems are inspected periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.

## 2.10 Parking Lot Maintenance SOP

### Description

Parking lots can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges.

### Pollution Prevention

- The Township performs minor parking lot maintenance services. Major repairs are contracted out to professional parking lot maintenance firms.
- The Township typically sweeps Township facility parking lots once a year, or as needed.

### **Objectives**

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

### **Targeted Constituents**

Sediment ✓  
Nutrients ✓  
Trash ✓  
Metals ✓  
Bacteria ✓  
Oil and Grease ✓  
Organics ✓  
Oxygen Demanding ✓

### Protocols

- The parking lots are kept clean and orderly. Debris is removed in a timely fashion.
- An adequate number of litter receptacles are provided at all Township facilities.

### Surface Repair

- Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
- Parking lot repair is using concrete, asphalt, and seal coat is conducting during dry weather to prevent contamination from contacting stormwater runoff.
- Nearby storm drain inlets and manholes are covered and sealed (with waterproof material or mesh) before applying seal coat, slurry seal, etc., where applicable. Covers are left in place until the job is complete and until all water from emulsified oil sealants has drained or evaporated.
- The appropriate Township staff is trained on stormwater pollution prevention practices, parking lot sweeping and catch basin maintenance is covered as part of the training.

### Parking Lot Cleaning/Sweeping

- Parking lot cleaning sweeping will be contracted out to professional parking lot maintenance firms.
- Waste generated from the cleaning activities will be transported by the vendor to the vendor's offsite facility where it will be dewatered by evaporation and the solids hauled to a landfill.

- Should the above option not be available, the waste will be collected into a Vector truck and treated as waste under Part 121 or Part 115 Solid Waste Management of NREPA.

## 2.11 Safer Alternative Products SOP

### Description

Using less harmful products is important. Alternatives exist for most product classes including chemical fertilizers, pesticides, cleaning solutions, janitorial chemicals, automotive and paint products, and consumables (batteries, fluorescent lamps).

### Pollution Prevention

- The Township utilizes a variety of vendors general cleaning supplies (degreaser, window cleaners, etc.). Inasmuch as possible the Township utilizes Green Seal certified products.
- In the case of pesticides and herbicides, the least toxic chemical control will be selected and purchased. If a biological or alternative control is available, it will be selected as a first option.

### **Objectives**

- Educate
- Reduce/Minimize
- Product Substitution

### **Targeted Constituents**

Sediment  
Nutrients ✓  
Trash  
Metals ✓  
Bacteria  
Oil and Grease ✓  
Organics ✓  
Oxygen Demanding

## 2.12 Road and Street Maintenance SOP

### Description

Streets, roads, and highways are significant sources of pollutants in stormwater discharges, and operation and maintenance (O&M) practices, if not conducted properly, can contribute to the problem. Stormwater pollution from roadway and bridge maintenance should be addressed on a site-specific basis.

### Pollution Prevention

- The Township has no jurisdictional control over, nor does it perform maintenance on, any public roadways within its boundaries. This is solely the function of the Eaton County Road Commission and/or the Michigan Department of Transportation for streets, roads, and highways under their respective jurisdictions. This would also include street sweeping and catch basin cleaning activities. These agencies are responsible for implementing the appropriate stormwater pollution prevention protocols in maintaining their facilities located within the Township.

### **Objectives**

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

### **Targeted Constituents**

Sediment ✓  
Nutrients  
Trash ✓  
Metals ✓  
Bacteria  
Oil and Grease ✓  
Organics ✓  
Oxygen Demanding ✓



## 2.13 Salt Application and Storage SOP

### Description

The application and storage of deicing materials, most commonly salts such as sodium chloride, can lead to water quality problems for surrounding areas. Salts, gravel, sand, and other materials are applied to highways and roads to reduce the amount of ice during winter storm events. Salts lower the melting point of ice, allowing roadways to stay free of ice buildup during cold winters. Sand and gravel increase traction on the road, making travel safer.

During road salt application, certain best management practices can produce significant environmental benefits. The amount of road salt applied should be regulated to prevent over-salting of motorways and increasing runoff concentrations. The amount of salt applied should be varied to reflect site-specific characteristics, such as road width and design, traffic concentration, and proximity to surface waters. Calibration devices for spreaders in trucks aid maintenance workers in the proper application of road salts. Alternative materials, such as sand or gravel, should be used in especially sensitive areas.

### **Objectives**

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

### **Targeted Constituents**

- Sediment ✓
- Nutrients ✓
- Trash
- Metals ✓
- Bacteria
- Oil and Grease
- Organics ✓
- Oxygen Demanding ✓

### ***Pollution Prevention***

- The Township only salts Township facilities parking lots and sidewalks.
- The Township uses the minimum amount of salt needed to get the job done.
- Surface Temperatures are considered when determining volume of salt to apply.

### ***Protocols***

- The Township uses both a truck mounted applicator and a hand-operated applicator. The truck applicator is calibrated according to manufacturer's recommendations in the beginning of the season, and it is adjusted according to weather conditions.
- Snow is also manually removed from driveways, parking areas and sidewalks.
- Salt is brought by truck and loaded directly into the maintenance facility. The salt is dry, comes bagged and is stored inside to prevent a loss due to runoff.

## 2.14 Drainage System Maintenance SOP

### Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff that may contain certain pollutants. Maintaining catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis will remove pollutants, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

### Pollution Prevention

- The Township maintains parking lots at the Township facilities.
  
- Inspection of the system and structures is conducted semi-annually during regular maintenance of the surrounding areas.

### Protocols

- Municipal staff regularly inspect facilities to ensure the following:
  - Immediate repair of any deterioration threatening structural integrity.
  - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
  - Stenciling of catch basins and inlets
  
- Catch basins and detention ponds are inspected semi-annually and are cleaned on an as-needed basis.
  
- During routine maintenance of conveyance system and drainage structures field staff looks for evidence of illegal discharges or illicit connections:
  - Is there evidence of spills such as paints, discoloring, etc.
  - Are there any odors associated with the drainage system
  - Record locations of apparent illegal discharges/illicit connections
  - Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of up gradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.

### **Objectives**

- Contain
- Educate
- Reduce/Minimize

### **Targeted Constituents**

- Sediment ✓
- Nutrients ✓
- Trash ✓
- Metals ✓
- Bacteria ✓
- Oil and Grease ✓
- Organics ✓
- Oxygen Demanding ✓

- Once the origin of flow is established, require illicit discharger to eliminate the discharge.
- Storm drains will be stenciled, where applicable, to prevent illegal disposal of pollutants.

***Procedures***

- The following procedures will be applied in order to properly deal with the waste stream generated from catch basin cleaning activities:
  - The waste will be transported by the vendor to the vendor's offsite facility where it will be dewatered by evaporation and the solids hauled to a landfill.
- Should the above method be unavailable, the following described method would be used as long as there are no discharges to surface waters during dry weather conditions:
  - A visual inspection would be conducted to ensure the water in the sump has not been contaminated. If necessary, a grab sample of the water would be collected and inspected for signs of contamination such as visible sheen, discoloration, obvious odor, etc. If there is any doubt of the quality of the water, it will be collected into a Vactor truck and treated as waste under Part 121 or Part 115 Solid Waste Management of NREPA.
  - Using a sump pump, or other pumping mechanism, the majority of water in the sump of the basin would be removed without disturbing the solid material below. Pumps connected to the Vactor truck's holding tank would not be utilized.
  - The clear water would then be directly discharged to one of the following:
    - The Township's sanitary system
    - Curb and gutter
    - Back into the storm sewer system as long as it is contained within the system during dry weather condition to ensure no discharge into surface water
    - Applied to the ground adjacent to the catch basin (evenly distributed at a maximum rate of 250 gallons/acre/year)
    - The remaining liquid/solid in the sump would be collected with a Vactor truck

and disposed of off-site in accordance with Parts 115 or 121.

- The following procedures will be applied with regard to storm water detention ponds:
  - Inlet pipes and outlet pipes will be inspected for structural integrity semi-annually.
  - Riprap at the inlet pipes will be inspected semi-annually. It will be replaced when the riprap is clogged with sediment and debris.
  - Routine inspections for trash or other debris that may be blocking the inlet or outlet pipes or emergency spillway will be conducted monthly during the spring, summer, and fall months. Trash and debris will be removed from the basin.
  - Inspection for sediment accumulation at the inlet pipes will be conducted semi-annually, and cleaned out as necessary so as not to restrict water flow. Accumulated sediment will be removed with a shovel and wheelbarrow if it is blocking water flow. Small amounts of removed sediment can be spread evenly on upland areas and seeded with natural vegetation.
  - Inspection of the stone around the riser/standpipe (outlet pipe) will be conducted semi-annually. If stone has accumulated sediment, vegetation and/or debris to an extent that water is not flowing through the stone and out of the pond as originally designed, then the stone will be replaced.
  - Inspection for excess sediment accumulation in the pond will be conducted annually. Excess sediment would be removed every 10 years or when the sediment accumulation is more than 12 inches.
- The following procedures will be applied with regard to vegetated swales:
  - Inspect structural and vegetative components annually and after major runoff vents. If standing water is observed on the surface 48 hours after a runoff event, till or de-thatch the bottom to restore porosity.
  - Seasonal mowing as necessary to prevent noxious weeds and woody vegetation from being established.
  - Remove sediment accumulations when depth exceeds three (3) inches

## 2.15 Water & Sewer Utility Maintenance SOP

### Description

Although the operation and maintenance of public utilities are not considered chronic sources of stormwater pollution, some activities and accidents can result in the discharge of pollutants that can pose a threat to both human health and the quality of receiving waters if they enter the storm drain system. Sewage incident response and investigation may involve a coordinated effort between staff from a number of different departments/agencies. Cities that do not provide maintenance of water and sewer utilities must coordinate with the contracting agency responsible for these activities and ensure that these model procedures are followed.

### **Objectives**

- Cover
- Contain
- Educate
- Reduce/Minimize

### **Targeted Constituents**

Sediment ✓  
Nutrients ✓  
Trash  
Metals  
Bacteria ✓  
Oil and Grease ✓  
Organics ✓  
Oxygen Demanding ✓

### ***Pollution Prevention***

The Township owns and maintains the sanitary collection system and pump stations. The Township has a regular program of system maintenance. All mains in the system that are 15 inch diameter and smaller are jetted clean every two years. Suspected leaks are TV'd and repaired as necessary.

## **2.16 Reporting and Recordkeeping SOP**

As applicable, the Township maintains records demonstrating successful implementation of SOPs. Recordkeeping may include training, site inspection and maintenance, and if applicable, monitoring. It is anticipated that site inspections will occur on an annual basis because of the minimal amount of operations occurring at the Township level.

The Township is required under the Phase II General NDPES Permit, to submit progress reports to the MDEQ on October 1 of every other year, or as otherwise required. Specific reporting requirements will include:

- Program implementation status.
- Summary of stormwater activities performed.
- Results of information collected, such as monitoring data.
- Summary of proposed stormwater activities for the next reporting cycle.
- Changes made in BMP selection.
- Changes in stormwater management personnel.
- Changes made in program or measurable goals.

**DELTA CHARTER TOWNSHIP**

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**Stormwater Management Program (SWMP)**



**DELTA**  
T O W N S H I P

**APPENDIX E**

**ACTION PLAN**

Measurable Goal	Minimum Measure (in order of app)	Action Number	Priority if Applicable	Action - BMP	Lead Agency	Schedule			Evaluation Mechanism/Measure of Usage of Facilities or Material			Comments - activity	Complete	Minimum Measure/Action Number	
						Begin By	Complete By	Comment/Frequency							
						Clinton County Drain Com	Delhi Twp	Delta Twp							DeWitt, City of
Public Participation	1	1		Post PEP, Progress Reports, etc. to the GLRC website.	GLRC Crd	On-Going	Long Term	As Needed	Track website traffic related to the documents					1.1	
Public Participation	1	2		Post SWMP and Progress Reports to the community website. Include a link on the community website to the GLRC website. Follow the local public notice requirements.	Permittees	On-Going	Long Term	Post completed documents and update with progress report	Track website traffic related to the documents and number of inquiries related to the program		C			1.2	
Develop and Maintain Master PEP	2	1		Review and maintain master PEP document. Update in preparation for progress report submittal.	PEP Committee	On-Going	Long Term	Update BMPs completed with progress report						2.1	
Develop and Maintain Master PEP	2	2		Update the PEP based on BMPs completed as part of community specific programs and procedures.	Permittees	On-Going	Long Term	Update BMPs completed with progress report			C			2.2	
Set PEP Priorities	2	3		Set priorities based on survey results, cost effectiveness, etc.	PEP Committee	On-Going	Long Term	As Needed	Use survey results and other described evaluations of effectiveness to set priorities					Y 2.3	
PEP Evaluation and Effectiveness	2	4		Provide information to GLRC members on an updated survey to evaluate the effectiveness of the PEP.	PEP Committee	On-Going	Long Term		Recently completed, will do again with follow up survey in 2016.					Y 2.4	
PEP Evaluation and Effectiveness	2	5		Coordinate a follow up survey to evaluate and determine effectiveness of the PEP.	PEP Committee	Jul-16	Oct-16		Survey results will be used to guide further implementation activities.					2.5	
PEP Evaluation and Effectiveness	2	6		Partner with the GLRC to conduct another follow up survey to determine PEP effectiveness .	Permittees	Jul-16	Oct-16		Number of participants. Survey completed.		C			2.6	
PEP: Website Management and Education	2	7		Update the www.mywatersheds.org website and social media outlets with watershed wide educational material, watershed monitoring results, permit information and meeting information for the various committees of the GLRC. Include links to all community websites.	GLRC Crd	On-Going	Long Term	Continuously	Track website traffic, social media stats					2.7	
PEP Collaboration	2	8		Represent the GLRC on a regional public education campaign with the Middle Grand River Organization of Watersheds (MGROW).	GLRC Crd	Jan-13	Long Term	Continuously	Effectiveness of educational materials/strategies provided by MGROW					2.8	

E = Existing; C = Commitment  
 ". " (dash) = No commitment  
 X = Not applicable



Measurable Goal	Minimum Measure (in order of app)	Action Number	Priority if Applicable	Action - BMP	Lead Agency	Schedule			Evaluation Mechanism/Measure of Usage of Facilities or Material	Comments - activity	Complete	Minimum Measure/Action Number			
						Begin By	Complete By	Comment/frequency							
													Clinton County Drain Com	Delhi Twp	Delta Twp
PEP A: Public Responsibility & Watershed Stewardship	2	9	M	Continue to maintain watershed signage.	Permittees	On-Going	Long Term	Replace as needed	Number of signs, can track traffic counts to estimate the number of people reached			2.9			
PEP A: Public Responsibility & Watershed Stewardship	2	10	M	Promote "do you know your watershed" brochure, or related materials to general watershed education through website, social media, etc., update as appropriate.	PEP Committee	On-Going	Long Term	Update as needed. Materials will be distributed at Adopt A River, QWS, MWEA Watershed Summit, etc.	Number of brochures/materials provided to the public			Corresponding topic area: B	2.10		
PEP A: Public Responsibility & Watershed Stewardship	2	11	M	Promote "do you know your watershed" brochure, or related materials to general watershed education through website, social media, etc.	Permittees	On-Going	Long Term	Available to public at 82+ scheduled Twp. public meetings & events each year.	Number of brochures/materials provided to the public		E		Corresponding topic area: B	2.11	
PEP A: Public Responsibility & Watershed Stewardship	2	12	M	Support and promote Mid-MEAC's volunteer stream monitoring effort.	PEP Committee	On-Going	Long Term	Annually	Number of volunteers participating				Corresponding topic areas: C, J	2.12	
PEP A: Public Responsibility & Watershed Stewardship	2	13	M	Utilize the GLRC educational display for Adopt A River/Quiet Water Symposium, etc.	PEP Committee	On-Going	Long Term	Annual events	Number of events the display is used for				Corresponding topic areas: B, C, D, E, F, G, H, I, J, K	2.13	
PEP A: Public Responsibility & Watershed Stewardship		14	M	Update the GLRC education display panels to relate more specifically to the minimum control measures and target audiences.	PEP Committee	Aug-13	Dec-14		Number of events the newer panels are used for and overall number of events				Corresponding topic areas: B, C, D, E, F, G, H, I, J, K	2.14	
PEP A: Public Responsibility & Watershed Stewardship	2	15	M	Utilize the GLRC educational display for community events, lobby traffic, etc.	Permittees	On-Going	Long Term	Will utilize display at special events such as "Delta Rocks" and "Deltaside Business Expo".	Number of events the display is used for		C		Corresponding topic areas: B, C, D, E, F, G, H, I, J, K	2.15	

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Measurable Goal	Minimum Measure (in order of app)	Action Number	Priority if Applicable	Action - BMP	Lead Agency	Schedule			Evaluation Mechanism/Measure of Usage of Facilities or Material	Comments - activity	Complete	Minimum Measure/Action Number		
						Begin By	Complete By	Comment/Frequency						
									Clinton County Drain Com Delhi Twp Delta Twp DeWitt, City of DeWitt Twp Dimondale, Village of East Lansing, City of Eaton County Drain Com Grand Ledge, City of Ingham County Drain Com Lansing, City of Lansing Public Schools Lansing Twp Mason, City of Meridian Twp Michigan State University					
PEP A: Public Responsibility & Watershed Stewardship	2	16	M	2013 billboard posting for the months of March and April will be conducted. The graphic will be updated in 2014 and utilized in different media outlets.	PEP Committee	Mar-13	Long Term	Annually	Track website traffic				Corresponding topic areas: B, C, D, E, F, G, H, I, J, K	2.16
PEP A: Public Responsibility & Watershed Stewardship	2	17	M	Promote and distribute news article series developed for PEP topic areas through website, newspapers, social media, etc., update and add new topics appropriate.	PEP Committee	On-Going	Long Term	News articles will be posted to social media monthly	Number of articles published, track website traffic and social media				Corresponding topic areas: B, C, D, E, F, G, H, I, J, K	2.17
PEP A: Public Responsibility & Watershed Stewardship	2	18	M	Promote and distribute news article series developed for PEP topic areas in local community newspapers, website and social media.	Permittees	On-Going	Long Term	As appropriate	Number of articles published, track website traffic		C		Corresponding topic areas: B, C, D, E, F, G, H, I, J, K	2.18
PEP A: Public Responsibility & Watershed Stewardship	2	19	M	Promote Children's Water Festival.	GLRC Crd	On-Going	Long Term	Annually	Number of students/teachers attending					2.19
PEP A: Public Responsibility & Watershed Stewardship	2	20	M	Support the Children's Water Festival.	Permittees	On-Going	Long Term	Annually	Number of students/teachers reached, presented too		E			2.20
PEP B: MS4 Connection	2	21	H	Maintain and update the GLRC webpage "My Watershed". Update as appropriate.	GLRC Crd	On-Going	Long Term	Continuously	Track website traffic on page				Corresponding topic area: A	2.21
PEP B: MS4 Connection	2	22	H	Quarterly newsletters and annual report developed & distributed through email list, social media and website.	GLRC Crd	On-Going	Long Term	Quarterly/Annually	Number of people reached via email, track website traffic				Corresponding topic areas: B, C, D, E, F, G, H, I, J, K	2.22
PEP B: MS4 Connection	2	23	H	Distribute quarterly newsletter and annual report to public via website, social media, lobby, provide to administration.	Permittees	On-Going	Long Term	Quarterly/Annually	Number of people reached via email, track website traffic		E		Corresponding topic areas: B, C, D, E, F, G, H, I, J, K	2.23
PEP C: Reporting Illicit Discharges	2	24	H	Maintain the GLRC webpage, social media that lists contact information for all members and the state hotline regarding reporting of illicit discharges and illegal dumping.	GLRC Crd	On-Going	Long Term	Continuously	Track website traffic on page					Y 2.24
PEP C: Reporting Illicit Discharges	2	25	H	Explore new language, delivery mechanism to make the illicit discharge awareness more relatable to the public.	PEP Committee	Apr-13	Apr-15	Continuously	Number of situations reported (evaluate)					2.25
PEP C: Reporting Illicit Discharges	2	26	H	Provide contact information for reporting illicit discharges and illegal dumping on website.	Permittees	On-Going	Long Term	Continuously	Track website traffic on page & number of call/reports		C			2.26

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Measurable Goal	Minimum Measure (in order of app)	Action Number	Priority if Applicable	Action - BMP	Lead Agency	Schedule			Evaluation Mechanism/Measure of Usage of Facilities or Material	Comments - activity	Complete	Minimum Measure/Action Number		
						Begin By	Complete By	Comment/Frequency						
									Clinton County Drain Com					
									Delhi Twp					
									Delta Twp					
									DeWitt, City of					
									DeWitt Twp					
									Dimondale, Village of					
									East Lansing, City of					
									Eaton County Drain Com					
									Grand Ledge, City of					
									Ingham County Drain Com					
									Lansing, City of					
									Lansing Public Schools					
									Lansing Twp					
									Mason, City of					
									Meridian Twp					
									Michigan State University					
PEP D: Car Washing	2	27	M	Continue to promote the poster/brochure series: car washing, motor oil, fertilizer, pet waste. Update as appropriate. These are posted on website, social media and used with educational display.	PEP Committee	On-Going	Long Term	Continuously	Track number of materials provided to public and website traffic				Corresponding topic areas: A, B, F, G	2.27
PEP D: Car Washing	2	28	M	Promote the poster/brochure series: car washing, motor oil, fertilizer, pet waste. Provide at community events and post to website, social media.	Permittees	On-Going	Long Term	Available to public at 82+ scheduled Twp. public meetings & events each year.	Track number of materials provided to public and website traffic	E			Corresponding topic areas: A, B, F, G	2.28
PEP E: Disposal of Pesticides	2	29	M	Coordinate with Topic Area G						C				2.29
PEP F: Disposal of Pet Waste, etc.	2	30	M	Review and provide existing materials related to leaf litter disposal and grass clippings to GLRC members for distribution. Post to GLRC website, social media, distribute with educational display.	PEP Committee	Jul-13	Long Term	Continuously	Track number of materials provided to the public and website traffic				Corresponding topic area: A	2.30
PEP F: Disposal of Pet Waste, etc.	2	31	M	Post materials related to leaf litter disposal and grass clippings to website, social media, provide at community events.	Permittees	Aug-13	Long Term	Available to public at 82+ scheduled Twp. public meetings & events each year.	Track number of materials provided to the public and website traffic	C			Corresponding topic area: A	2.31
PEP F: Disposal of Pet Waste, etc.	2	32	M	Continue to maintain pet waste signage at local parks, dog parks, trails, etc.	Permittees	On-Going	Long Term	Continuously	Track number of signs posted, maintenance activities	C			Corresponding topic areas: A, D	2.32
PEP G: P2 HHW	2	33	M	Promote local household hazardous waste and recycling events via email and website postings, social media.	GLRC Crd	On-Going	Long Term	Continuously	Track website traffic and amounts of waste collected				Corresponding topic areas: D, E	Y 2.33
PEP G: P2 HHW	2	34	M	Promote local household hazardous waste, local travel trailer waste stations, yard waste procedures and recycling events via email and website postings, social media.	Permittees	On-Going	Long Term	Available to public at 82+ scheduled Twp. public meetings & events each year.	Track website traffic and amounts of waste collected	C			Corresponding topic areas: D, E	2.34

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Measurable Goal	Minimum Measure (in order of app)	Action Number	Priority if Applicable	Action - BMP	Lead Agency	Schedule			Evaluation Mechanism/Measure of Usage of Facilities or Material														Comments - activity	Complete	Minimum Measure/Action Number					
						Begin By	Complete By	Comment/Frequency		Clinton County Drain Com	Delhi Twp	Delta Twp	DeWitt, City of	DeWitt Twp	Dimondale, Village of	East Lansing, City of	Eaton County Drain Com	Grand Ledge, City of	Ingham County Drain Com	Lansing, City of	Lansing Public Schools	Lansing Twp				Mason, City of	Meridian Twp	Michigan State University		
PEP H: Septic System Care	2	35	L	Coordinate with Topic Area A/Post links to local County programs related to septic inspections (Eaton and Ingham Counties), and 319 partner materials, etc. on GLRC website, social media.	GLRC Crd	On-Going	Long Term	Continuously	Track website traffic, review number of inspections																				Y	2.35
PEP I: GI & LID	2	36	H	Promote LID brochure, post on website, social media and use with educational display. Update as appropriate.	PEP Committee	On-Going	Long Term	Continuously	Track number of materials provided to the public and website traffic																					2.36
PEP I: GI & LID	2	37	H	Promote LID brochure, post on website, social media, lobby, etc.	Permittees	On-Going	Long Term	Available to public at 82+ scheduled Twp. public meetings & events each year.	Track number of materials provided to the public and website traffic																					2.37
PEP I: GI & LID	2	38	H	Maintain and update the GLRC webpage listing local LID projects.	GLRC Crd	On-Going	Long Term	Continuously	Track website traffic and number of projects posted.																					2.38
PEP I: GI & LID	2	39	H	Incorporate all local LID project into the Networked Neighborhoods for Eco-Conservation Online (NECO), incorporate all completed projects by 2014. Continuous updates thereafter.	GLRC Crd	Aug-13	Long Term	Continuously	Track number of projects posted, comments received, etc.																					2.39
PEP I: GI & LID	2	40	H	Promote local projects on website, public meetings, social media, etc.	Permittees	On-Going	Long Term	Available to public at 82+ scheduled Twp. public meetings & events each year.	Track website traffic, number of projects posted																					2.40
PEP I: GI & LID	2	41	H	Develop topics with the Ordinance/BMP Committee for LID Presentation Series. Promote through email, websites, social media.	GLRC Crd	Apr-13	Apr-17	5 per permit cycle	Track number of participants																					2.41
PEP I: GI & LID	2	42	H	Send appropriate staff/elected officials to LID Presentations Series events.	Permittees	On-Going	Apr-17	Semi-annually	Track number of participants																					2.42

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Measurable Goal	Minimum Measure (in order of app)	Action Number	Priority if Applicable	Action - BMP	Lead Agency	Schedule			Evaluation Mechanism/Measure of Usage of Facilities or Material	Location													Comments - activity	Complete	Minimum Measure/Action Number					
						Begin By	Complete By	Comment/Frequency		Clinton County Drain Com	Delhi Twp	Delta Twp	DeWitt, City of	DeWitt Twp	Dimondale, Village of	East Lansing, City of	Eaton County Drain Com	Grand Ledge, City of	Ingham County Drain Com	Lansing, City of	Lansing Public Schools	Lansing Twp				Mason, City of	Meridian Twp	Michigan State University		
PEP I: GI & LID	2	43	H	Participate in the local Greening Mid-Michigan (GMM) Project through TCRPC to support the GI vision, improved land use policies, and LID techniques. The GI vision includes a natural features inventory, identification of potential conservation areas and habitat sensitive lands.	GLRC Crd	On-Going	Long Term	Continuously	Overall regional participant level, review and identify gaps in participants																				Corresponding topic area: A	2.43
PEP I: GI & LID	2	44	H	Support the development of a GI video, promote video (extra specific LID project videos) through website, social media.	PEP Committee	Jun-13	Apr-17	Continuously	Number people reached with videos																				Corresponding topic area: A	2.44
PEP I: GI & LID	2	45	H	Promote videos provided through the GMM project on website, social media.	Permittees	Jan-14	Apr-17	Quarterly website/social media postings.	Number of people reached with videos			C																	Corresponding topic area: A	2.45
PEP I: GI & LID	2	46	H	Adopt the GI vision.	Permittees	On-Going	Apr-17	N/A	Number of resolutions adopting the GI Vision			-																	Corresponding topic area: A	2.46
PEP J: Riparian Lands	2	47	M	Promote riparian buffer brochure and other resources through website, social media. Update as appropriate.	PEP Committee	On-Going	Long Term	Continuously	Number of brochures/materials provided to the public																				Corresponding topic area: A	2.47
PEP J: Riparian Lands	2	48	M	Maintain riparian landowner list, provide materials via mail, email, website, social media.	Permittees	On-Going	Long Term	Will update list annually.	Number of people on the riparian list/materials provided			C																	Corresponding topic area: A	2.48
PEP K: Business/Commercial education	2	49	M	Explore opportunities to connect with local business regarding pollution prevention through stormwater runoff. This may include business publications, presentation to associations, focus groups, etc.	PEP Committee	Apr-13	Long Term	Outreach to the business sector twice during permit cycle.	Number of businesses reached, etc.																				Corresponding topic area: A	2.49
PEP K: Business/Commercial education	2	50	M	If you have an industrial pre-treatment program, describe your connection with local businesses, industries here. The IPITP can help you connect and ultimately educate them.	Permittees	On-Going	Long Term	Annual meeting with program participant(s)	Number of business reached, etc.			C																	Corresponding topic area: A Only one industrial facility (General Motors) currently falls under Delta's wastewater industrial pre-treatment program. Delta does not have stormwater industrial pre-treatment program.	2.50
IDEP	3	1		Implement the municipal separate storm sewer system Illicit Discharge Elimination Plans (IDEP). Include nested jurisdictions if applicable.	Permittees	On-Going	Long Term	Continuously	Number of corrective actions taken			C																	For Delta Township owned facilities only. All others fall under the jurisdiction of the Eaton County Drain Commissioner's Office for facilities located within Delta Township.	3.1

E = Existing; C = Commitment  
 "-" (dash) = No commitment  
 X = Not applicable

Measureable Goal	Minimum Measure (in order of app)	Action Number	Priority if Applicable	Action - BMP	Lead Agency	Schedule			Evaluation Mechanism/Measure of Usage of Facilities or Material	Clinton County Drain Com Delhi Twp Delta Twp DeWitt, City of DeWitt Twp Dimondale, Village of East Lansing, City of Eaton County Drain Com Grand Ledge, City of Ingham County Drain Com Lansing, City of Lansing Public Schools Lansing Twp Mason, City of Meridian Twp Michigan State University	Comments - activity	Complete	Minimum Measure/Action Number			
						Begin By	Complete By	Comment/Frequency								
IDEP - mapping/locations	3	2		Maintain the GPS (Lat/long) locations of all MS4 outlets to waters of the state (optional)	Permittees	On-Going	Long Term	Maintain		C					For Delta Township owned properties & facilities only. Otherwise a responsibility of Eaton County Drain Commissioner's Office.	3.2
IDEP - maintaining mapping system	3	3		Maintain the location of an up-to-date storm sewer map(s) (part of the IDEP).	Permittees	On-Going	Long Term	Maintain		C					For Delta Township owned properties & facilities only.	3.3
IDEP - prioritize the system	3	4		Implement the procedure for prioritizing the identification and investigation of outfalls and points of discharge (part of the IDEP).	Permittees	Apr-13	Long Term	Continuously	Procedure Implemented.	C					For Delta Township owned properties & facilities only.	3.4
IDEP - prioritize the system	3	5		Maintain the geographical location of each prioritized area using either a narrative description or a map detailing the prioritized area (part of the IDEP).	Permittees	Apr-13	Long Term	Maintain	Maintain prioritized area location.	C					For Delta Township owned properties & facilities only.	3.5
IDEP - screening	3	6		Provide the procedure and schedule for conducting performing field observations at all outfall and point of discharge in priority areas (part of IDEP).	Permittees	On-Going	2017	Complete by end of permit cycle	Number of outfalls and points of discharge observed						For Delta Township owned properties & facilities only.	3.6
IDEP - screening	3	7		Perform field observations and points of discharge, once per permit cycle in the prioritized area or entire MS4.	Permittees	On-Going	2017	Complete by end of permit cycle	Number of outfalls and points of discharge observed	C					For Delta Township owned properties & facilities only.	3.7
IDEP - screening	3	8		Implement the procedure for performing field screening if flow is observed and a potential source is not identified (part of IDEP).	Permittees	On-Going	Long Term	As identified	Number of field screenings performed	C					For Delta Township owned properties & facilities only.	3.8
IDEP - response	3	9		Implement the procedure for performing a source investigation if the source of an illicit discharge is not identified by field screening (part of IDEP).	Permittees	On-Going	Long Term	As identified	Number of source investigations performed.	C					For Delta Township owned properties & facilities only.	3.9
IDEP - response	3	10		Implement the procedure for responding to illegal dumping/spills (part of IDEP).	Permittees	On-Going	Long Term	As identified	Number of spills/illegal dumping responded to	C					For Delta Township owned properties & facilities only.	3.10
IDEP - reporting	3	11		Implement the procedure for responding to illicit discharges outside the priority areas.	Permittees	On-Going	Long Term	As identified	Number of illicit discharges reported and responded to outside the priority areas	C					For Delta Township owned properties & facilities only.	3.11
IDEP - reporting	3	12		Implement the procedure for reporting any release of any polluting materials from the MS4 to waters of the state as identified by the Part 5 Rules (part of IDEP).	Permittees	On-Going	Long Term	As identified	Number of incidents reported	C						3.12
IDEP - training	3	13		Track the usage of the Excal Visual employee training video "Illicit Discharge Detection and Elimination: A Grate Concern".	GLRC Crd	On-Going	Long Term	Continuously	Collective number of staff trained							3.13

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"." (dash) = No commitment

X = Not applicable

Measurable Goal	Minimum Measure (in order of app)	Action Number	Priority if Applicable	Action - BMP	Lead Agency	Schedule			Evaluation Mechanism/Measure of Usage of Facilities or Material														Comments - activity	Complete	Minimum Measure/Action Number						
						Begin By	Complete By	Comment/frequency																							
										Clinton County Drain Com	Delhi Twp	Delta Twp	DeWitt, City of	DeWitt Twp	Dimondale, Village of	East Lansing, City of	Eaton County Drain Com	Grand Ledge, City of	Ingham County Drain Com	Lansing, City of	Lansing Public Schools	Lansing Twp				Mason, City of	Meridian Twp	Michigan State University			
IDEP - training	3	14		Provide a training session showing the training video for all GLRC members twice during the permit cycle.	GLRC Crd	On-Going	Long Term	2 sessions per permit cycle	Number of staff trained																						
IDEP - training	3	15		Coordinate with the City of Lansing IDEP training program when appropriate.	GLRC Crd	On-Going	Long Term	Continuously	Collective number of staff trained																						
IDEP - training	3	16		Train new employees within the first year of employment and other staff once during the permit cycle on all procedures described in the IDEP.	Permittee	On-Going	Apr-17	Once per permit cycle or first year of new hire	Number of staff trained		C																		Delta Township will utilize the training materials and sessions provided by the GLRC.		
IDEP - evaluation	3	17		Implement the procedure for evaluating overall effectiveness of the IDEP. Review guidance documents.	Permittee	On-Going	Apr-17	Once per permit cycle or first year of new hire	Number of staff trained		C																				
IDEP - regulatory authority	3	18		Implement the IDEP ordinance or other regulatory mechanism in place that covers section VII. questions 20-27 of the application.	Permittees	On-Going	May-13	Continuously	Number of illicit discharges eliminated, timeframe for eliminating the discharge, enforcement actions taken.		C																				
IDEP - collaboration	3	18		Meet once a year to discuss member issues related to implementation and management of IDEP, sharing concerns, situation, solutions, etc.	IDEP Committee	On-Going	Apr-17	Annually	Number of participants																						
Construction SW	4	1		Implement the procedure for notifying the Part 91 agency or appropriate staff when soil or sediment is discharged to the MS4.	Permittee	Apr-13	Long Term	Continuously	Number of notifications		C																		Delta Township is an Authorized Public Agency for its own projects. All other development is governed by the Eaton County Drain Commissioner's Office.		
Construction SW	4	2		Implement the procedure for notifying the MDEQ when soil, sediment, or other pollutants are discharged to the MS4	Permittee	Apr-13	Long Term	Continuously	Number of notifications		C																		Delta Township's MS4 encompasses only Delta owned properties. All others are under the jurisdiction of the Eaton County Drain Commissioner.		
Construction SW	4	3		Implement the procedure for ensuring that construction activity one acre or more obtains a Part 91 permit or is conducted by an approved Authorized Public Agency as appropriate. (see section VII questions 29-32.)	Permittee	Apr-13	Long Term	Continuously	% of Part 91 permits obtained as part of site plan review. Number of projects conducted as an APA.		C																		Delta Township's Site Plan Review standards requires all applicable approvals and permits to be obtained from the Eaton County Drain Commissioner's Office prior to issuance of Final Site Plan Approval.		

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 X = Not applicable

Measureable Goal	Minimum Measure (in order of app)	Action Number	Priority if Applicable	Action - BMP	Lead Agency	Schedule			Evaluation Mechanism/Measure of Usage of Facilities or Material										Comments - activity	Complete	Minimum Measure/Action Number
						Begin By	Complete By	Comment/Frequency													
Construction SW	4	4		Implement the procedure for advising the landowner or recorded easement holder of the State of Michigan Permit by Rule.	Permittee	Apr-13	Long Term	Continuously	% of landowner or recorded easement holders notified of Permit by Rule as part of construction activity.												4.4
PCSWC - collaboration	5	1		Maintain template ordinance; design manual (including inspection checklists, etc.); and policy and procedures manual for post-construction stormwater control measures as developed by GLRC members.	Ord/BMP Com (Technical workgroup)	On-Going	Long Term	Continuously													5.1
PCSWC - collaboration	5	2		Convene the Post-Construction Stormwater Control Technical Workgroup to discuss implementation strategies, etc.	Ord/BMP Com (Technical workgroup)	Apr-13	Apr-17	Annually	Number of participants that have successfully implemented the program												5.2
PCSWC - regulatory authority/design criteria	5	3		Have an ordinance or other regulatory mechanism in place that covers the water quality treatment performance standard and channel protection performance standard as described in section VII. The ordinance or regulatory mechanism should cover questions 33-43 and 54-59.	Permittees	On-Going	May-13	Continuously	Number of ordinances/regulatory mechanisms adopted										This function lies entirely within the jurisdiction of the Eaton County Drain Commissioner. All properties within the Township are governed by the Drain Office's rules and regulations. Site plans for development are not approved without first receiving approval from the Drain Office.		5.3
PCSWC - alternative approach	5	4		If utilizing the alternative approach, or off-site mitigation or payment in lieu programs, provide the procedure (included in PCSWC manuals).	Permittees	On-Going	May-13	Continuously	Number of alternative approaches adopted			X							This function lies entirely within the jurisdiction of the Eaton County Drain Commissioner. All properties within the Township are governed by the Drain Office's rules and regulations. Site plans for development are not approved without first receiving approval from the Drain Office.		5.4
PCSWC - collaboration & education	5	5		Develop a series of LID presentations that are beneficial to GLRC members (street trees, stormceptors, local project details, etc.)	Ord/BMP Com	On-Going	Apr-17	5 per permit cycle	Number of participants												5.5
P2 Good Housekeeping	6	1		Maintain the GLRC developed "Pollution Prevention and Good Housekeeping for Municipal Activities" handbook.	Ord/BMP Com	On-Going	Long Term	Continuously													6.1
P2 Good Housekeeping	6	2		Update the handbook as necessary (current version can be used to meet requirements).	Ord/BMP Com	On-Going	Long Term	Continuously													6.2

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 X = Not applicable



Measurable Goal	Minimum Measure (in order of app)	Action Number	Priority if Applicable	Action - BMP	Lead Agency	Schedule			Evaluation Mechanism/Measure of Usage of Facilities or Material	Comments - activity												Complete	Minimum Measure/Action Number						
						Begin By	Complete By	Comment/Frequency																					
										Clinton County Drain Com	Delhi Twp	Delta Twp	DeWitt, City of	DeWitt Twp	Dimondale, Village of	East Lansing, City of	Eaton County Drain Com	Grand Ledge, City of	Ingham County Drain Com	Lansing, City of	Lansing Public Schools			Lansing Twp	Mason, City of	Meridian Twp	Michigan State University		
P2 Good Housekeeping - implementation	6	3		Use the handbook or other method to meet P2/good housekeeping requirements to review existing program and make necessary changes (can be used for all questions in section VII 60-84). Include nested jurisdictions.	Permittees	On-Going	Long Term	Continuously	Number of communities that have used the handbook to assist in BMPs/SOP for P2 GH																			6.3	
P2 Good Housekeeping - implementation	6	4		Implement site-specific BMPs/SOPs for each facility, operation and structure. Use the P2/good housekeeping manuals for scheduling and inspection criteria.	Permittees	On-Going	Long Term	Continuously	Number of SOPs/BMPs adopted, facilities included, etc.			C																	6.4
P2 Good Housekeeping - employee training	6	5		Maintain and track the usage of the Excal Visual employee training videos "Rain Check" and "Storm Watch". Both are for MS4 good housekeeping programs.	GLRC Crd	On-Going	Long Term	Continuously	Number of staff trained																				6.5
P2 Good Housekeeping - employee training	6	6		Provide a training session showing the training video for all GLRC members twice during the permit cycle.	GLRC Crd	On-Going	Long Term	Twice per permit cycle	Number of staff trained																				6.6
P2 Good Housekeeping - implementation	6	7		Include employee training schedule in the manual/SOPs. New employees should be trained within the first year of employment, other staff once during the permit cycle.	Permittees	On-Going	Long Term	Once per permit cycle or first year of new hire	Number of staff trained			C																	6.4
TMDL Implementation - water quality data	7	1		Maintain the Master Water Quality Database to assist GLRC members with potential monitoring programs related to the TMDL. Data includes all local sources of monitoring from biological to chemical, pathogens, etc.	GLRC Crd	On-Going	Long Term	Continuously	Amount of monitoring data, number of active monitoring programs																				7.1
TMDL Implementation - BMPs	7	2		Implement BMPs to meet the TMDL implementation plan. A measurable goal/assessment should be included for each BMP. Existing/status of Carrier Creek restoration project can be described.	Eaton County & Delta Twp only	On-Going	Long Term																						7.2
TMDL Implementation - collaboration	7	3		Indicate the collaborative efforts of the project.	Eaton County & Delta Twp only	On-Going	Long Term		Number of partners involved																				7.3

E = Existing; C = Commitment  
 "-" (dash) = No commitment  
 X = Not applicable

Measurable Goal	Minimum Measure (in order of app)	Action Number	Priority if Applicable	Action - BMP	Lead Agency	Schedule			Evaluation Mechanism/Measure of Usage of Facilities or Material	Comments - activity	Complete											
						Begin By	Complete By	Comment/Frequency														
									Clinton County Drain Com													
									Delhi Twp													
									Delta Twp													
									DeWitt, City of													
									DeWitt Twp													
									Dimondale, Village of													
									East Lansing, City of													
									Eaton County Drain Com													
									Grand Ledge, City of													
									Ingham County Drain Com													
									Lansing, City of													
									Lansing Public Schools													
									Lansing Twp													
									Mason, City of													
									Meridian Twp													
									Michigan State University													
TMDL Implementation - prioritization/ monitoring	7	4		Implement the prioritized BMPs and the monitoring program for assessing progress of the BMPs.	Eaton County & Delta Twp only	On-Going	Long Term	Continuously	Status of BMP implementation and monitoring results.	X											The Carrier Creek is solely under the jurisdiction of the Eaton County Drain Commissioner's Office. Delta Township's MS4 does not have any known discharge points into the Carrier Creek within the defined urbanized area. The Township will rely on the BMPs implemented by the Drain Office to satisfy the requirements of this section.	7.4
Progress Reports	8	1		Provide updated progress report templates and other applicable materials to GLRC members for preparation of individual progress report submittals.	GLRC Crd	On-Going	Long Term	Continuously	Track all GLRC activities listed in action plan and other related documents. Evaluate collective efforts as part of progress report submission													
Progress Reports	8	2		Finalize and submit progress report	Permittees					C												
<b>PEP Committee – Yellow</b>																						
<b>Ordinance/BMP Committee – Blue</b>																						
<b>IDEP Committee - Purple</b>																						
<b>GLRC Coordinator – Green</b>																						
<b>Not required to be in SWMP (should already be in place/done as a pre-application process) - Grey</b>																						

**DELTA CHARTER TOWNSHIP**

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**Stormwater Management Program (SWMP)**



**DELTA**  
**T O W N S H I P**

**APPENDIX F**

**DRAINAGE SYSTEM INVENTORY**

# DRAINAGE SYSTEM INVENTORY

**GENERAL**

System ID: \_\_\_\_\_ Discharge ID: 1A  
 Date 9/13/2016 Time 9:30AM  
 Initial (1) WK Initial (2) \_\_\_\_\_  
 Picture #'s \_\_\_\_\_

**STRUCTURE TYPE**

- Discharging Pipe
- Manhole
- Catch Basin
- Culvert Outlet
- Point in Open Channel
- Not Found
- Blind Tie or Tap
- Non-point Source (circle below)
  - \*Seepage
  - \*Overland flow

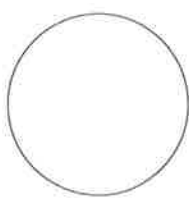
**OWNERSHIP**

- Delta Township
- Drain Commissioner
- Private
- Road Commission
- Other
- Unknown

**LOCATION (see back side for location sketch)**

Latitude/State Plane: \_\_\_\_\_  
 Longitude/State Plane: \_\_\_\_\_  
 Cross-street: SAGINAW HWY / CANAL RD  
 Offset Description: BEHIND PARKS BARN  
 Receiving Waterbody: REGULATED WETLANDS  
 Inventory Comments: OPEN END SECTION, DISCHARGES INTO WETLAND WITH ANIMAL DROPPINGS PRESENT.  
 \_\_\_\_\_  
" SEE ATTACHMENT " PHOTO

CONDUIT INFORMATION						
Pipe ID	<u>1A</u>					
Direction from MH	<u>N</u>					
Shape						
Diameter (in)	<u>12"</u>					
Width (in) (Open Channel)						
Depth (in)						
Measure Down (ft) (Manhole)						
Invert Elevation (ft) (Pipes)						
Conduit Material	<u>PVC</u>					
Inlet/Outlet						

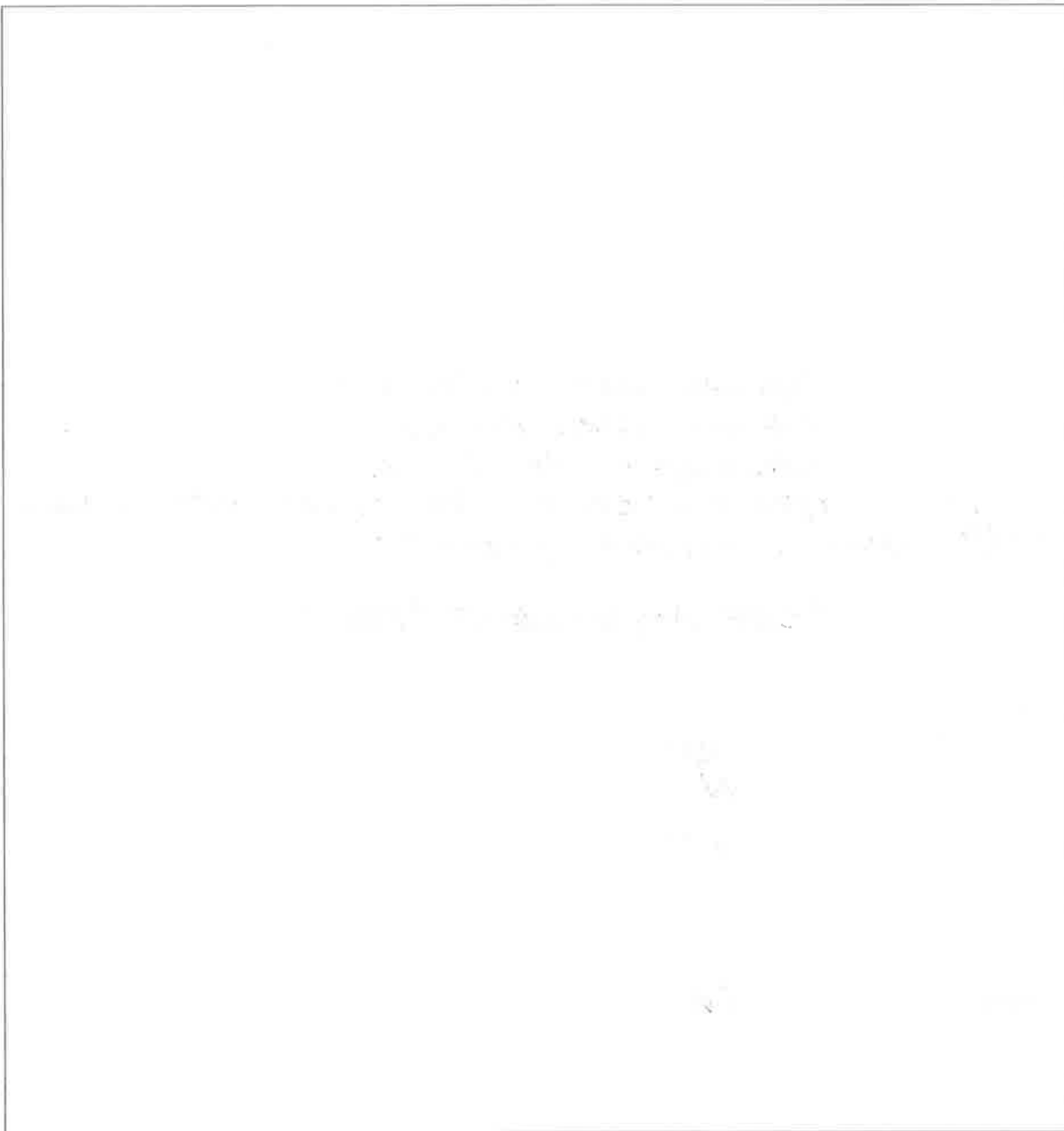


Canine hit:  Yes  No

## LOCATION SKETCH

### CHECKLIST

- Label street names
- Indicate north
- Locate manholes by dimensions from property lines, back of curb, or edge of pavement
- Sketch catch basins and connections (no measurements necessary)
- Indicate (if possible) distance to upstream and downstream manholes
- Flow direction
- Sample point
- Special access/traffic control notes
- Between mile markers \_\_\_\_ & \_\_\_\_ or \_\_\_\_ tenths past mile marker \_\_\_\_
- Velocity/depth measure location





## DRAINAGE SYSTEM INVENTORY

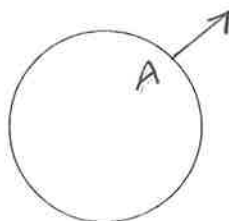
GENERAL	
Structure/Discharge ID: <u>STM #125</u>	
Date: <u>10/4/2018</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description: <u>7710 W SAGINAW Hwy.</u>	
Latitude/State Plane: <u>13043591.8449</u>	
Longitude/State Plane: <u>452658.4410</u>	
Cross-street: <u>SAGINAW Hwy / CANAL / ADMINISTRATION / <del>CANAL</del></u>	
Receiving Waterbody: <u>BENJAMIN DRAIN</u>	

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

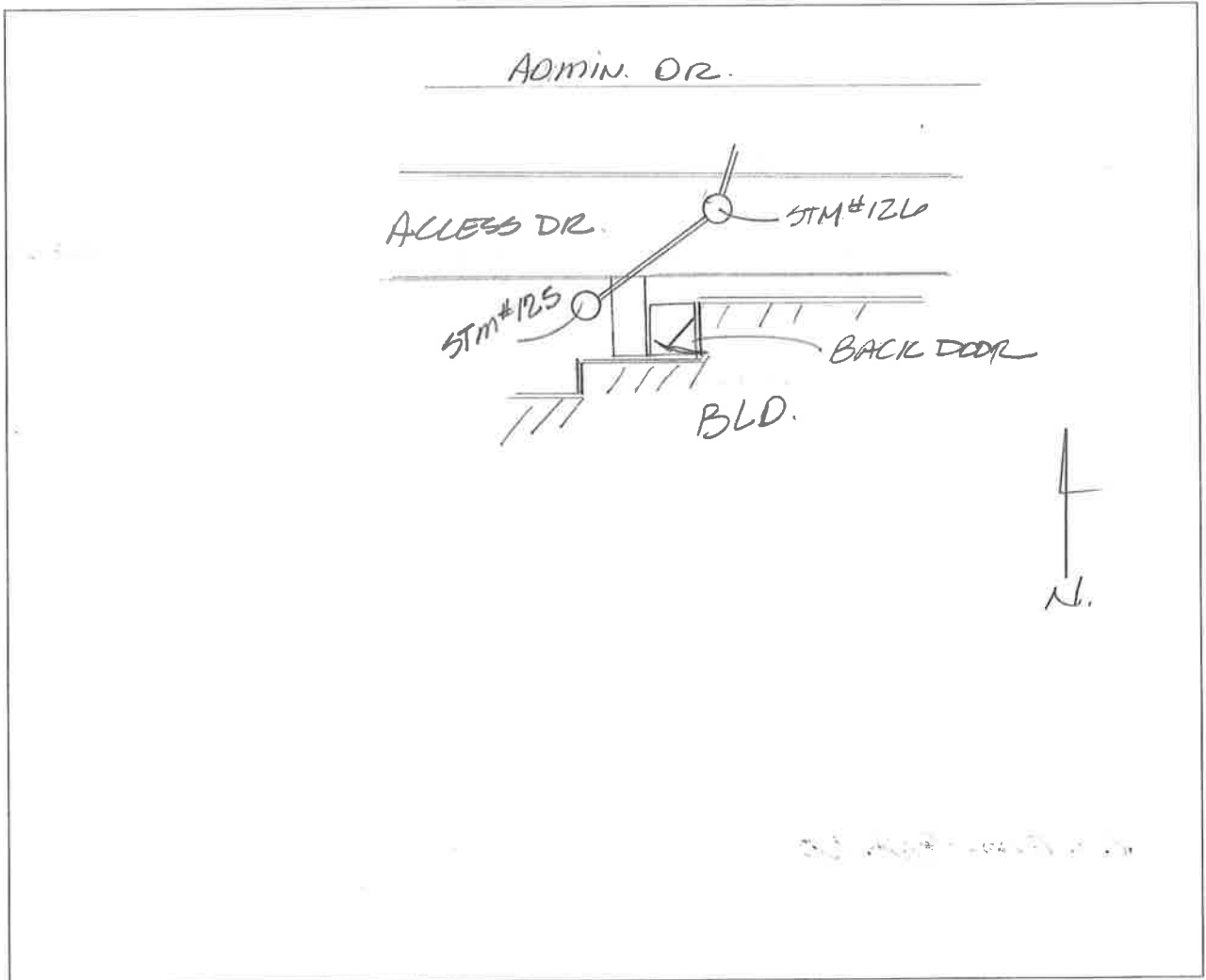
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

Rim Elev. <u>858.60</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID	A					
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



# LOCATION SKETCH

Description/Comment: NEXT TO TWP. ADMIN. BLD. BACK DOOR





## DRAINAGE SYSTEM INVENTORY

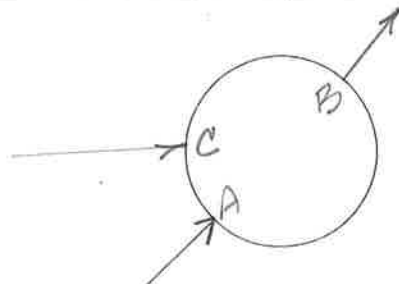
GENERAL	
Structure/Discharge ID: <u>STM # 126</u>	
Date: <u>10/4/2018</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description:	<u>7710 W. SAGINAW HWY</u>
Latitude/State Plane:	<u>13043611.8740</u>
Longitude/State Plane:	<u>452682.8495</u>
Cross-street:	<u>SAGINAW HWY / CANAL / ADMINISTRATION DR.</u>
Receiving Waterbody:	_____

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

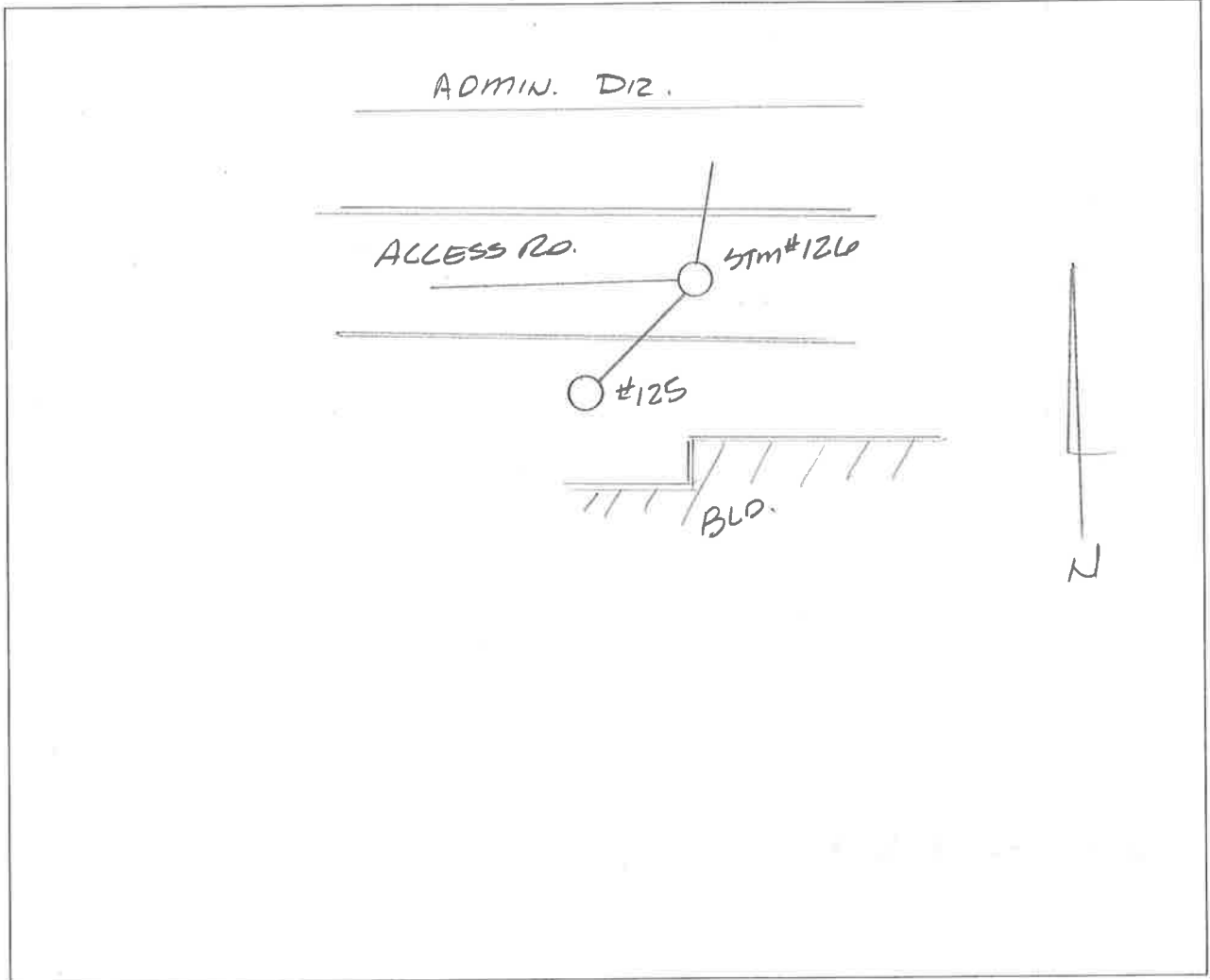
<u>Rim ELEV. = 856.88</u>	STRUCTURE/PIPE INFORMATION				
Structure Material					
Structure Diameter					
Pipe ID	A	B	C		
Pipe Material					
Pipe Diameter					
Pipe Rim-Invert					





LOCATION SKETCH

Description/Comment: NEXT TO ADMIN. BLD. IN ACCESS RD.





# DRAINAGE SYSTEM INVENTORY

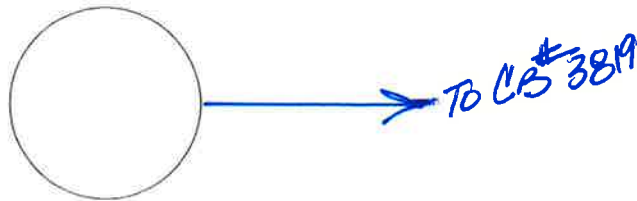
GENERAL			
Structure/Discharge ID:	CB# 5360		
Date	10/4/2018	Time	
Checked by	W. KULASA	Checked by	
Picture #'s			

LOCATION	
Address/Description:	7710 W. SAGINAW HWY
Latitude/State Plane:	130 435 55.30
Longitude/State Plane:	45 2763.51
Cross-street:	SAGINAW / ADMIN. DR / CANAL
Receiving Waterbody:	BENJIMAN DRAIN

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

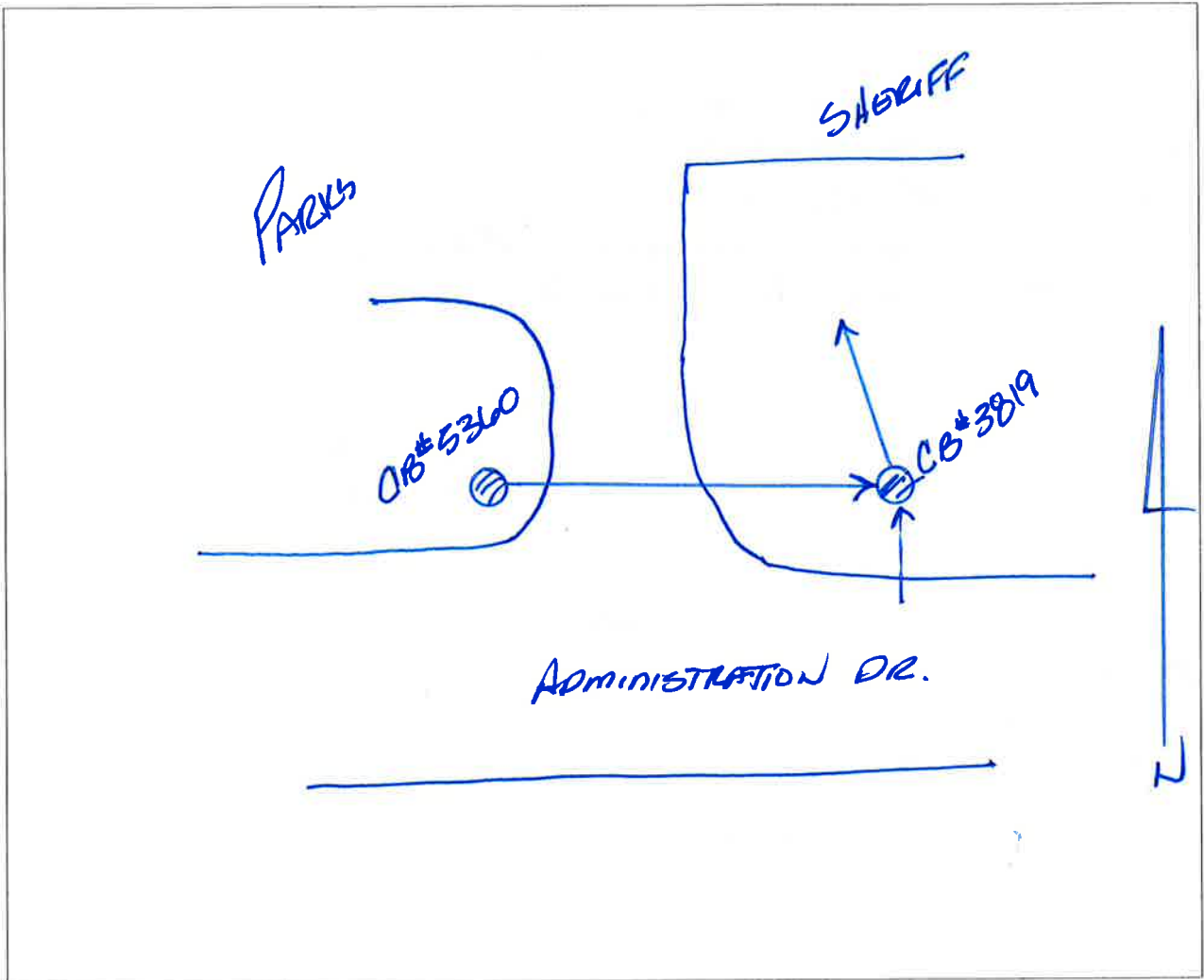
STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: CATCH BASIN NORTH SIDE OF ADMIN. DR.

WEST SIDE OF ENTRANCE TO PARKS/SHERIFF



## DRAINAGE SYSTEM INVENTORY

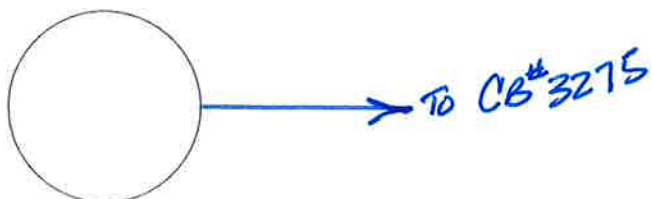
GENERAL	
Structure/Discharge ID:	<u>CB# <del>51360</del> 50569</u>
Date	<u>10/4/2018</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>7710 W. SAGINAW HWY.</u>
Latitude/State Plane:	<u>13 043 503.32</u>
Longitude/State Plane:	<u>452 709.90</u>
Cross-street:	<u>SAGINAW / ADMINISTRATION / CANAL</u>
Receiving Waterbody:	<u>BENJIMAN DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

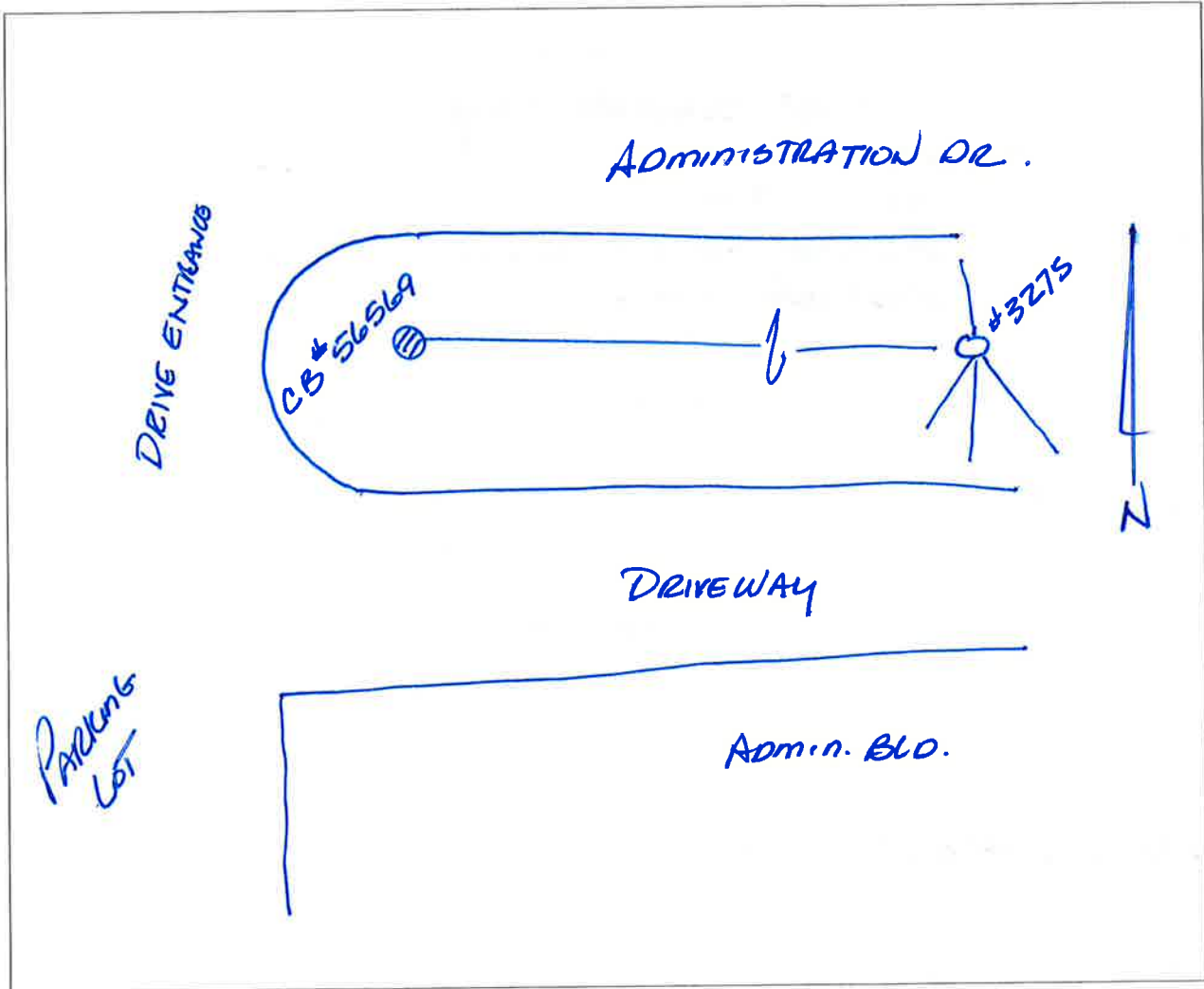
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

<u>Rim Elev. = 856.37</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: CATCH BASIN IN THE GRASS BETWEEN  
ADMIN. DR. + DRIVEWAY. NEAR THE WEST PARKING LOT  
ENTRANCE.



## DRAINAGE SYSTEM INVENTORY

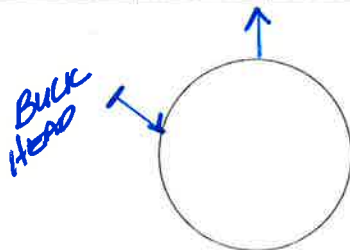
GENERAL	
Structure/Discharge ID: <u>CB # 3274</u>	
Date: <u>10/4/2018</u>	Time: _____
Checked by: <u>W. KULAGA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description: <u>7710 W. SAGINAW Hwy</u>	
Latitude/State Plane: <u>130434 50.49</u>	
Longitude/State Plane: <u>452824.34</u>	
Cross-street: <u>SAGINAW Hwy / CANAL RD / ADMINISTRATION DR</u>	
Receiving Waterbody: <u>BENJAMIN DRAIN</u>	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

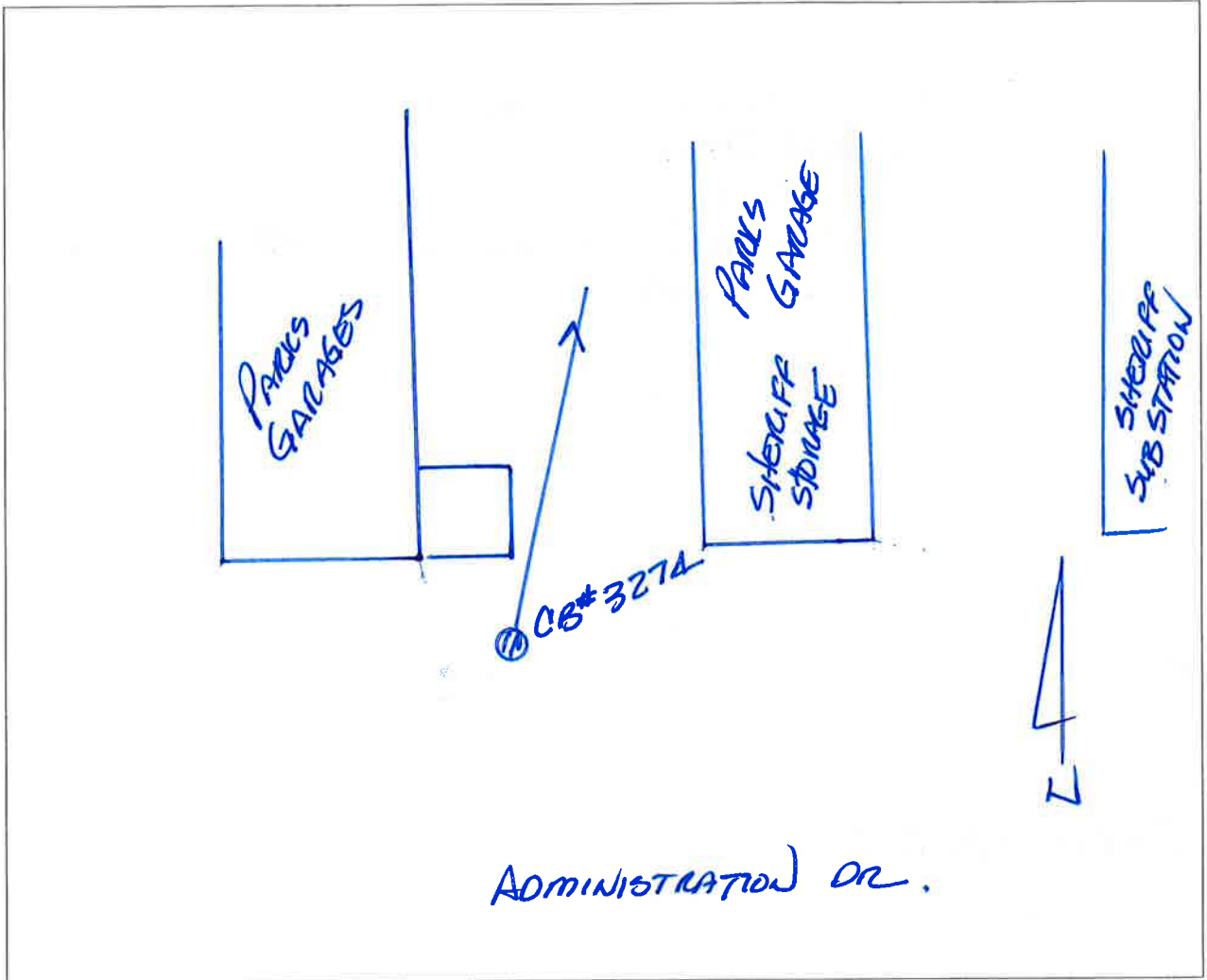
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

<u>Rim Elev. = 856.99</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: BASIN SOUTH EAST CORN OF PARKS BLD.  
IN THE GRASS



## DRAINAGE SYSTEM INVENTORY

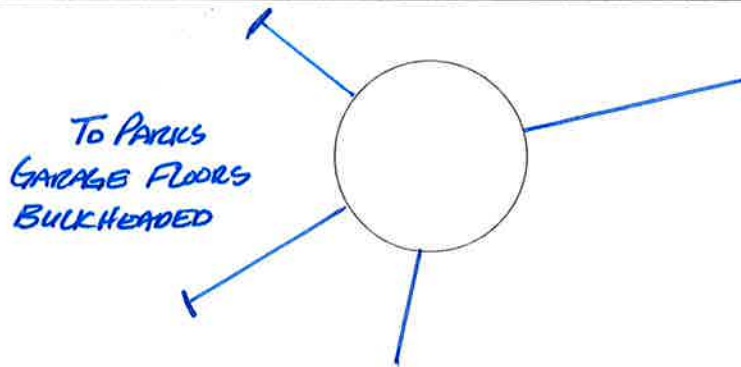
GENERAL	
Structure/Discharge ID: <u>OB# 3277</u>	
Date: <u>10/4/2018</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description:	<u>7710 W. SAGINAW Hwy.</u>
Latitude/State Plane:	<u>130434 W. 44</u>
Longitude/State Plane:	<u>452917.59</u>
Cross-street:	<u>SAGINAW / ADMINISTRATION / CANAL</u>
Receiving Waterbody:	<u>BENJAMIN DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

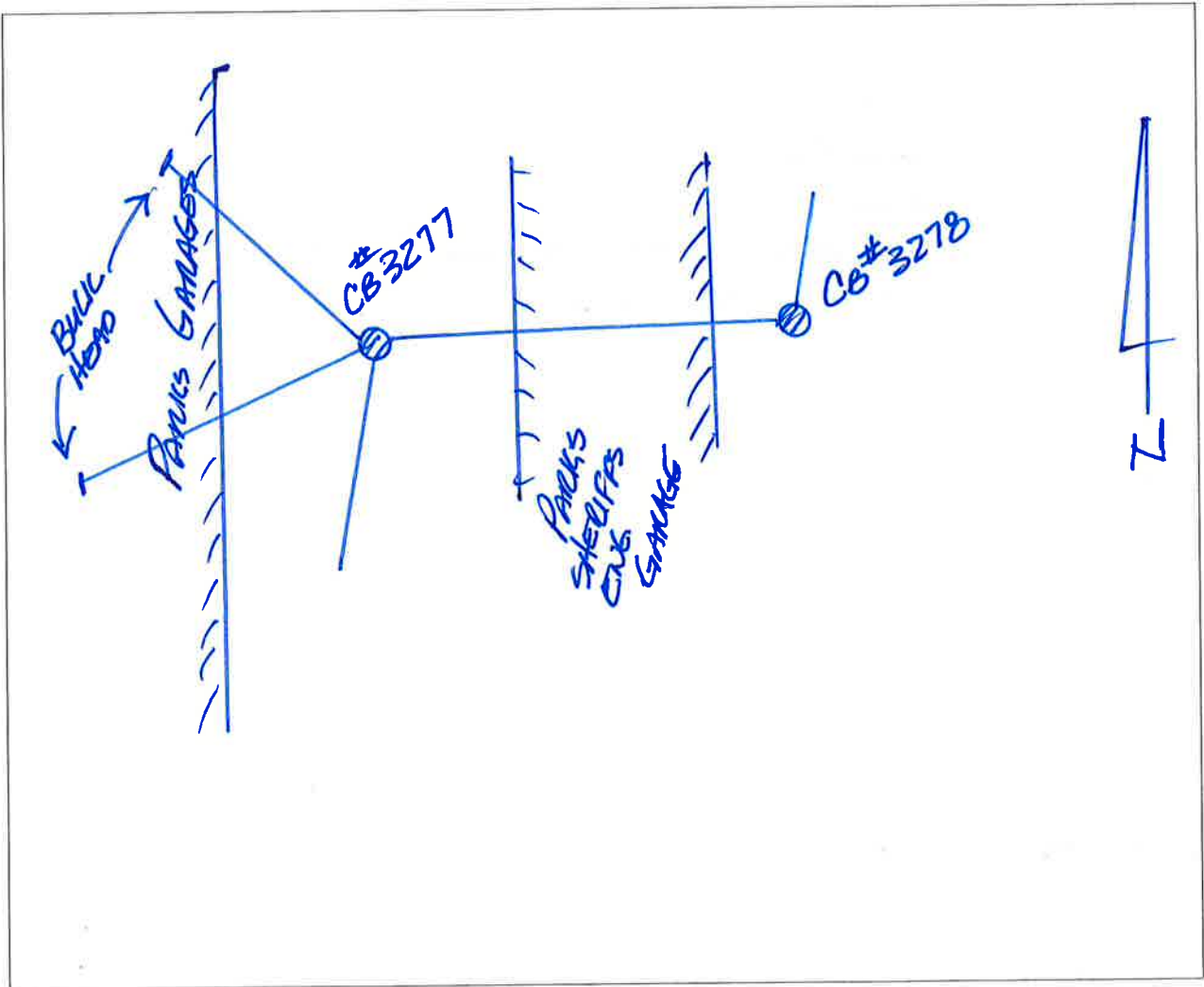
<u>Rim Elev. = 855.78</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						





LOCATION SKETCH

Description/Comment: CATCH BASIN IN THE POINT BETWEEN  
THE TWO GARAGES.



## DRAINAGE SYSTEM INVENTORY

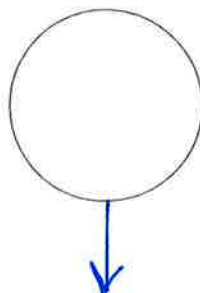
GENERAL	
Structure/Discharge ID:	<u>CB#921</u>
Date	<u>10/4/2018</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>7710 W. SAGINAW Hwy</u>
Latitude/State Plane:	<u>13043546.04</u>
Longitude/State Plane:	<u>453017.75</u>
Cross-street:	<u>SAGINAW / Administration / CANAL</u>
Receiving Waterbody:	<u>BENJIMAN DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

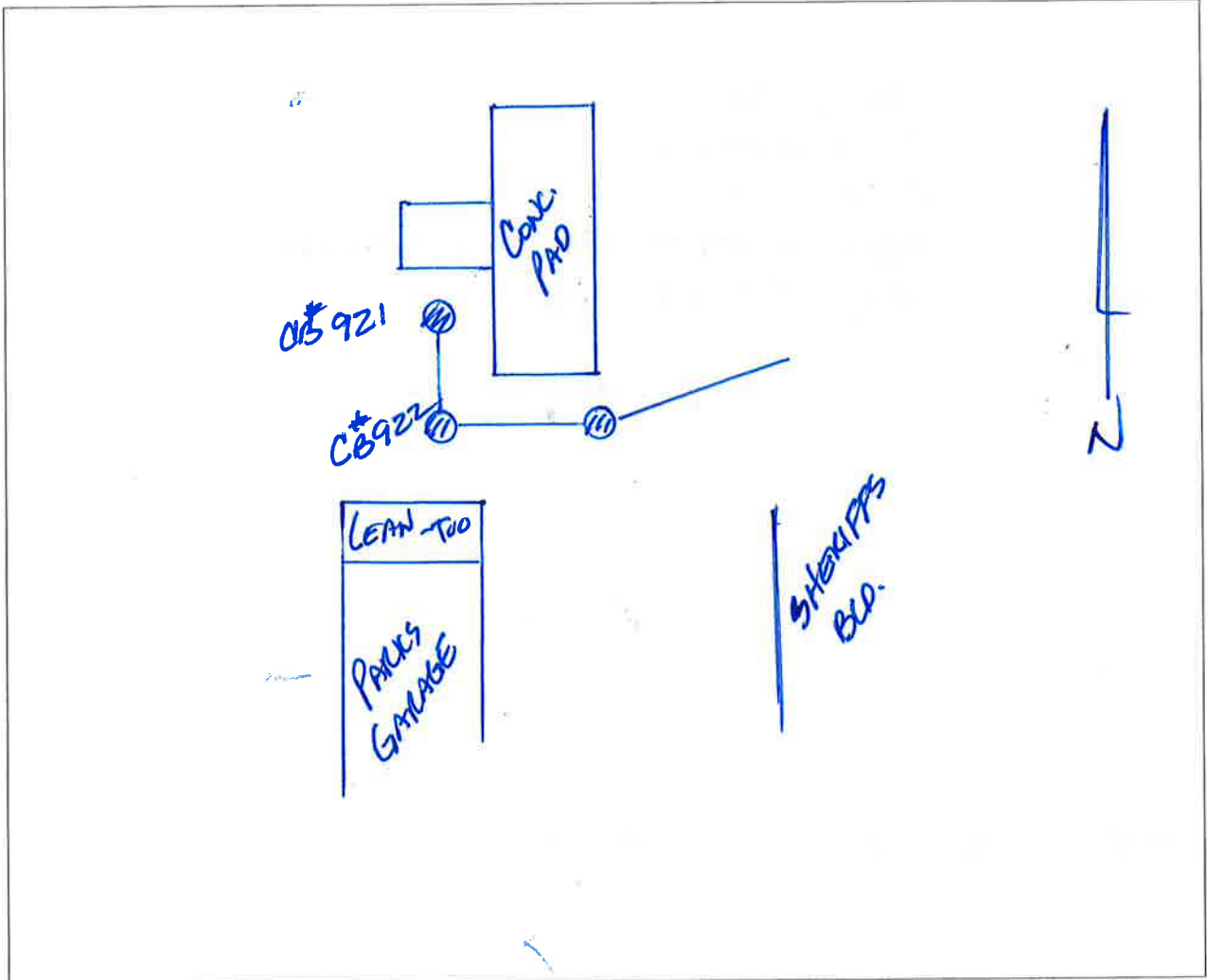
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

<u>Rim ELEV. = 857.29</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: CATCH BASIN NEAR BULK WATER



## DRAINAGE SYSTEM INVENTORY

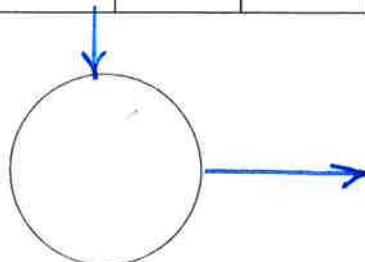
GENERAL	
Structure/Discharge ID:	<u>CB# 922</u>
Date	<u>10/4/2010</u> Time _____
Checked by	<u>W. Kulasa</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>7710 W. SAGINAW Hwy</u>
Latitude/State Plane:	<u>130 435 46.01</u>
Longitude/State Plane:	<u>45 29 93.54</u>
Cross-street:	<u>SAGINAW Hwy / ADMINISTRATION / RAIL CANAL</u>
Receiving Waterbody:	<u>BENJAMIN DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

Rim ELEV. = <u>856.58</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



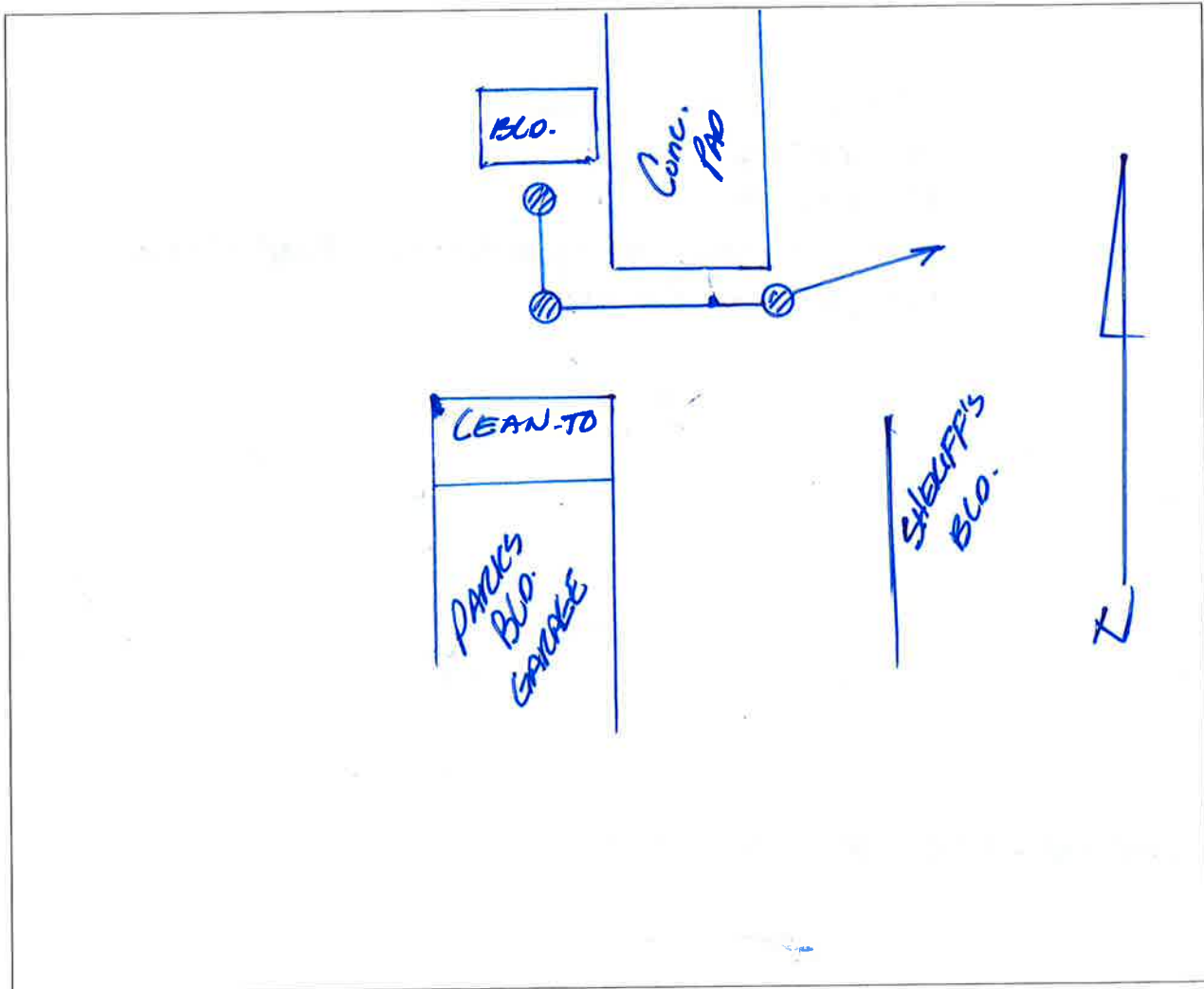
LOCATION SKETCH

Description/Comment: CATCH BASIN NEAR WATER PUMP

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## DRAINAGE SYSTEM INVENTORY

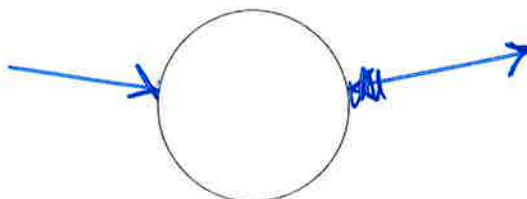
GENERAL	
Structure/Discharge ID: <u>CB# 3820</u>	
Date: <u>10/4/2018</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description: <u>7110 W. SAGINAW Hwy</u>	
Latitude/State Plane: <u>130 435 82.11</u>	
Longitude/State Plane: <u>45 29 93.74</u>	
Cross-street: <u>SAGINAW Hwy / ADMINISTRATION / CANAL</u>	
Receiving Waterbody: <u>BENJIMAN DRAIN</u>	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

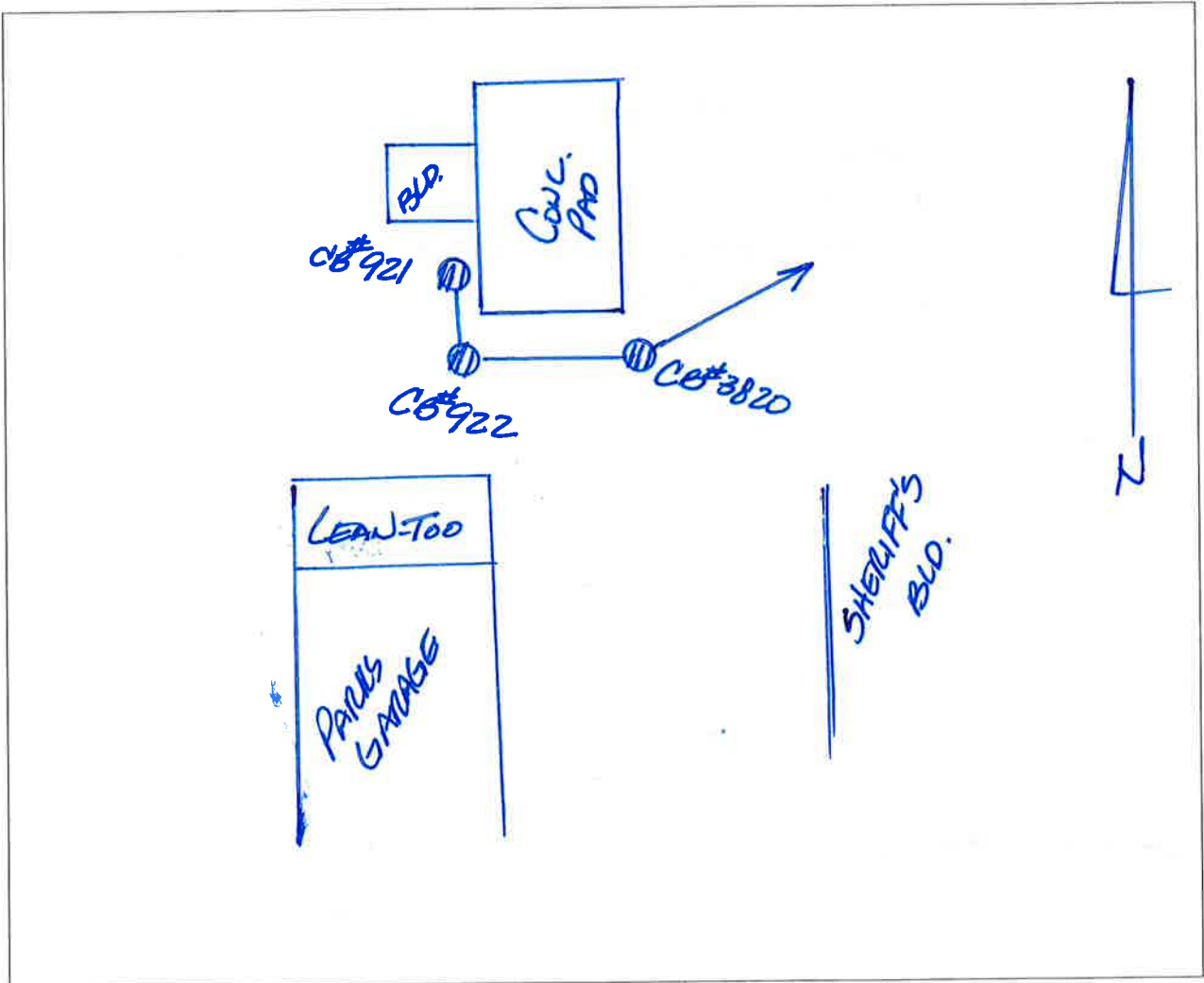
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

<u>Rim ELEV. = 855.54</u>	STRUCTURE/PIPE INFORMATION						
Structure Material							
Structure Diameter							
Pipe ID							
Pipe Material							
Pipe Diameter							
Pipe Rim-Invert							



LOCATION SKETCH

Description/Comment: CB. NEAR THE WATER BULIC STATION



## DRAINAGE SYSTEM INVENTORY

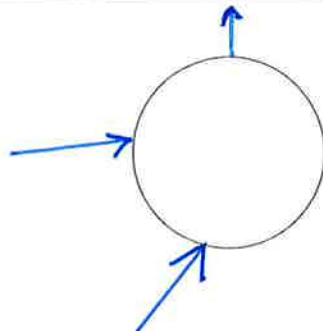
GENERAL	
Structure/Discharge ID: <u>CB# 14A</u>	
Date: <u>10/4/2018</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description: <u>7710 W. SAGINAW Hwy</u>	
Latitude/State Plane: _____	
Longitude/State Plane: _____	
Cross-street: <u>SAGINAW Hwy / Administration Dr. / CANAL Co.</u>	
Receiving Waterbody: <u>BENJIMAN DRAIN</u>	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

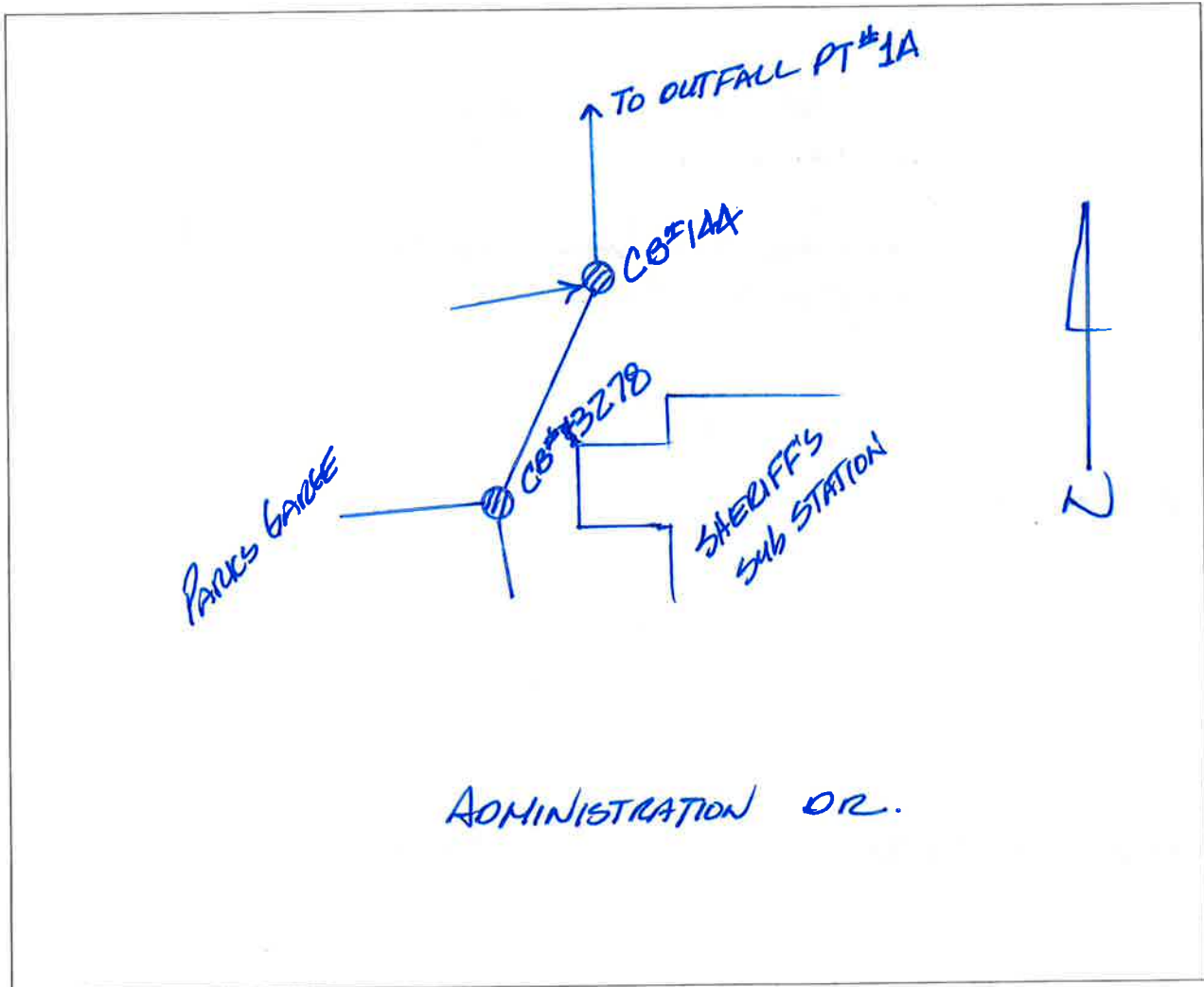
<u>Rim ELEV. = 893.93</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						





LOCATION SKETCH

Description/Comment: Catch Basin North of the Sheriff's  
Sub Station in the Pvcmt.



## DRAINAGE SYSTEM INVENTORY

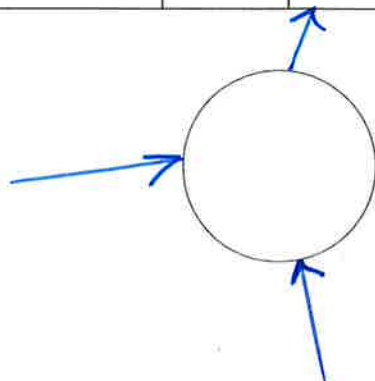
GENERAL	
Structure/Discharge ID:	<u>CB* 3278</u>
Date	<u>10/4/2018</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>7710 W. SAGINAW HWY</u>
Latitude/State Plane:	<u>130 435 82.49</u>
Longitude/State Plane:	<u>45 2934.25</u>
Cross-street:	<u>SAGINAW HWY / ADMIN DR. / CANAL RD</u>
Receiving Waterbody:	<u>BENJIMAN DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

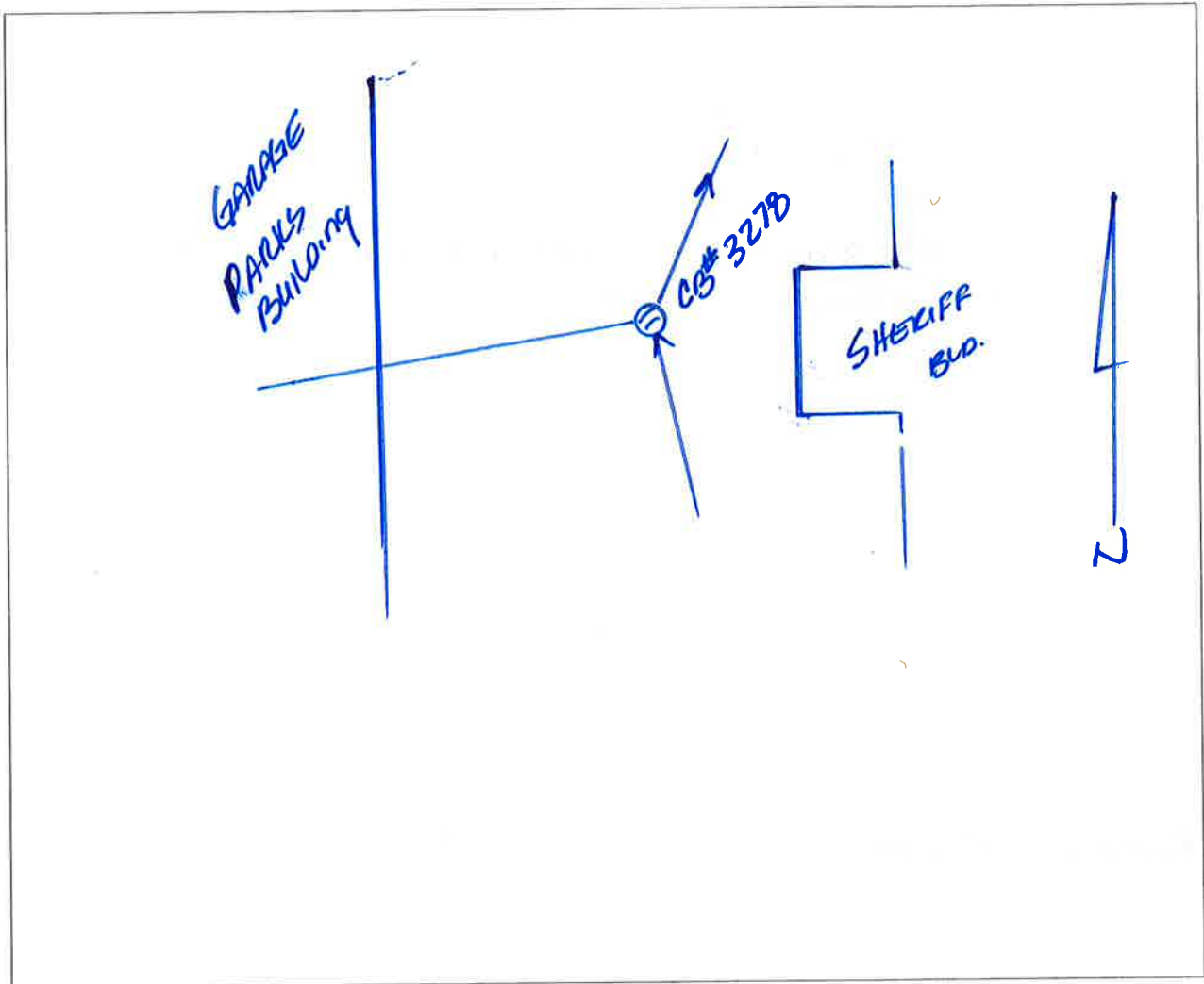
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

Rim Elev. = <u>856.42</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: CATCH BASIN IN PVMT. WEST SIDE OF SHERIFF.  
THE PIPE GOING TO THE WEST, GOES UNDER THE PARKS  
GARAGE TO ANOTHER CB.



## DRAINAGE SYSTEM INVENTORY

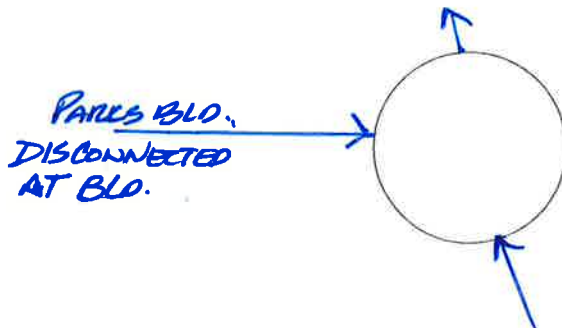
GENERAL	
Structure/Discharge ID: <u>STM # 33154</u>	
Date: <u>10/4/2018</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description: <u>7710 W. SAGINAW Hwy.</u>	
Latitude/State Plane: <u>130 436 03.64</u>	
Longitude/State Plane: <u>45 28 62.55</u>	
Cross-street: <u>SAGINAW Hwy / ADMIN. DR. / CANAL RD</u>	
Receiving Waterbody: <u>BENJIMAN DRAIN</u>	

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

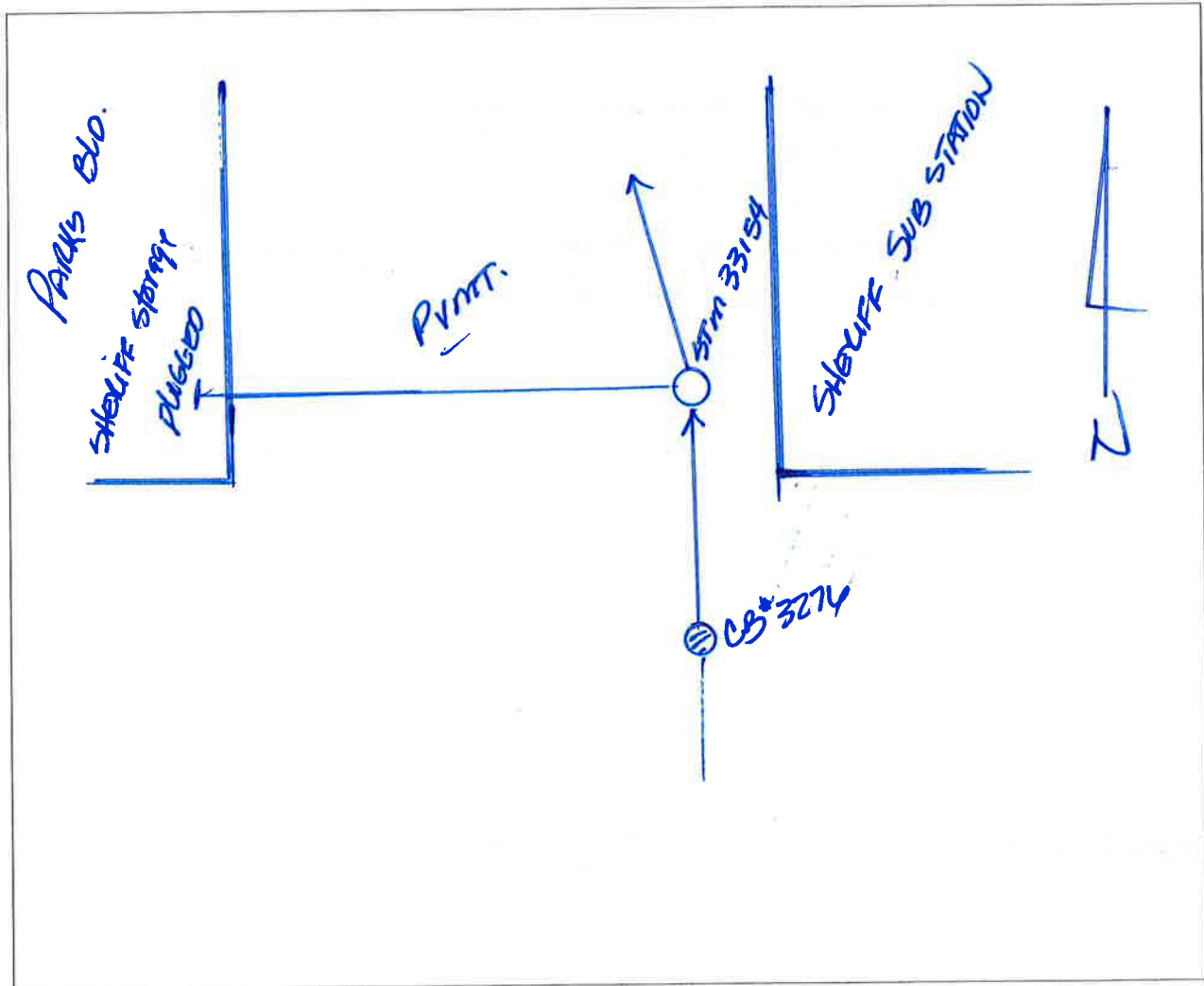
Rim ELEV. = <u>855.70</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: MANHOLE ON WEST SIDE OF SHERIFF DEPT.

LOCATED IN PVMT. THE PIPE COMING FROM THE PARKS GARAGE (USED BY THE SHERIFF DEPT) HAS BEEN PLUGGED



## DRAINAGE SYSTEM INVENTORY

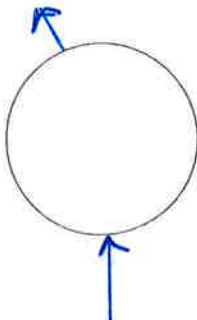
GENERAL	
Structure/Discharge ID:	<u>CB# 3270</u>
Date	<u>10/4/2018</u> Time _____
Checked by	<u>W. KULAGA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>7710 W. SAGINAW HWY.</u>
Latitude/State Plane:	<u>130 436 04.59</u>
Longitude/State Plane:	<u>45 28 01.75</u>
Cross-street:	<u>SAGINAW HWY / ADMIN. DR / CANAL RD</u>
Receiving Waterbody:	<u>BENJAMIN DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

Rim Elev. = 853.82	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



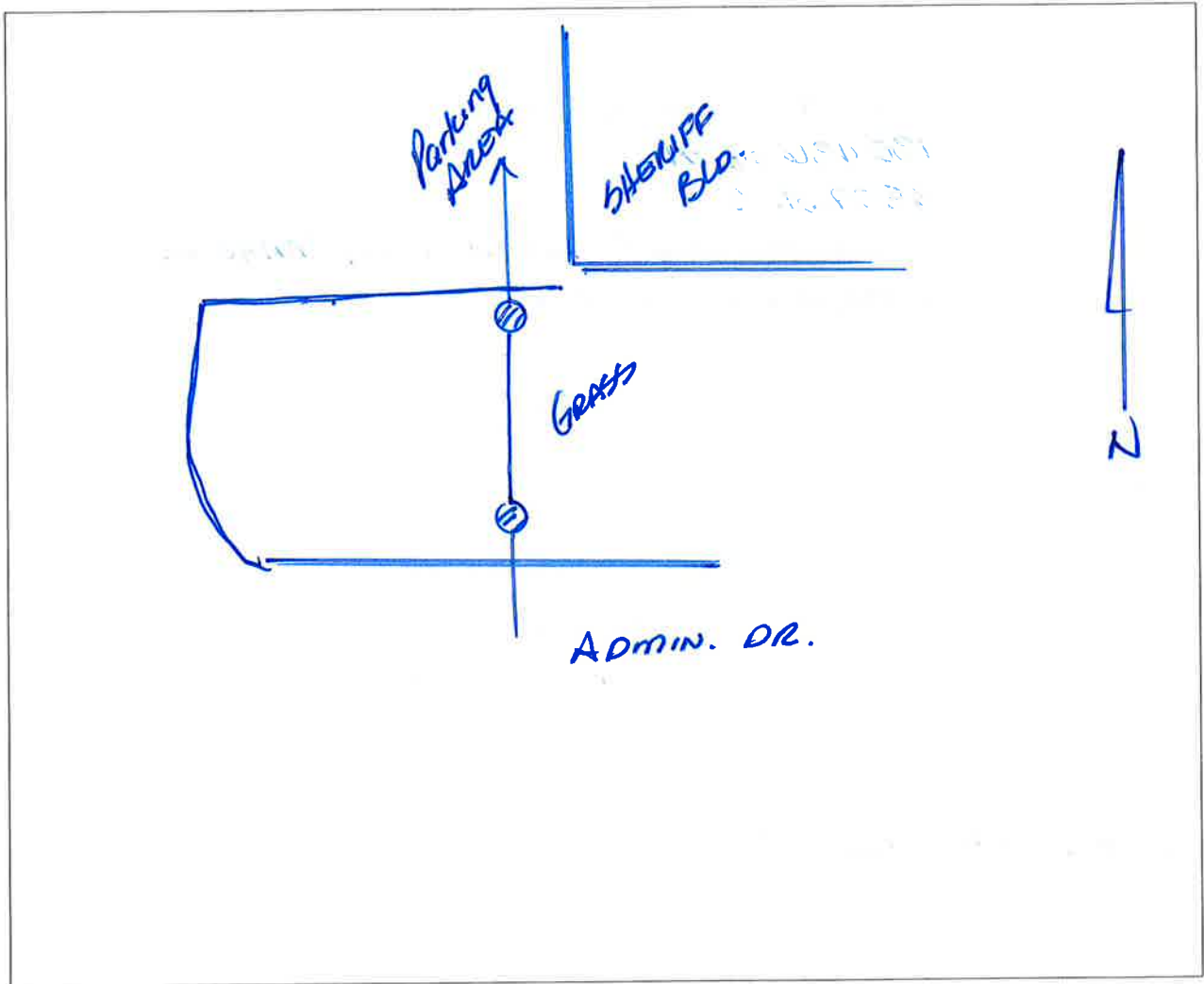
LOCATION SKETCH

Description/Comment: IN FRONT OF SHERIFF BLD. ON THE Southside

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## DRAINAGE SYSTEM INVENTORY

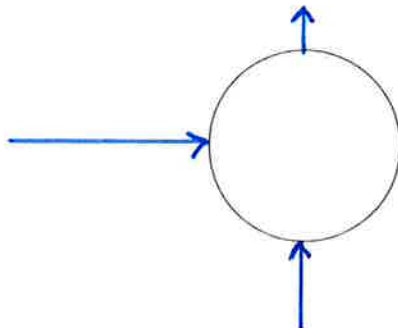
GENERAL	
Structure/Discharge ID: <u>CB# 3819</u>	
Date: <u>10/4/2018</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description: <u>7710 W. SAGINAW Hwy</u>	
Latitude/State Plane: <u>13043624.66</u>	
Longitude/State Plane: <u>452765.62</u>	
Cross-street: <u>SAGINAW Hwy / ADMINISTRATION DR / CANAL RD.</u>	
Receiving Waterbody: <u>BENJIMAN DR</u>	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

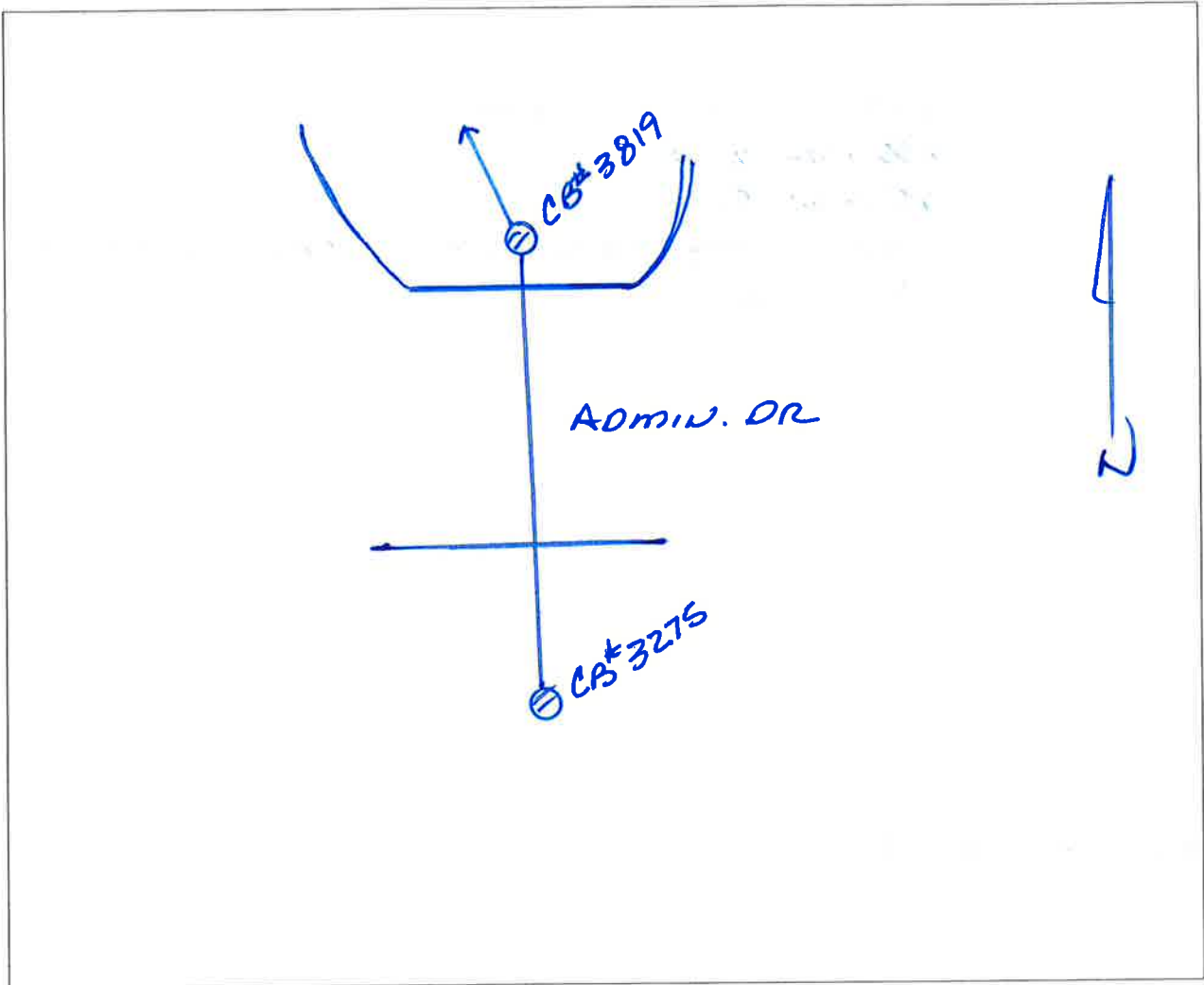
Rim ELEV. = <u>853.48</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						





LOCATION SKETCH

Description/Comment: IN GRASS AREA NORTH OF ADMIN. DR  
IN FRONT OF SHERIFF DEPT.



## DRAINAGE SYSTEM INVENTORY

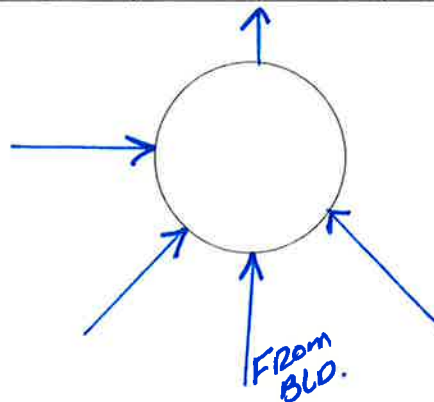
GENERAL	
Structure/Discharge ID: <u>CB# 3275</u>	
Date: <u>10/4/2018</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description:	<u>7710 W. SAGINAW Hwy.</u>
Latitude/State Plane:	<u>130 434 31. 2602</u>
Longitude/State Plane:	<u>45 27 09. 0395</u>
Cross-street:	<u>SAGINAW Hwy / ADMINISTRATIVE DR. / CANAL RD</u>
Receiving Waterbody:	<u>BENJAMIN DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

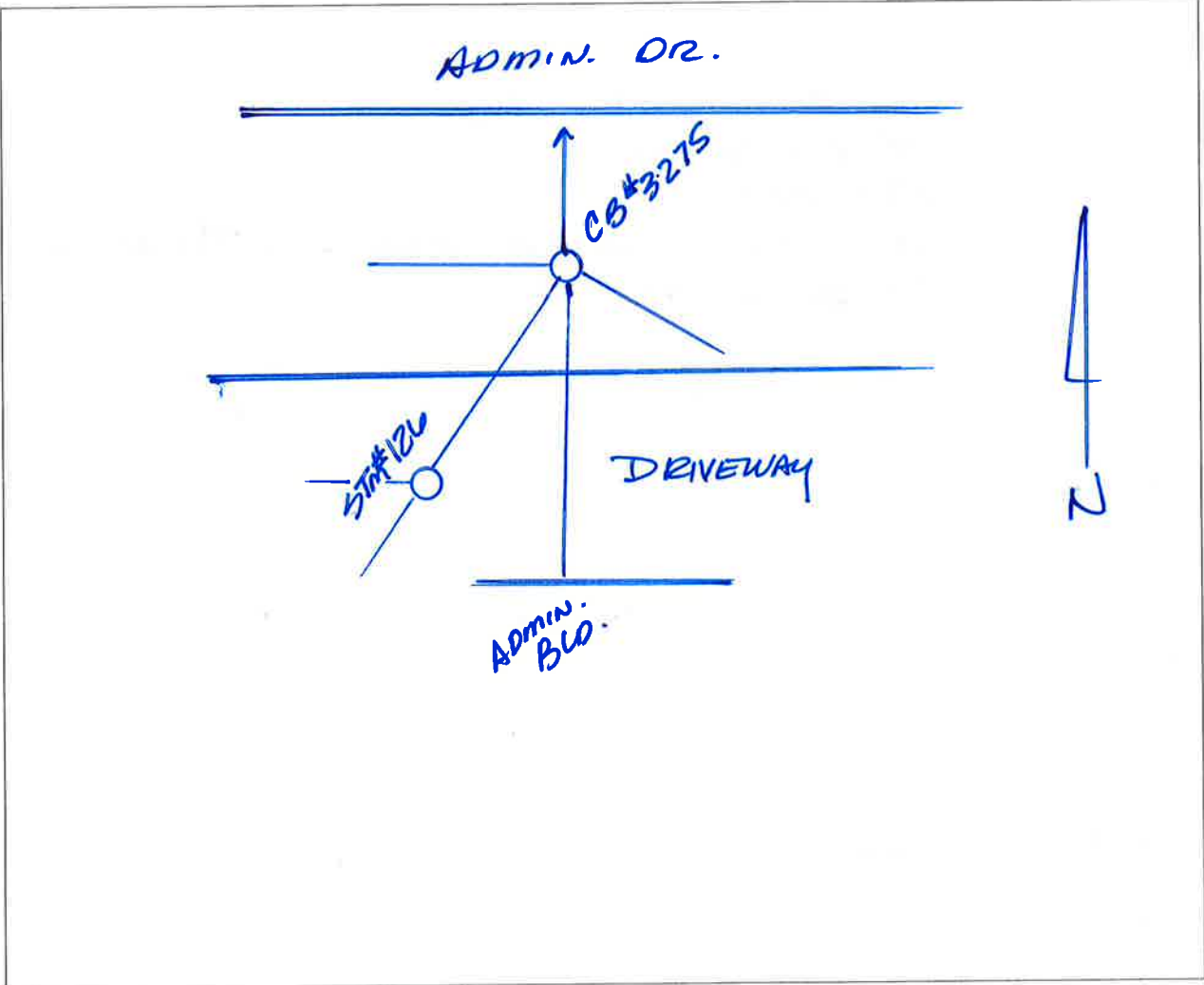
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

<u>Rim ELEV = 854.23</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: CB IN THE GRASS AREA BETWEEN  
THE ADMIN. BLD. + ADMIN. DR.



## DRAINAGE SYSTEM INVENTORY

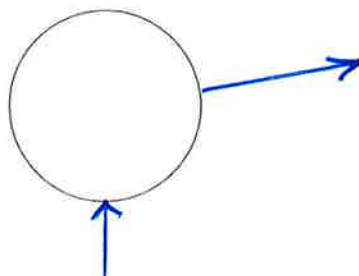
GENERAL	
Structure/Discharge ID:	<u>CB# 3272</u>
Date	<u>10/4/2018</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>7110 W. SAGINAW Hwy</u>
Latitude/State Plane:	<u>130 433 85.3410</u>
Longitude/State Plane:	<u>45 26 52.4042</u>
Cross-street:	<u>SAGINAW Hwy / ADMINISTRATION DR / CANAL RD.</u>
Receiving Waterbody:	<u>BENJAMIN DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

Rim Elev. = <u>856.24</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



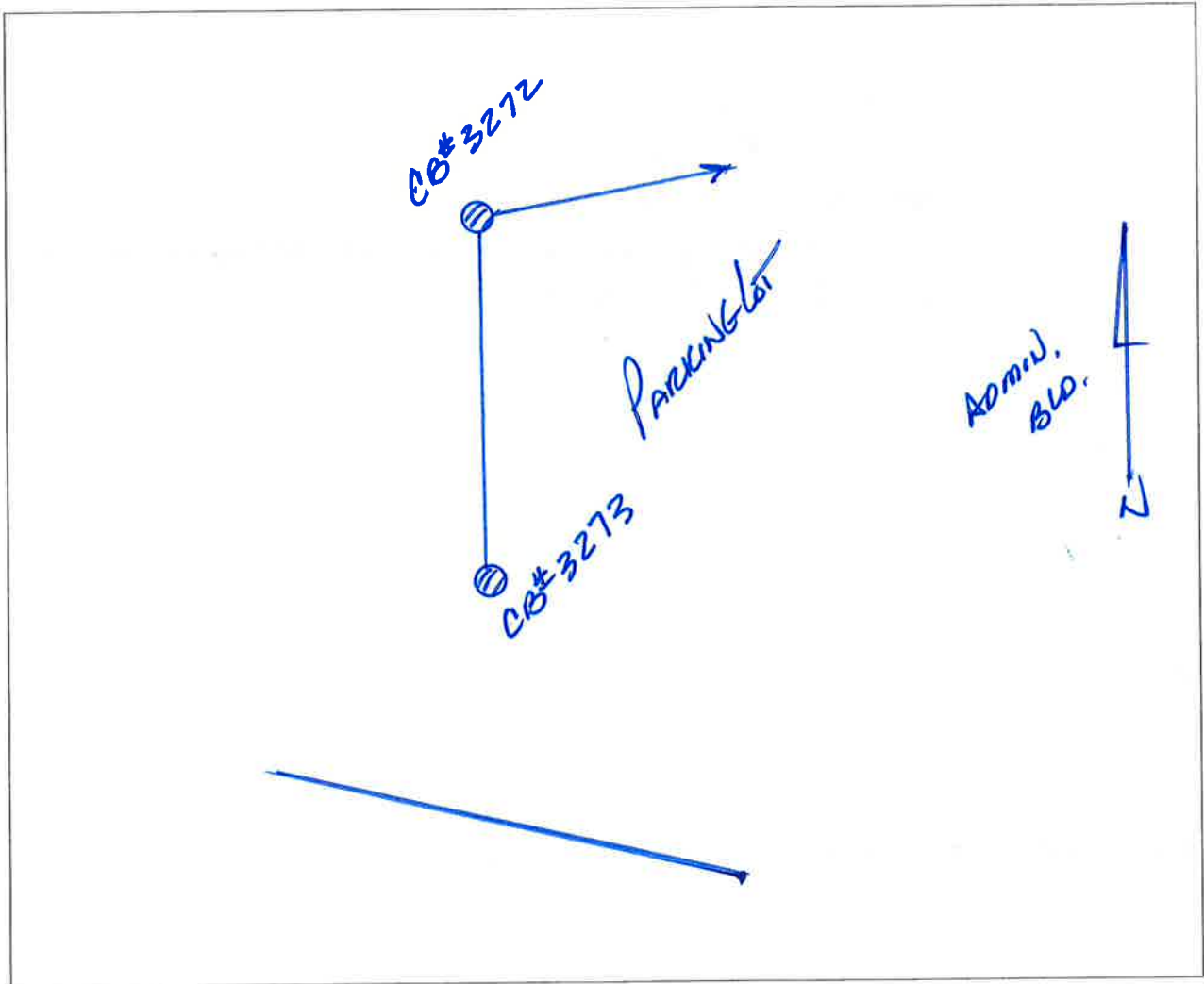
LOCATION SKETCH

Description/Comment: WEST PARKING LOT OF ADMIN. BLD.

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# DRAINAGE SYSTEM INVENTORY

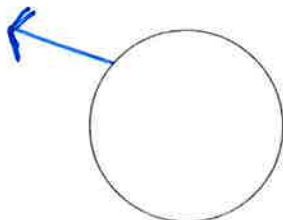
GENERAL	
Structure/Discharge ID:	CB#5532
Date	10/4/2018
Checked by	W. KULASA
Picture #'s	

LOCATION	
Address/Description:	7710 W. SAGINAW Hwy
Latitude/State Plane:	130 437 77.82
Longitude/State Plane:	45 26 16.48
Cross-street:	SAGINAW Hwy / ADMINISTRATION DR / CANAL RD
Receiving Waterbody:	BENJAMIN DRAIN

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

Rim ELEV. = 856.45	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



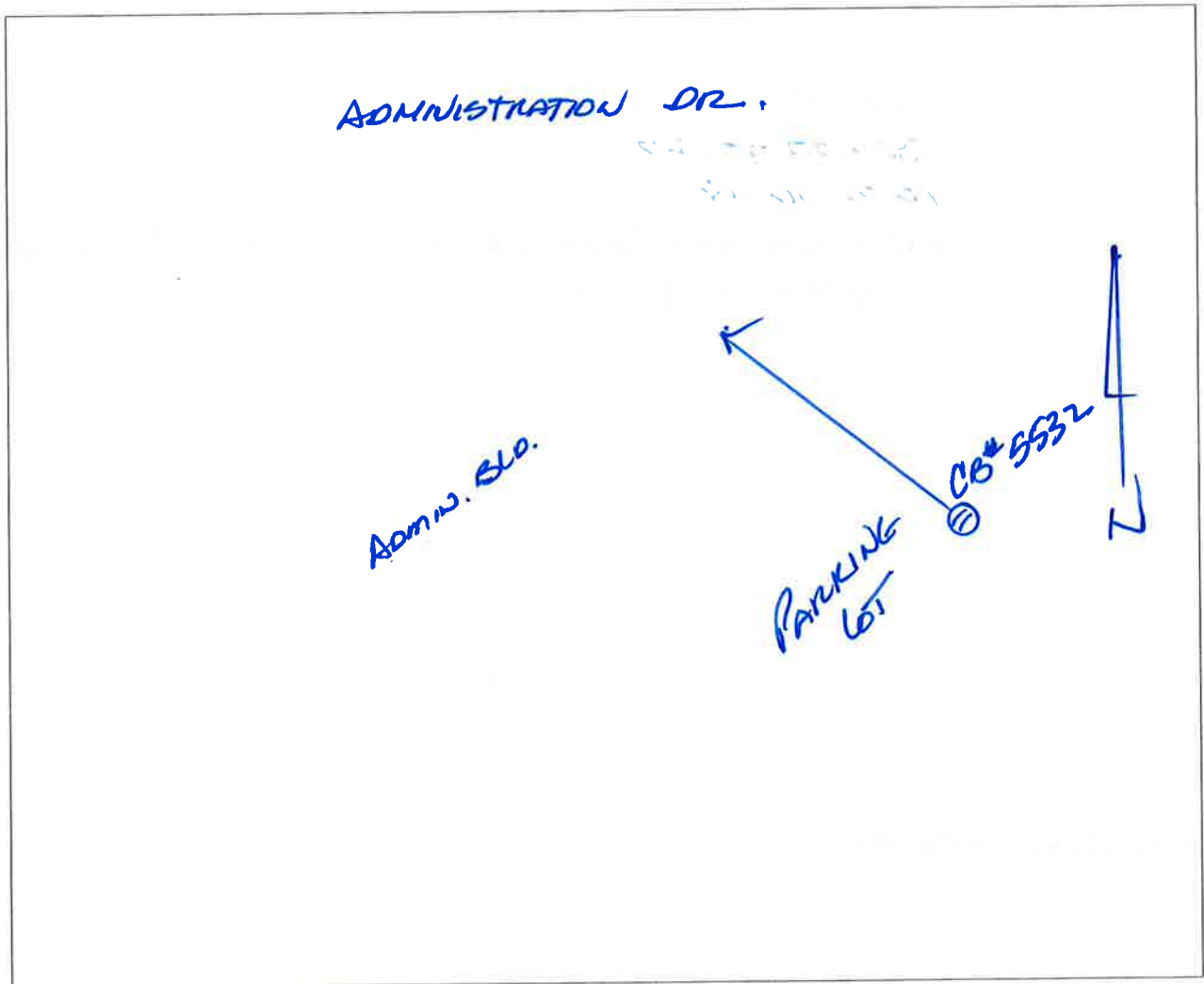
LOCATION SKETCH

Description/Comment: EAST PARKING LOT OF ADMIN. BLD.

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## DRAINAGE SYSTEM INVENTORY

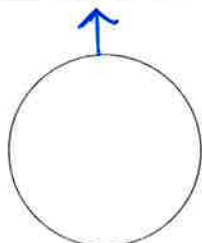
GENERAL	
Structure/Discharge ID: <u>CB# 3273</u>	
Date: <u>10/4/2018</u>	Time: _____
Checked by: <u>WACT KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description: <u>7710 W. SAGINAW Hwy</u>	
Latitude/State Plane: <u>130 433 84.7565</u>	
Longitude/State Plane: <u>45 25 88.1409</u>	
Cross-street: <u>SAGINAW Hwy / ADMINISTRATION DR / CANAL RD</u>	
Receiving Waterbody: <u>BENJAMIN DRAIN</u>	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

<u>Rim ELEV. = 856.03</u>	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						





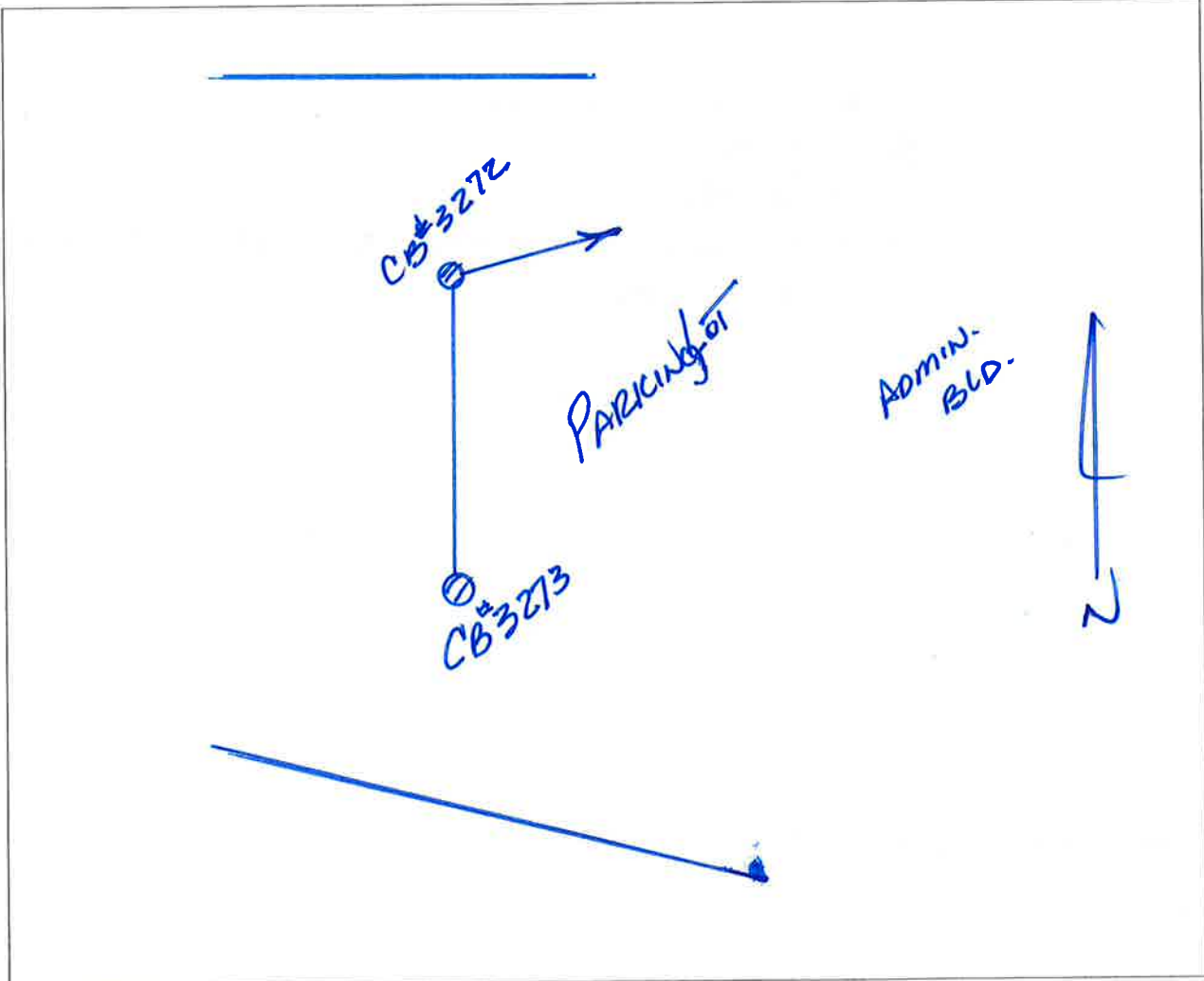
LOCATION SKETCH

Description/Comment: WEST PARKING LOT OF THE ADMIN. BLD.

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## DRAINAGE SYSTEM INVENTORY

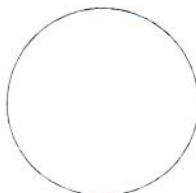
GENERAL	
Structure/Discharge ID:	<u>OUTFALL # 1A</u>
Date	<u>4/17/2019 WED.</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>7710 W. SAGINAW Hwy.</u>
Latitude/State Plane:	<u>N 42° - 44' - 35"</u>
Longitude/State Plane:	<u>W 84° - 39' - 47"</u>
Cross-street:	<u>CAVAL RO. / ADMINISTRATION DR. / SAGINAW Hwy.</u>
Receiving Waterbody:	<u>WET LANDS - BENJIMAN DR.</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input checked="" type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

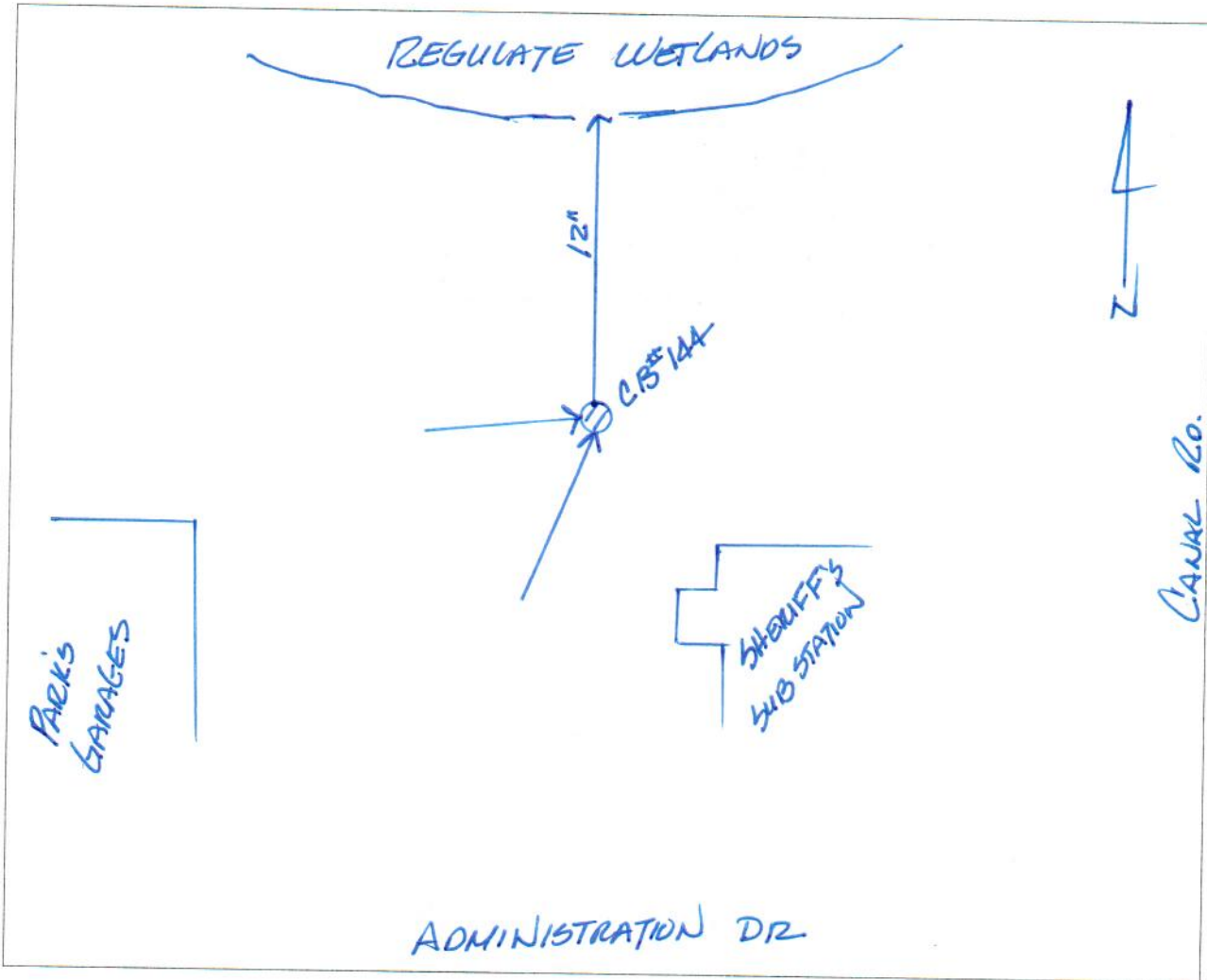
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION	
INV. = <u>839.32</u>	
Structure Material	
Structure Diameter	<u>12" ENO SECTION</u>
Pipe ID	
Pipe Material	
Pipe Diameter	<u>12"</u>
Pipe Rim-Invert	<u>839.32</u>



LOCATION SKETCH

Description/Comment: SW CORNER of CANAL RD. + ADMINISTRATION DR  
DISCHARGES INTO REGULATED WETLANDS, DRAINS INTO  
THE BENJIMAN DRAIN.



# DRAINAGE SYSTEM INVENTORY

**GENERAL**

System ID: \_\_\_\_\_ Discharge ID: 1B  
 Date: 9-14-2010 Time: 8am  
 Initial (1): WK Initial (2): \_\_\_\_\_  
 Picture #'s: \_\_\_\_\_

**STRUCTURE TYPE**

- Discharging Pipe
- Manhole
- Catch Basin
- Culvert Outlet
- Point in Open Channel
- Not Found
- Blind Tie or Tap
- Non-point Source (circle below)
  - \*Seepage
  - \*Overland flow

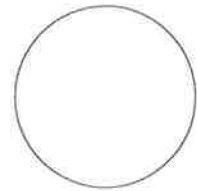
**OWNERSHIP**

- Delta Township
- Drain Commissioner
- Private
- Road Commission
- Other
- Unknown

**LOCATION (see back side for location sketch)**

Latitude/State Plane: \_\_\_\_\_  
 Longitude/State Plane: \_\_\_\_\_  
 Cross-street: SAGINAW HWY / CANAL RD.  
 Offset Description: BEHIND FIRE STATION  
 Receiving Waterbody: REGULATED WETLAND  
 Inventory Comments: CONC. PIPE SECTION COMING APART. HIRED CONTRACTOR TO REPAIR. REMOVED LAST PIPE SECTION, REPLACED WITH NEW N-12 PLASTIC (12").  
"SEE ATTACHED PHOTO"

CONDUIT INFORMATION						
Pipe ID						
Direction from MH	<u>N</u>					
Shape						
Diameter (in)	<u>12"</u>					
Width (in) (Open Channel)						
Depth (in)						
Measure Down (ft) (Manhole)						
Invert Elevation (ft) (Pipes)						
Conduit Material	<u>PLASTIC</u>					
Inlet/Outlet						

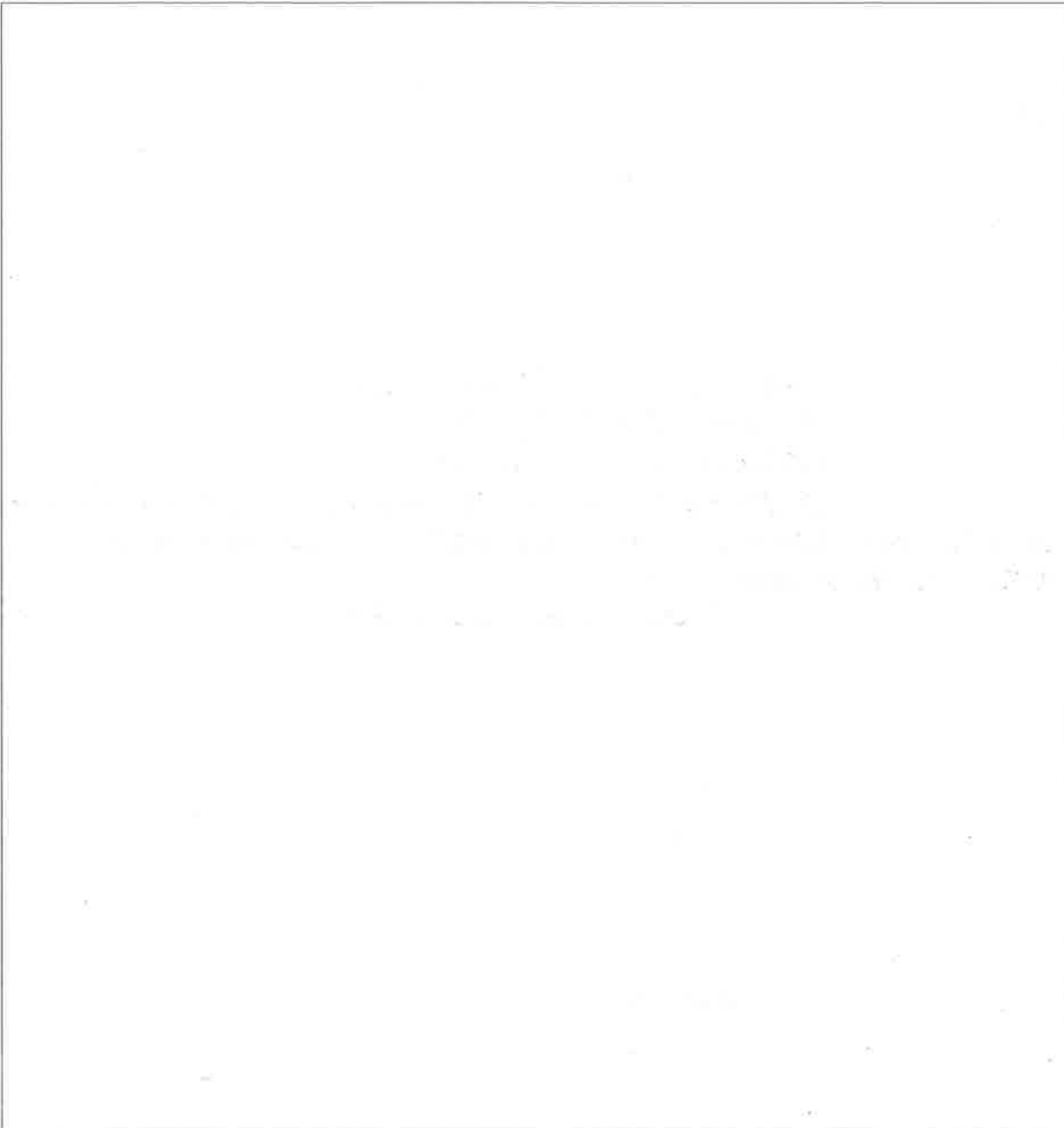


Canine hit:  Yes  No

## LOCATION SKETCH

### CHECKLIST

- Label street names
- Indicate north
- Locate manholes by dimensions from property lines, back of curb, or edge of pavement
- Sketch catch basins and connections (no measurements necessary)
- Indicate (if possible) distance to upstream and downstream manholes
- Flow direction
- Sample point
- Special access/traffic control notes
- Between mile markers \_\_\_\_ & \_\_\_\_ or \_\_\_\_ tenths past mile marker \_\_\_\_
- Velocity/depth measure location





## DRAINAGE SYSTEM INVENTORY

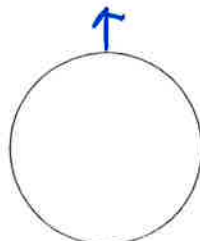
GENERAL			
Structure/Discharge ID:	CB# 20155		
Date	10/4/2018	Time	
Checked by	W. KULASA	Checked by	
Picture #'s			

LOCATION	
Address/Description:	7710 W. SAGINAW Hwy (FIRE STATION #1)
Latitude/State Plane:	130 437 56.70
Longitude/State Plane:	4530 24.22
Cross-street:	SAGINAW Hwy / ADMINISTRATION / CANAL RD.
Receiving Waterbody:	BENJIMAN DRAIN

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

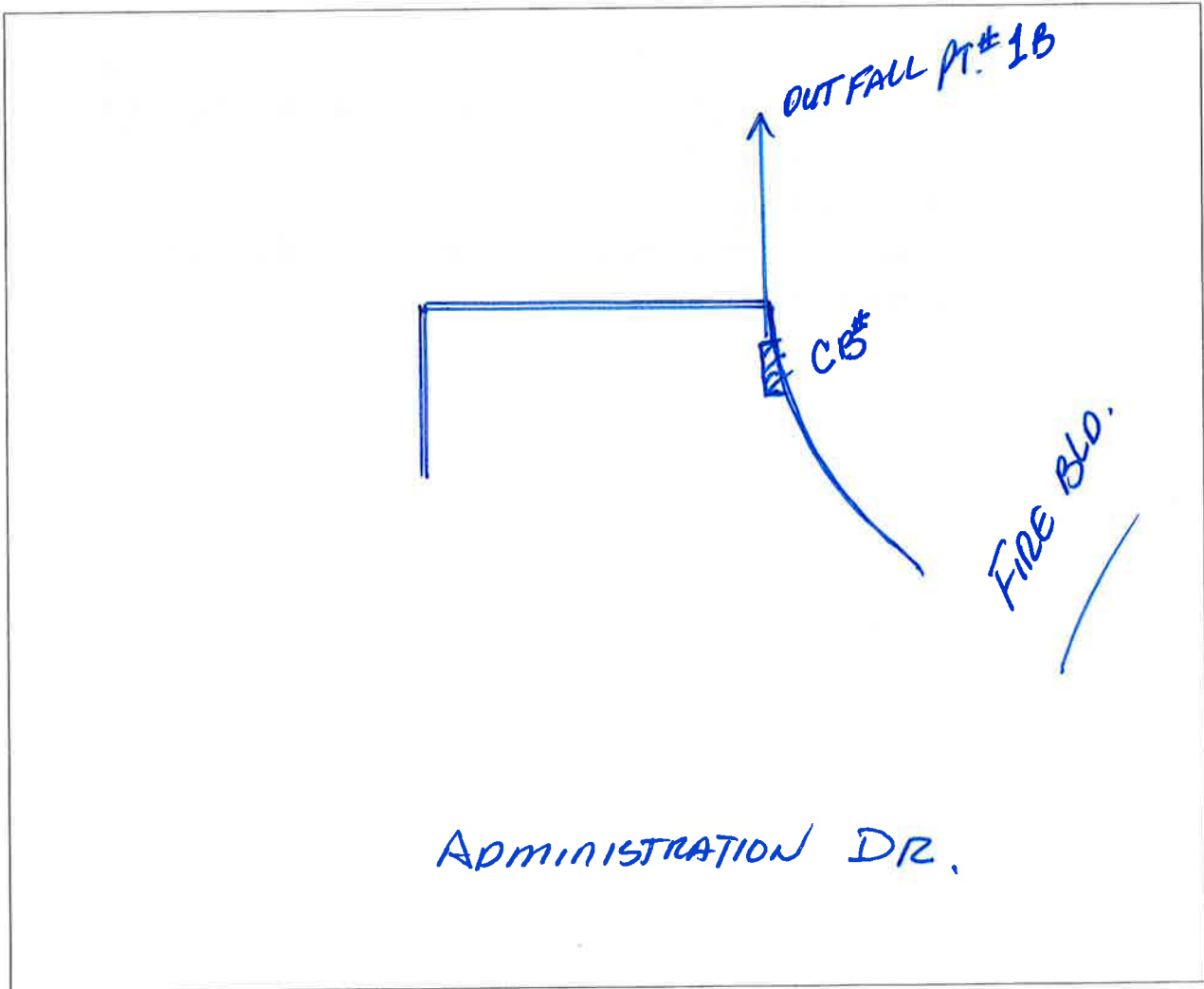
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: CATCH BASIN IN FIRE STATION PARKING





## DRAINAGE SYSTEM INVENTORY

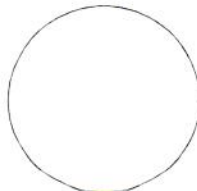
GENERAL	
Structure/Discharge ID:	<u>OUTFALL #1B</u>
Date	<u>4/17/2019 WED</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>811 N. CANAL</u> <u>7710 W. SAGINAW Hwy (FIRE STATION #1)</u>
Latitude/State Plane:	<u>N 42° - 44' - 35"</u>
Longitude/State Plane:	<u>W 84° - 39' - 46"</u>
Cross-street:	<u>SAGINAW Hwy / ADMINISTRATION / CANAL</u>
Receiving Waterbody:	<u>WETLANDS - BENJIMAN DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input checked="" type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

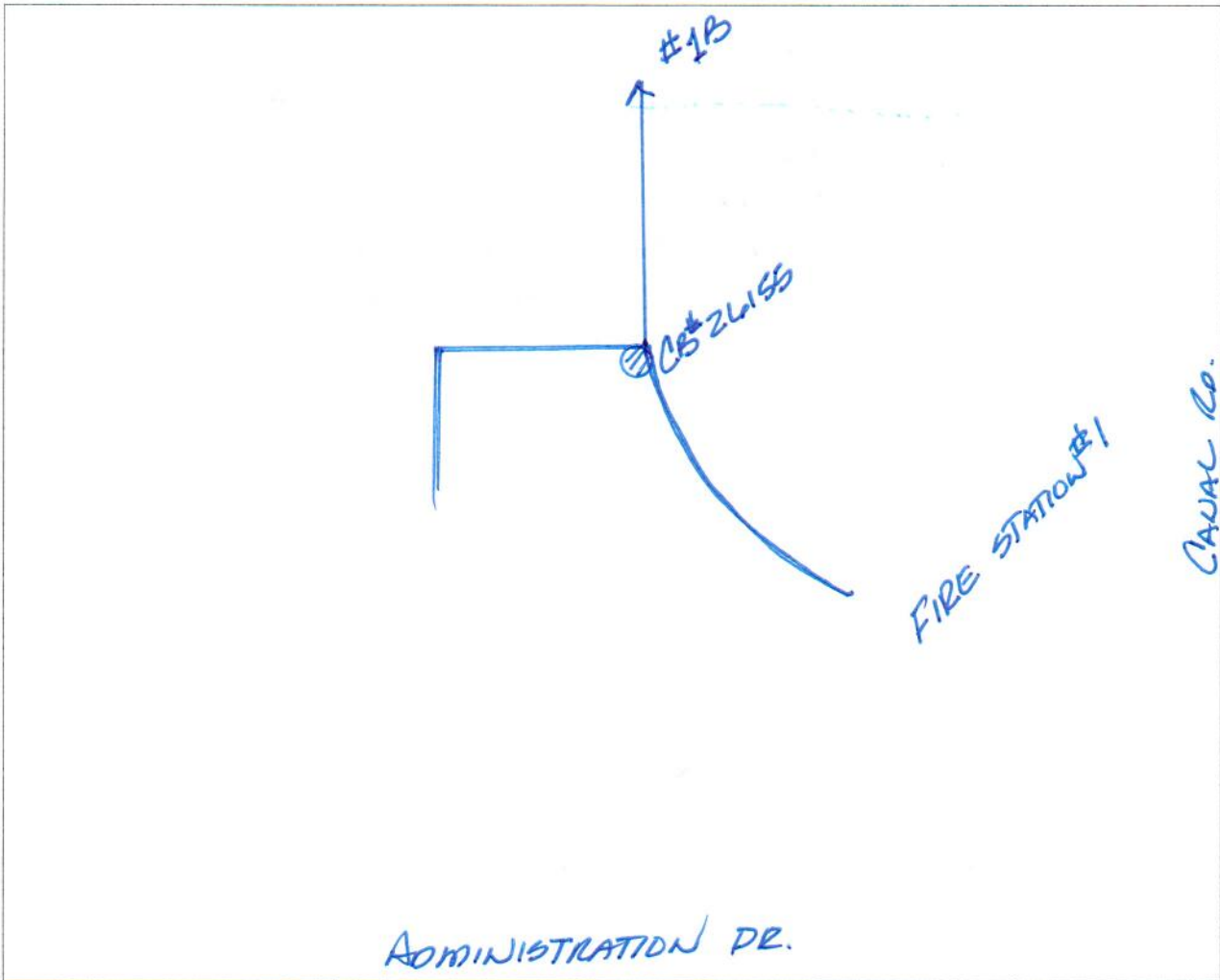
STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						





LOCATION SKETCH

Description/Comment: COMES FROM CB# 26155 IN FIRE STATION  
PARKING LOT





### DRAINAGE SYSTEM INVENTORY

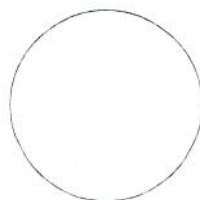
<b>GENERAL DISCHARGE #2A</b>			
Structure/Discharge ID:	#2A DISCHARGE PT. END OF PIPE (North)		
Date	MON 9-17-2018	Time	11:00AM
Checked by	W KULASA	Checked by	
Picture #'s	YES		

<b>LOCATION</b>	
Address/Description:	5130 DAVENPORT DR DELTA LIBRARY
Latitude/State Plane:	13,055,203.464
Longitude/State Plane:	454,894.219
Cross-street:	ELMWOOD DR / MALL DR
Receiving Waterbody:	BOLLMAN DAMON DRAIN

<b>STRUCTURE TYPE</b>	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input checked="" type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

<b>OWNERSHIP</b>	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

<b>STRUCTURE/PIPE INFORMATION</b>						
Structure Material	END SECTION					
Structure Diameter						
Pipe ID	2A					
Pipe Material	RCP					
Pipe Diameter	15"					
Pipe Rim-Invert						



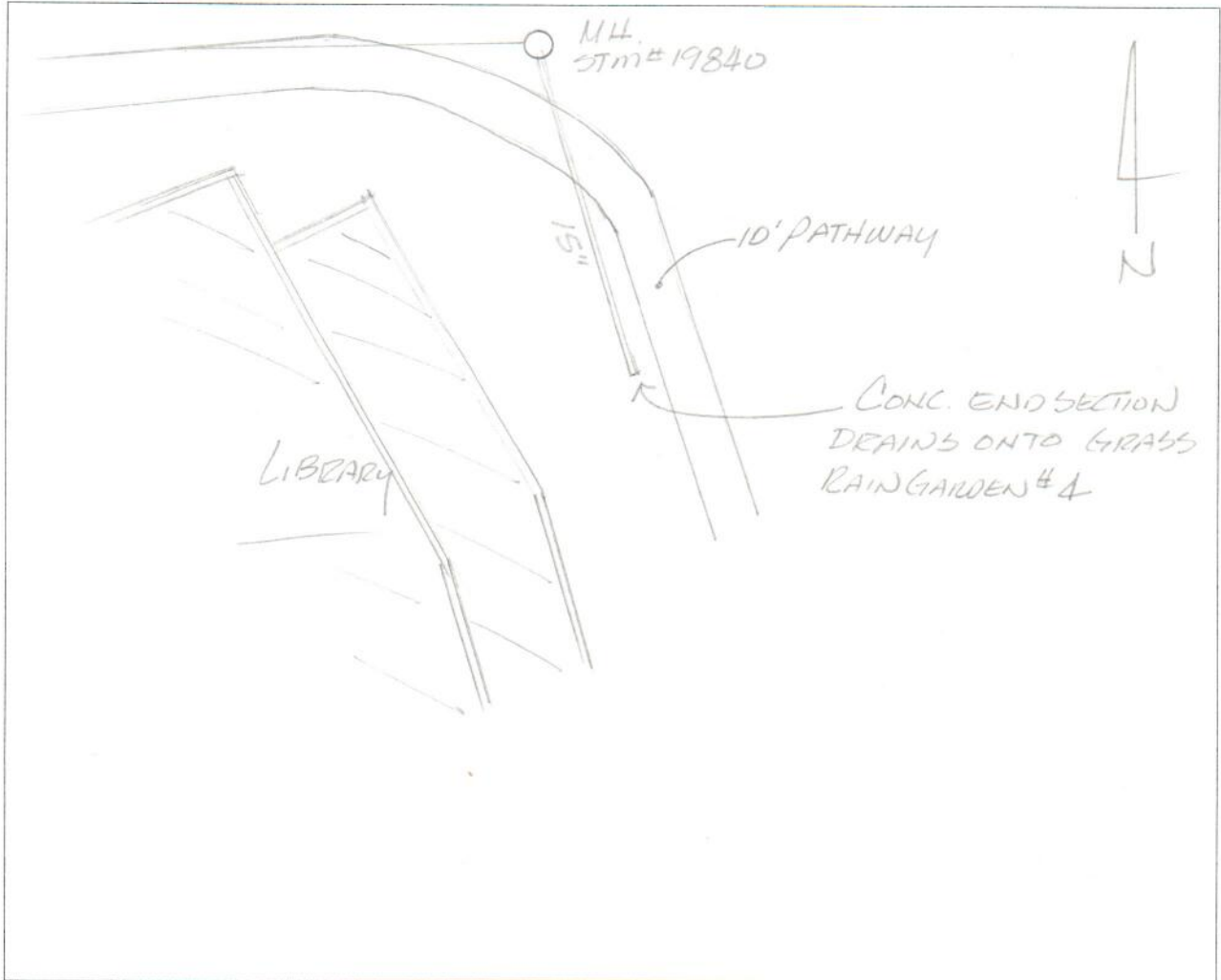
LOCATION SKETCH

Description/Comment: DELTA TWP'S LIBRARY DISCHARGE #2A

5130 DAVENPORT DR

NORTH END OF BLD. NEXT TO PATHWAY

CONC. END SECTION DRAINS ONTO THE GROUND.





## DRAINAGE SYSTEM INVENTORY

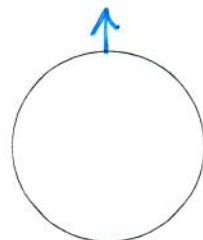
GENERAL	
DISCHARGE # 2A	
Structure/Discharge ID:	CB* 29358
Date	9/25/2018 TUE
Time	
Checked by	W. KULASA
Checked by	
Picture #'s	

LOCATION	
Address/Description:	5130 DAVENPORT DR / DELTA LIBRARY
Latitude/State Plane:	13,054,997.385
Longitude/State Plane:	454,910.318
Cross-street:	ELMWOOD DR / MALL DR
Receiving Waterbody:	BULLMAN DAMION DRAIN

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material	ROP					
Structure Diameter	4'					
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						

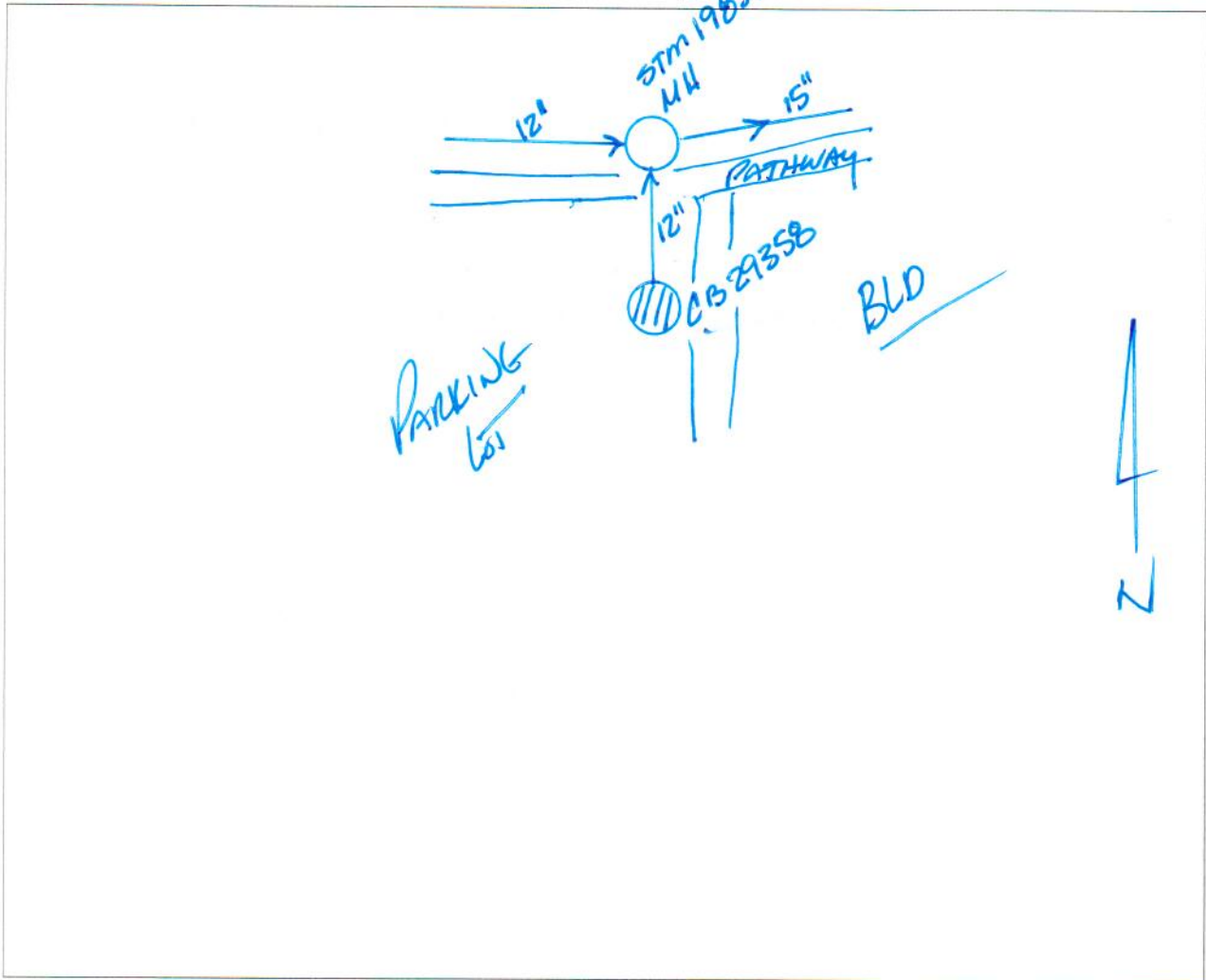


LOCATION SKETCH

Description/Comment:

CB# 29358

DISCHARGE# 2A



## DRAINAGE SYSTEM INVENTORY

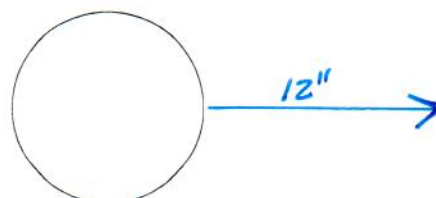
GENERAL <span style="float: right;">DISCHARGE # 2A</span>	
Structure/Discharge ID: <u>CB 2935A</u>	
Date: <u>9/25/2018 TUE.</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description: <u>5130 DAVENPORT DR / DELTA LIBRARY</u>	
Latitude/State Plane: <u>13,054,870.195</u>	
Longitude/State Plane: <u>454,855.579</u>	
Cross-street: <u>ELMWOOD DR / MALL DR</u>	
Receiving Waterbody: <u>BOLLMAN CANYON CREEK</u>	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material	<u>RCP</u>					
Structure Diameter	<u>4'</u>					
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



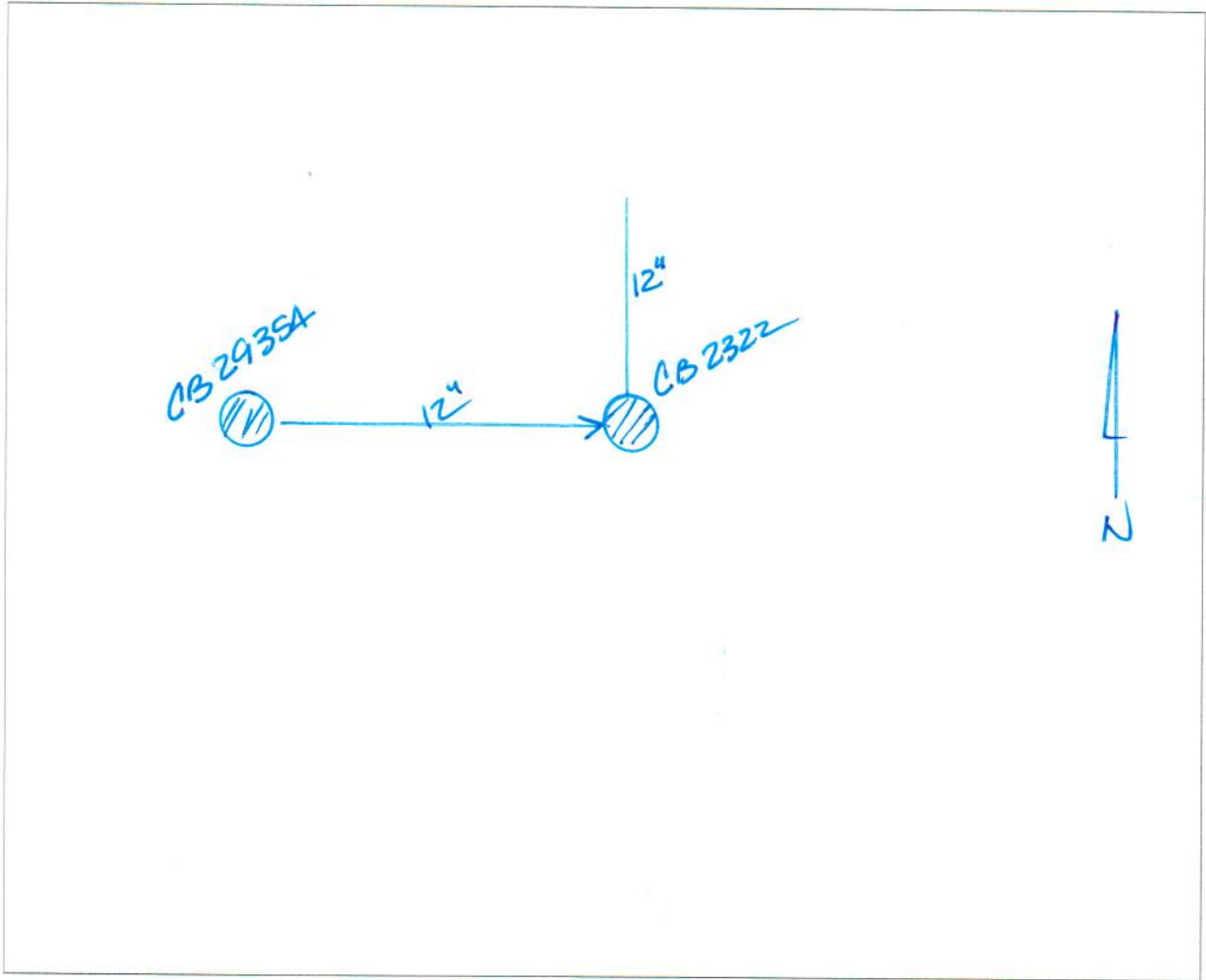
LOCATION SKETCH

Description/Comment: CB 2935A DISCHARGE # 2A

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## DRAINAGE SYSTEM INVENTORY

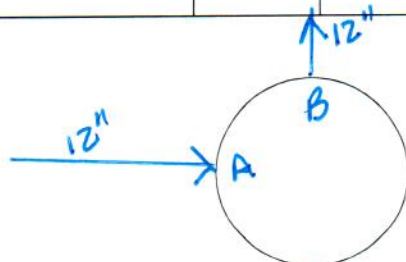
GENERAL <span style="float: right;">DISCHARGE # 2A</span>	
Structure/Discharge ID: <u>CB 2322</u>	
Date <u>9/25/2018 TUE</u>	Time _____
Checked by <u>W. KULASA</u>	Checked by _____
Picture #'s _____	

LOCATION	
Address/Description: <u>5130 DAVENPORT DR / DELTA LIBRARY</u>	
Latitude/State Plane: <u>13,054,891.125</u>	
Longitude/State Plane: <u>454,857.189</u>	
Cross-street: <u>ELMWOOD DR / MALL DR</u>	
Receiving Waterbody: <u>BOLLMAN DAMON DRAIN</u>	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION					
Structure Material	<u>RCP</u>				
Structure Diameter	<u>4'</u>				
Pipe ID		<u>A</u>	<u>B</u>		
Pipe Material		<u>RCP</u>	<u>RCP</u>		
Pipe Diameter		<u>12"</u>	<u>12"</u>		
Pipe Rim-Invert					



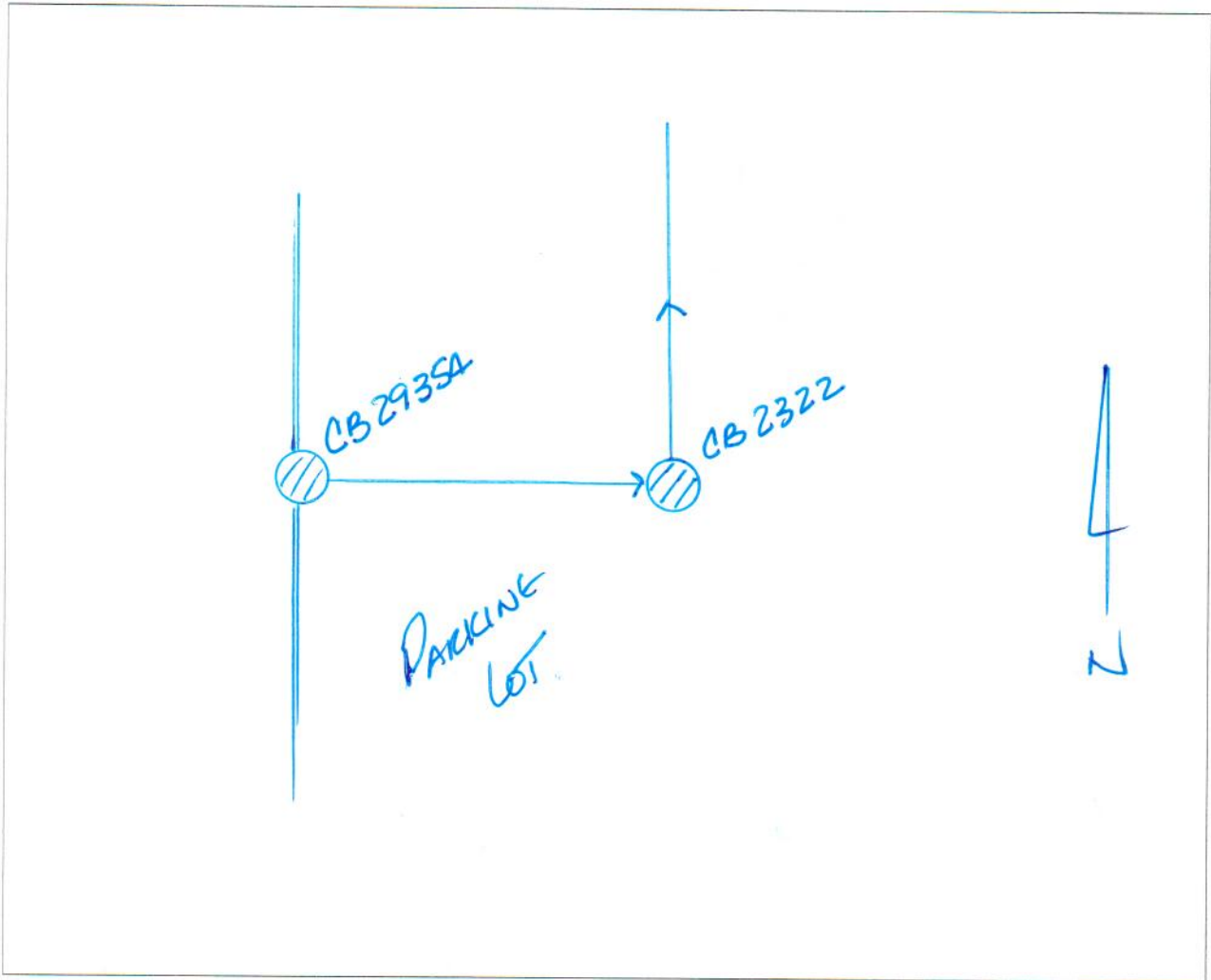


LOCATION SKETCH

Description/Comment:

CB 2322

DISCHARGE #2A





## DRAINAGE SYSTEM INVENTORY

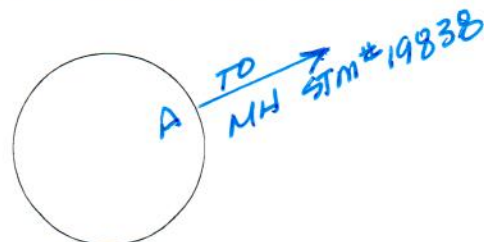
GENERAL	
DISCHARGE # 2A	
Structure/Discharge ID:	CB # 29357
Date	9/25/2018 TUE
Time	
Checked by	W. KULASA
Checked by	
Picture #'s	

LOCATION	
Address/Description:	5130 DAVENPORT DR / DELTA LIBRARY
Latitude/State Plane:	13,054,873.415
Longitude/State Plane:	454,924.808
Cross-street:	ELMWOOD DR / MALL DR
Receiving Waterbody:	BOLLMAN DAMON DRAIN

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

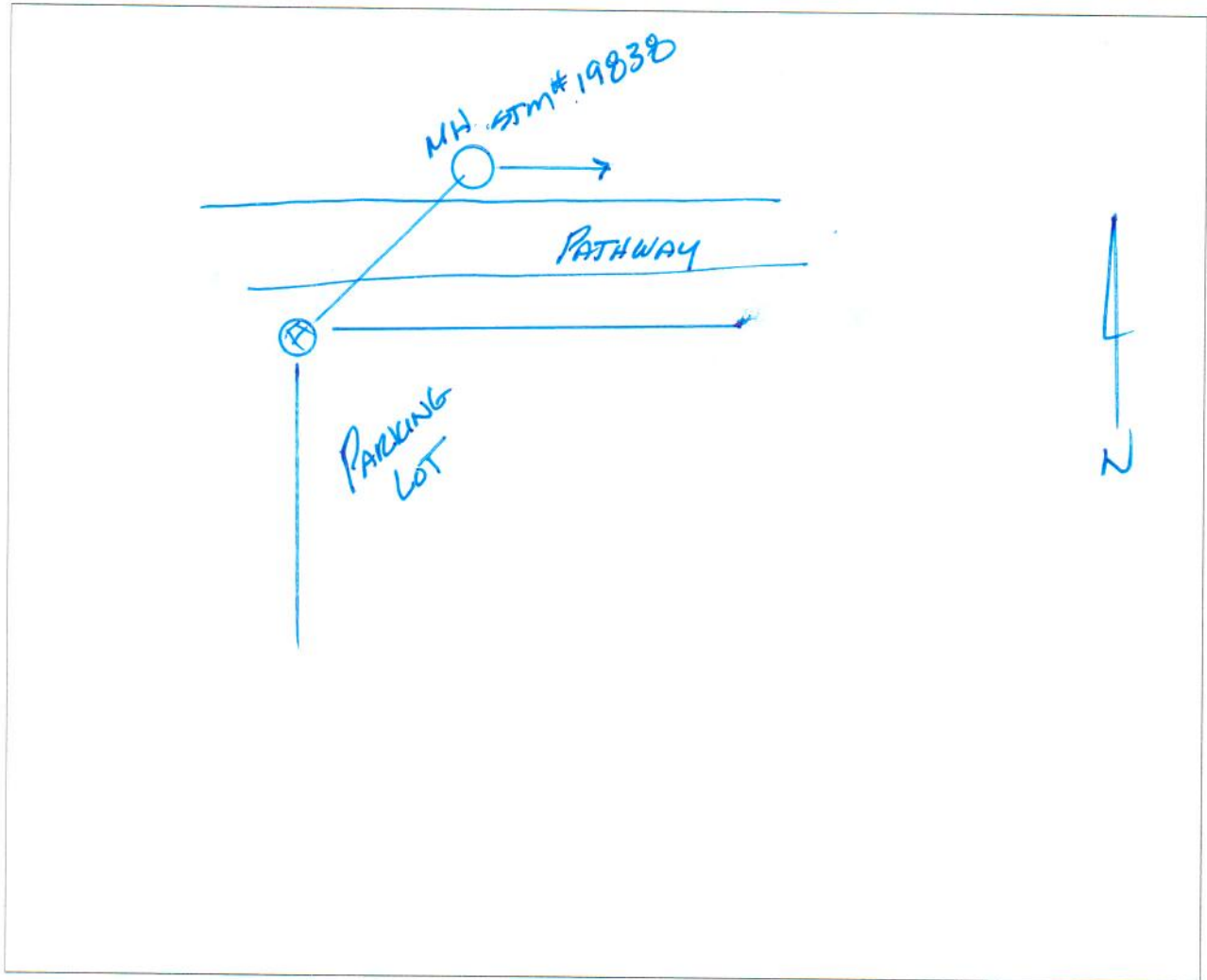
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material	RCP					
Structure Diameter	4'					
Pipe ID		A				
Pipe Material		RCP				
Pipe Diameter		12"				
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: CB#29357 DISCHARGE #2A  
THIS CB WAS RELOCATE AT THE TIME  
THE PATHWAY WAS CONSTRUCTED.





## DRAINAGE SYSTEM INVENTORY

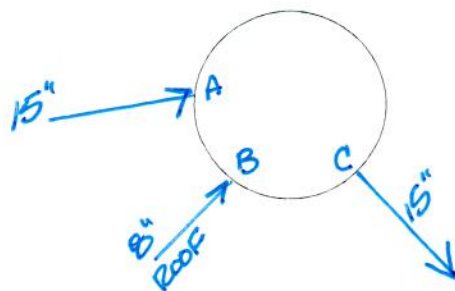
GENERAL	
Structure/Discharge ID:	<u>STM #19840</u>
Date	<u>9/25/2018 TUE.</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>5130 OAVENPORT DR. / DELTA LIBRARY</u>
Latitude/State Plane:	<u>13,055,139.064</u>
Longitude/State Plane:	<u>454,976.328</u>
Cross-street:	<u>ELMWOOD DR / HALL DR</u>
Receiving Waterbody:	<u>Boilman Ditch DRAIN</u>

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

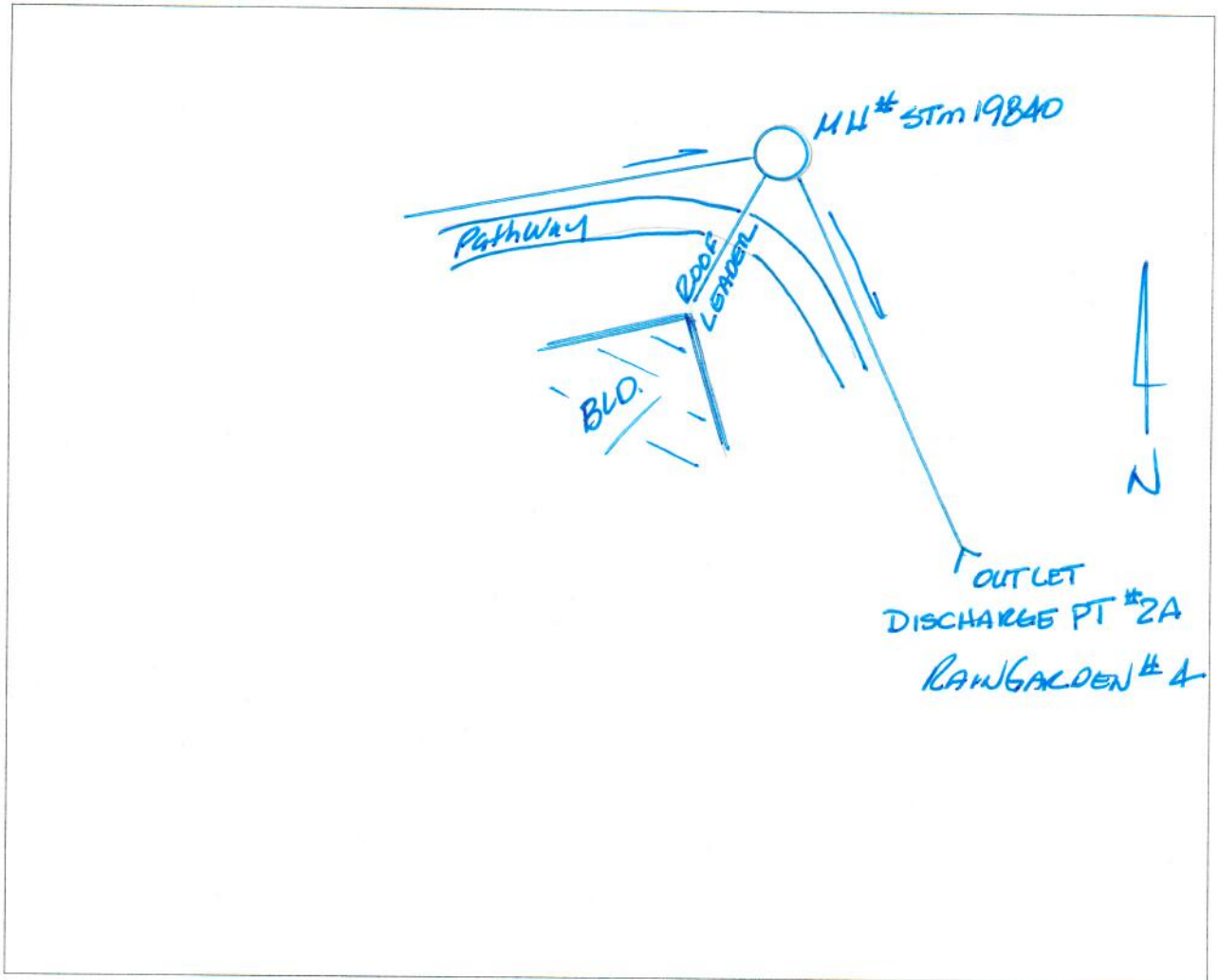
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION					
Structure Material	<u>CONC</u>	<u>A</u>	<u>B</u>	<u>C</u>	
Structure Diameter	<u>4'</u>	<u>15" RCP</u>	<u>8" RCP</u>	<u>15" RCP</u>	
Pipe ID		<u>15"</u>	<u>8"</u>	<u>15"</u>	
Pipe Material		<u>RCP</u>	<u>RCP</u>	<u>RCP</u>	
Pipe Diameter					
Pipe Rim-Invert					



LOCATION SKETCH

Description/Comment: DELTA LIBRARY <sup>STM</sup> ~~63~~ 19840 DISCHARGE # 2A  
STORM MH. FOR PARKING LOT + ROOF DRAINAGE





## DRAINAGE SYSTEM INVENTORY

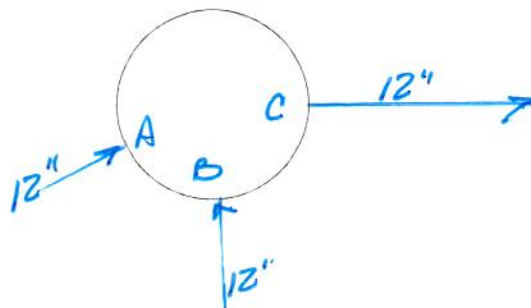
GENERAL <span style="float: right;">DISCHARGE #2A</span>	
Structure/Discharge ID:	<u>STM 19838</u>
Date	<u>9/25/2018 TUE</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>5130 DAVENPORT DR / DELTA LIBRARY</u>
Latitude/State Plane:	<u>13,054,895.955</u>
Longitude/State Plane:	<u>454,942.518</u>
Cross-street:	<u>ELMWOOD DR / MALL DR</u>
Receiving Waterbody:	<u>BELLMAN DAMON DRAIN</u>

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

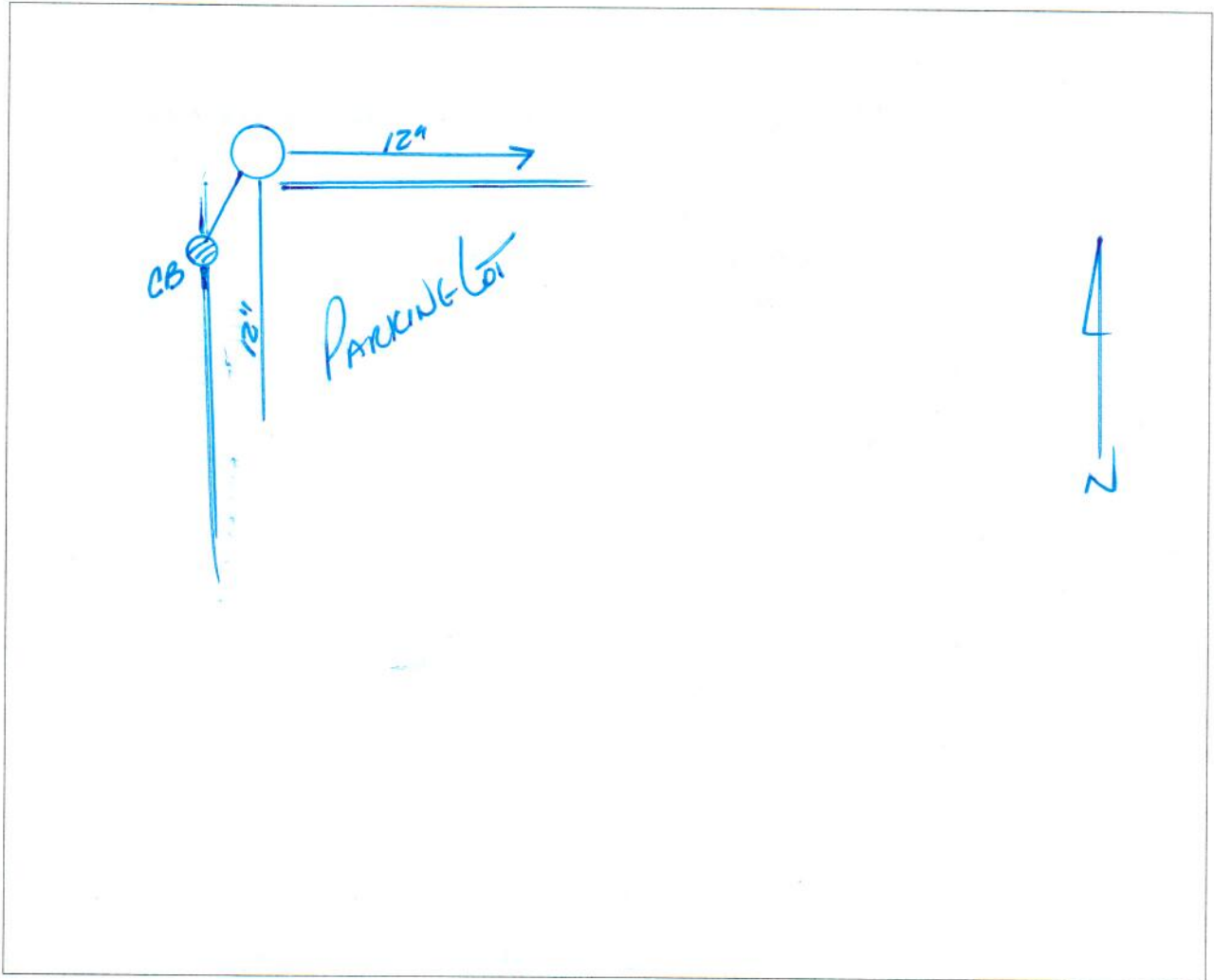
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION					
Structure Material	<u>CONC</u>				
Structure Diameter	<u>4'</u>				
Pipe ID		<u>A</u>	<u>B</u>	<u>C</u>	
Pipe Material		<u>RCP</u>	<u>RCP</u>	<u>RCP</u>	
Pipe Diameter		<u>12"</u>	<u>12"</u>	<u>12"</u>	
Pipe Rim-Invert					



LOCATION SKETCH

Description/Comment: MH. STM #19838 DISCHARGE #2A





## DRAINAGE SYSTEM INVENTORY

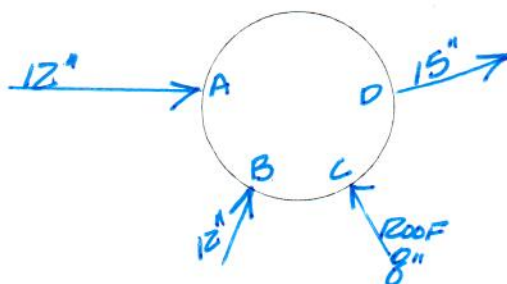
GENERAL	
DISCHARGE # 2A	
Structure/Discharge ID:	STM # 19839 MH
Date	9/25/2018 TUE. <span style="float: right;">Time _____</span>
Checked by	W. KULASA <span style="float: right;">Checked by _____</span>
Picture #'s	_____

LOCATION	
Address/Description:	5130 DAVENPORT DR / DELTA LIBRARY
Latitude/State Plane:	13.055, 011.875
Longitude/State Plane:	454, 942.518
Cross-street:	ELMWOOD DR / MALL DR
Receiving Waterbody:	BOLLMAN DAMON DRAIN

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

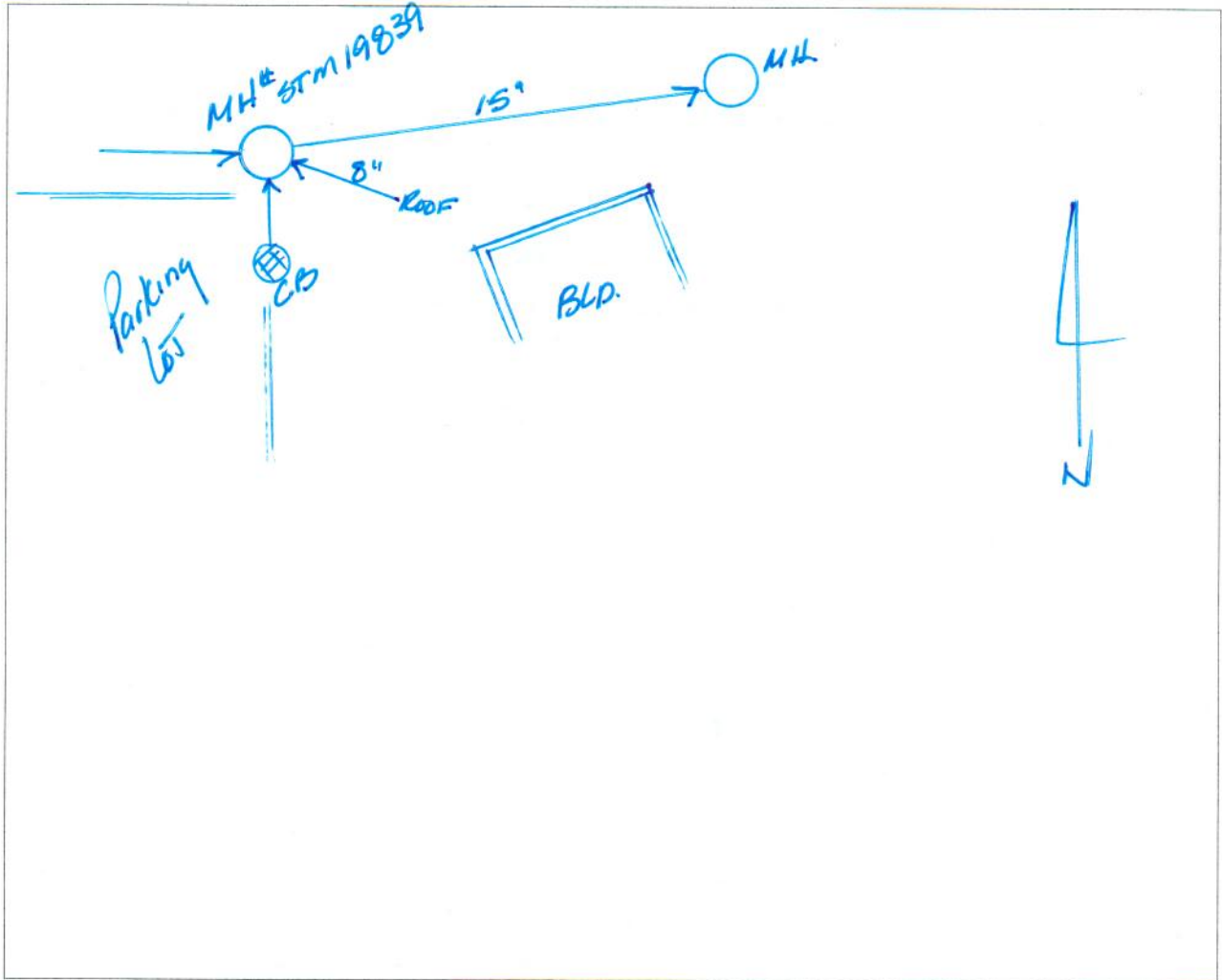
STRUCTURE/PIPE INFORMATION					
Structure Material	CONC				
Structure Diameter	4'				
Pipe ID	A	B	C	D	
Pipe Material	RCP	RCP	RCP	RCP	
Pipe Diameter	12"	12"	8"	15"	
Pipe Rim-Invert					





LOCATION SKETCH

Description/Comment: MH. STM#19839 DISCHARGE#2A





## DRAINAGE SYSTEM INVENTORY

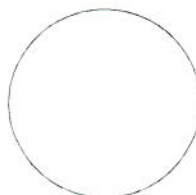
GENERAL	
Structure/Discharge ID:	#2B DISCHARGE PT. END OF PIPE (SOUTH)
Date	MON. 9-17-2018
Time	11:30 AM
Checked by	W KULASA
Picture #'s	YES

LOCATION	
Address/Description:	5130 DAVENPORT DR., DELTA LIBRARY
Latitude/State Plane:	13,055,304.894
Longitude/State Plane:	454,560.954
Cross-street:	ELMWOOD DR / MALL DR.
Receiving Waterbody:	BOLLMAN DAMON DRAIN

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input checked="" type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material	END SECTION					
Structure Diameter						
Pipe ID	2B					
Pipe Material	RCP					
Pipe Diameter	15"					
Pipe Rim-Invert						



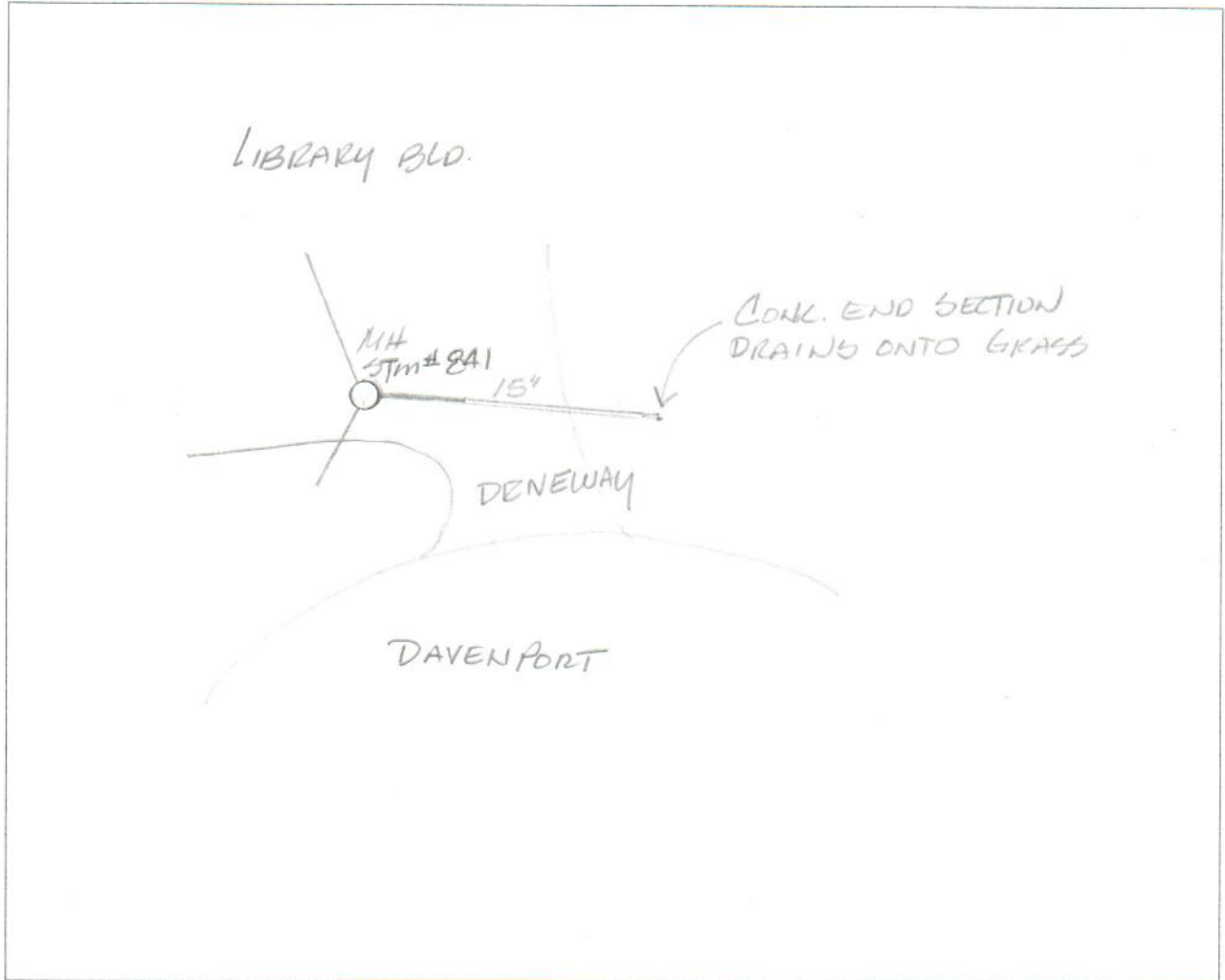
LOCATION SKETCH

Description/Comment: DELTA TWP LIBRARY DISCHARGE # 2B

5130 DAVENPORT DR.

SOUTH END OF BLD. PAST THE CUL-DE-SAC

CONC. END SECTION, DRAINS ONTO THE GROUND



## DRAINAGE SYSTEM INVENTORY

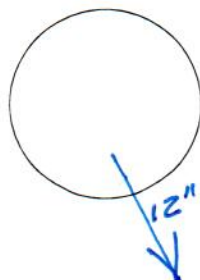
GENERAL <span style="float: right;">DISCHARGE # 2 B</span>	
Structure/Discharge ID:	<u>CB 56568</u>
Date	<u>9/25/2018 TUE</u> Time _____
Checked by	<u>W. Ku/95a</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>5815130 Davenport Dr / DELTA LIBRARY</u>
Latitude/State Plane:	<u>13,055,180.924</u>
Longitude/State Plane:	<u>454,602.809</u>
Cross-street:	<u>ELMWOOD DR / MALL DR</u>
Receiving Waterbody:	<u>Bollman DAMON DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

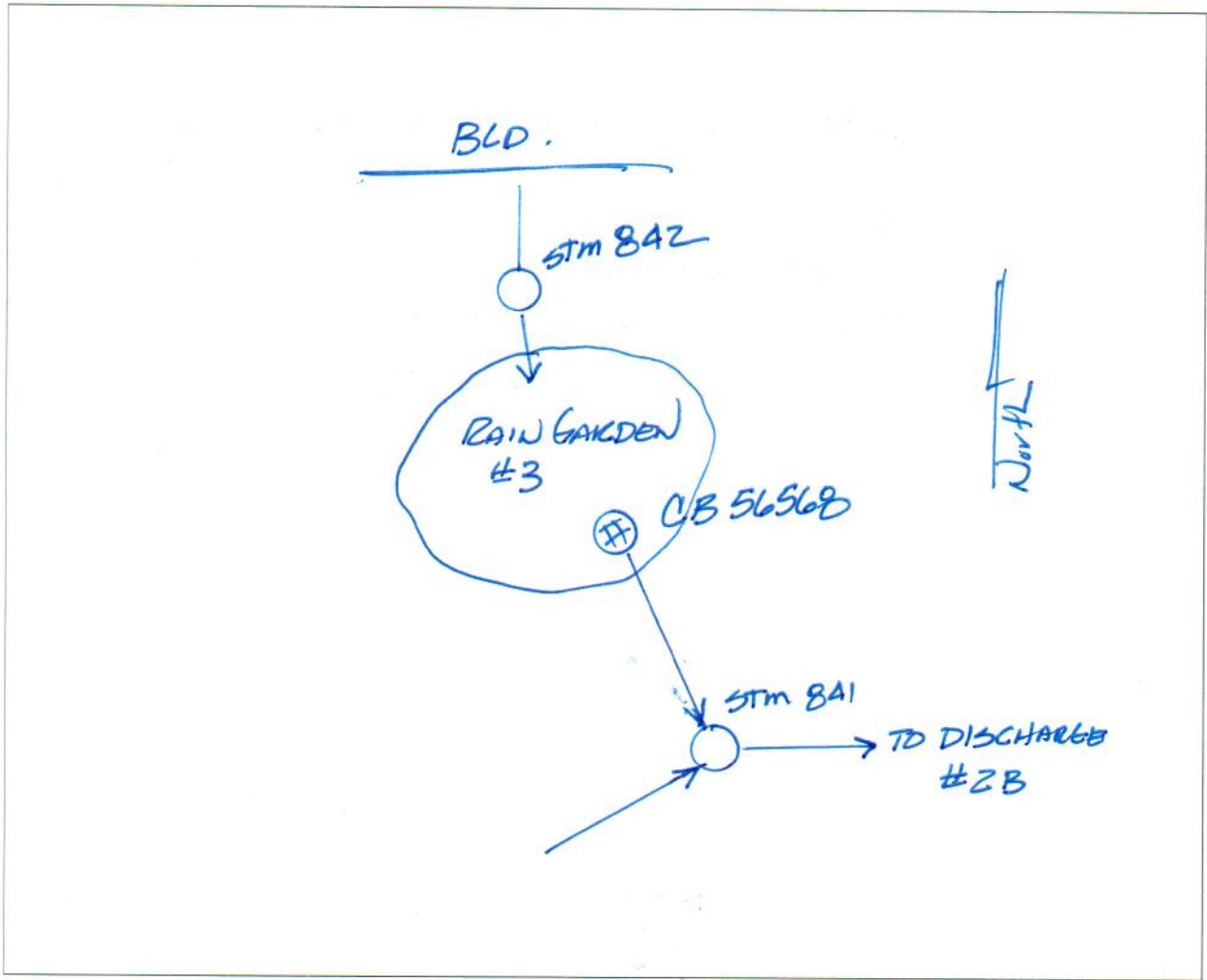
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material	<u>CONC</u>					
Structure Diameter	<u>4'</u>					
Pipe ID	<del>12"</del>					
Pipe Material	<u>RCP</u>					
Pipe Diameter	<u>12"</u>					
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: CB# 56568 DISCHARGE# 2B





## DRAINAGE SYSTEM INVENTORY

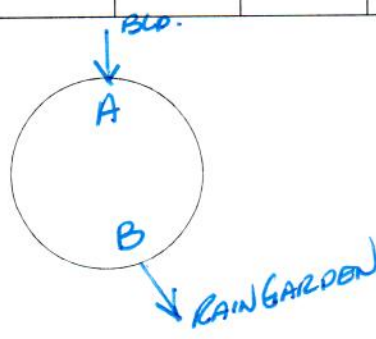
GENERAL DISCHARGE# ZB	
Structure/Discharge ID: <u>STM 842</u>	_____
Date: <u>9/25/2018 TUE.</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	_____

LOCATION	
Address/Description: <u>5130 DAVENPORT DR / DELTA LIBRARY</u>	_____
Latitude/State Plane: <u>13,055,139.064</u>	_____
Longitude/State Plane: <u>454,623.739</u>	_____
Cross-street: <u>ELMWOOD DR / MALL DR</u>	_____
Receiving Waterbody: <u>BOLLMAN DAMON DRAIN</u>	_____

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

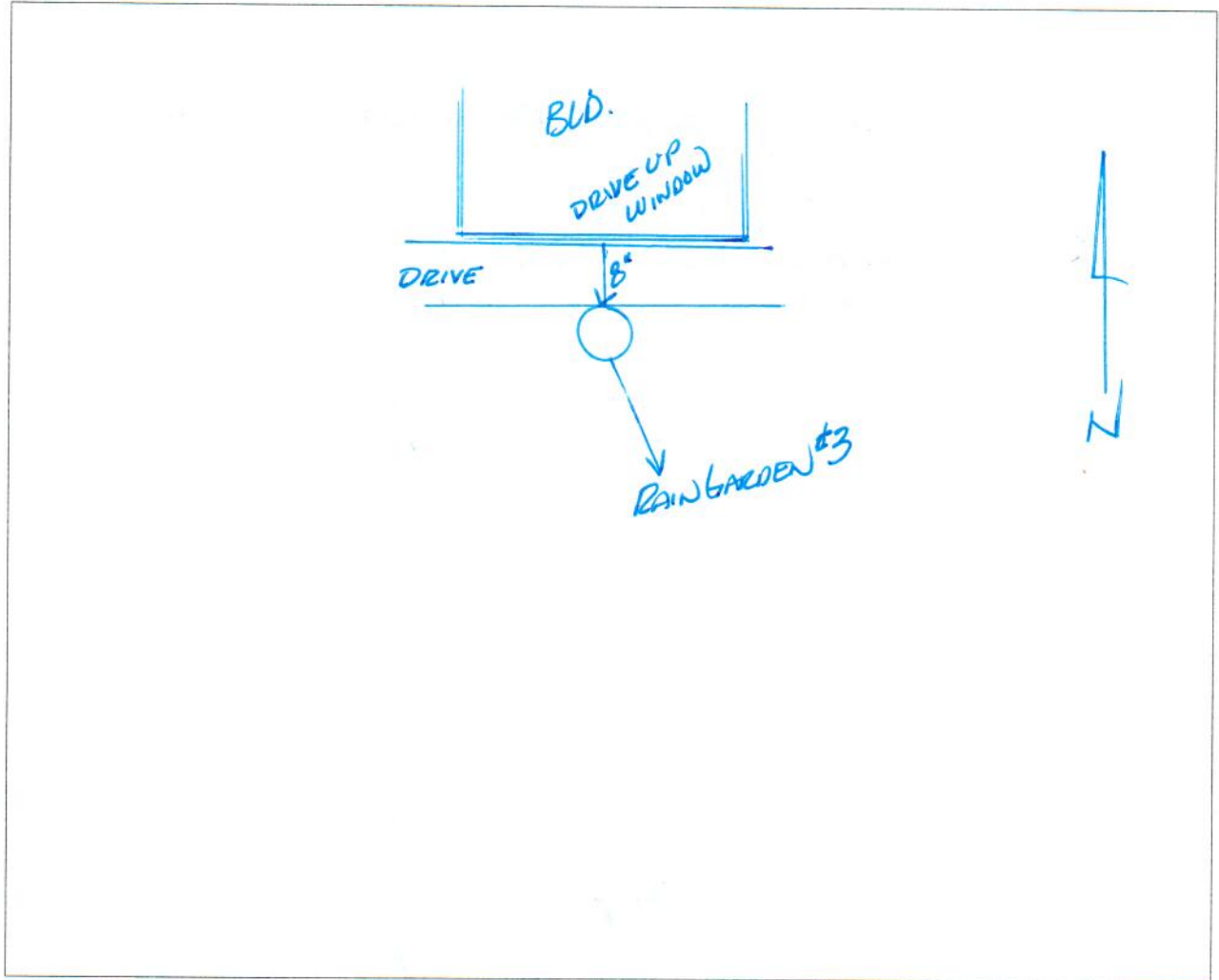
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION					
Structure Material	<u>CONC</u>				
Structure Diameter	<u>4"</u>				
Pipe ID		<u>A</u>	<u>B</u>		
Pipe Material		<u>DIP</u>	<u>RCP</u>		
Pipe Diameter		<u>8"</u>	<u>12"</u>		
Pipe Rim-Invert					



LOCATION SKETCH

Description/Comment: STM 84Z ~~NO~~ DISCHARGE # 2B





## DRAINAGE SYSTEM INVENTORY

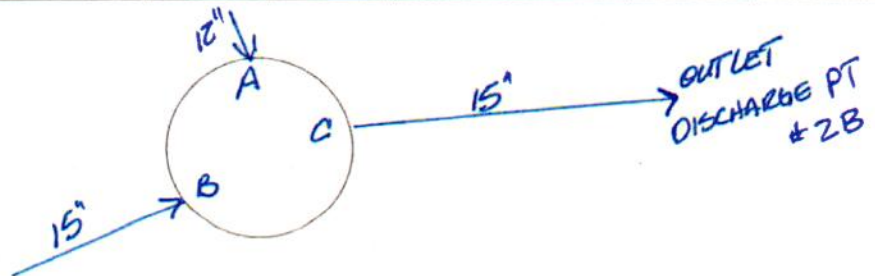
GENERAL <span style="float: right;">DISCHARGE # 2B</span>			
Structure/Discharge ID: <u>STM 841</u>			
Date	<u>9/25/2018 TUE</u>	Time	_____
Checked by	<u>W. KULASA</u>	Checked by	_____
Picture #'s _____			

LOCATION	
Address/Description:	<u>5130 DAVENPORT DR / DELTA LIBRARY</u>
Latitude/State Plane:	<u>13.055, 224.394</u>
Longitude/State Plane:	<u>454,538.410</u>
Cross-street:	<u>ELMWOOD DR / MALL DR</u>
Receiving Waterbody:	<u>BOLLMAN DAMON DRAIN</u>

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

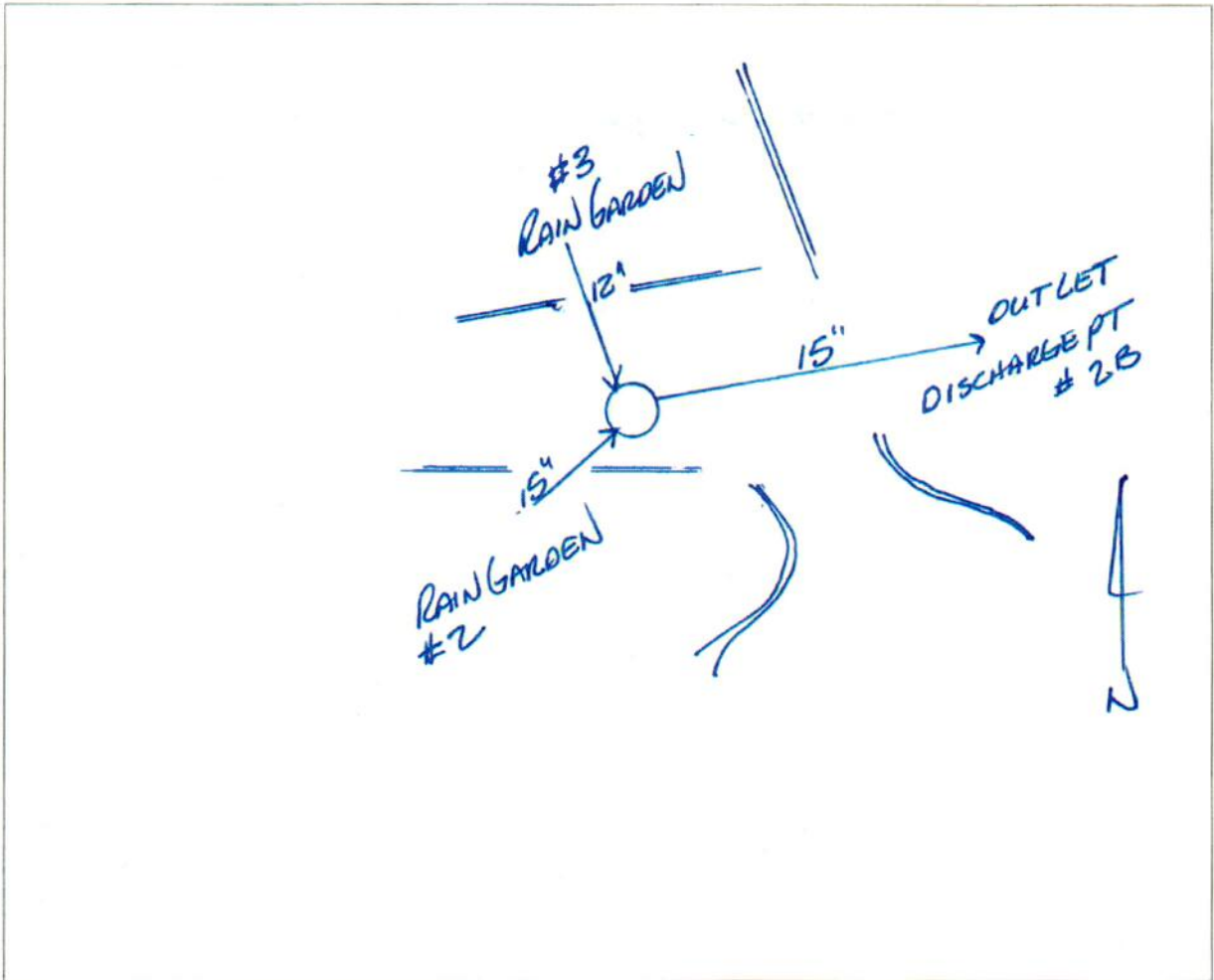
STRUCTURE/PIPE INFORMATION					
Structure Material	<u>CONC</u>				
Structure Diameter	<u>4'</u>				
Pipe ID		<u>A</u>	<u>B</u>	<u>C</u>	
Pipe Material	<u>RCP</u>	<u>RCP</u>	<u>RCP</u>	<u>RCP</u>	
Pipe Diameter		<u>12"</u>	<u>15"</u>	<u>15"</u>	
Pipe Rim-Invert					





LOCATION SKETCH

Description/Comment: STM #841 DISCHARGE # 2B





## DRAINAGE SYSTEM INVENTORY

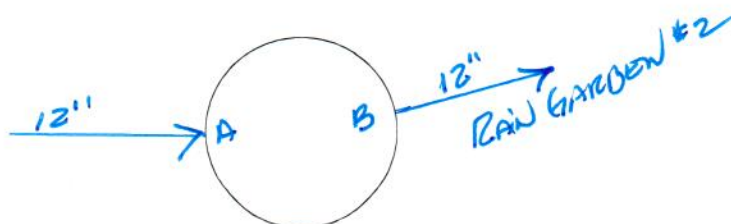
GENERAL	
DISCHARGE #2B	
Structure/Discharge ID:	CB# 2327
Date	9/25/2018 TUE
Time	
Checked by	W. KULASA
Checked by	
Picture #'s	

LOCATION	
Address/Description:	5130 DAVENPORT DR / DELTA LIBRARY
Latitude/State Plane:	13,055,082.714
Longitude/State Plane:	454,470.790
Cross-street:	ELMWOOD DR / MALL DR
Receiving Waterbody:	BOLLMAN DAMON DRAIN

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

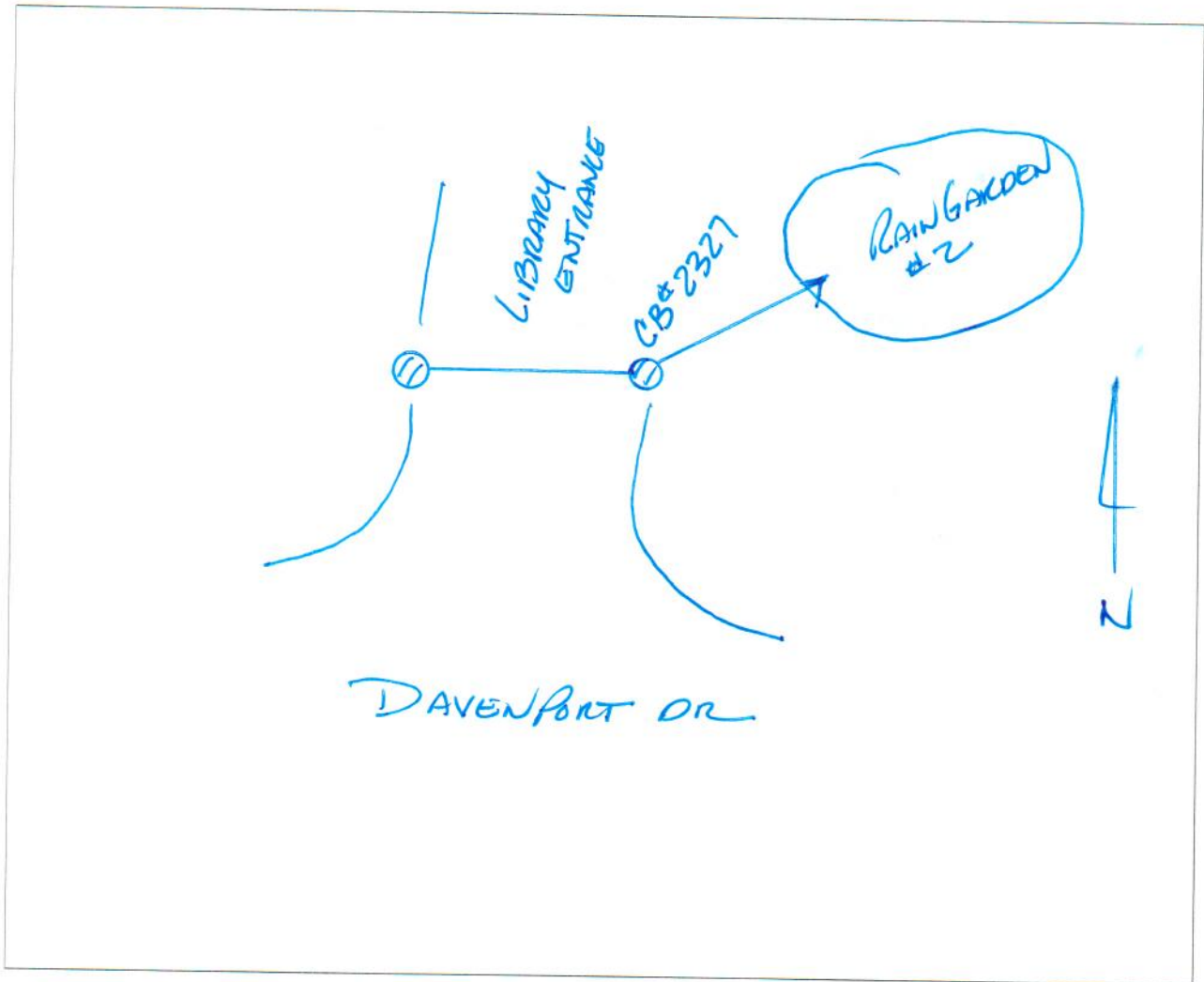
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION					
Structure Material	RCP				
Structure Diameter	4'				
Pipe ID		A	B		
Pipe Material		RCP	RCP		
Pipe Diameter		12"	12"		
Pipe Rim-Invert					



LOCATION SKETCH

CB#2327 DISCHARGE#2B  
Description/Comment: CATCH BASIN ON EAST SIDE OF THE  
ENTRANCE. DRAINS INTO THE RAIN GARDEN #2



## DRAINAGE SYSTEM INVENTORY

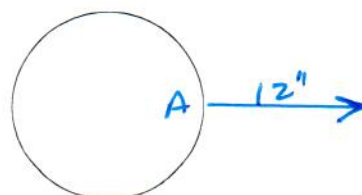
GENERAL <span style="float: right;">DISCHARGE# 2B</span>	
Structure/Discharge ID: <u>CB# 232L</u>	_____
Date <u>9/25/2018 TUE</u>	Time _____
Checked by <u>W. KULASA</u>	Checked by _____
Picture #'s _____	_____

LOCATION	
Address/Description: <u>5130 DAVENPORT DR / DELTA LIBRARY</u>	_____
Latitude/State Plane: <u>13,055,055.344</u>	_____
Longitude/State Plane: <u>454,465.960</u>	_____
Cross-street: <u>ELMWOOD DR / MALL DR</u>	_____
Receiving Waterbody: <u>BOLLMAN DAMON DRAIN</u>	_____

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material	<u>RCP</u>					
Structure Diameter	<u>4'</u>					
Pipe ID		<u>A</u>				
Pipe Material		<u>RCP</u>				
Pipe Diameter		<u>12"</u>				
Pipe Rim-Invert						

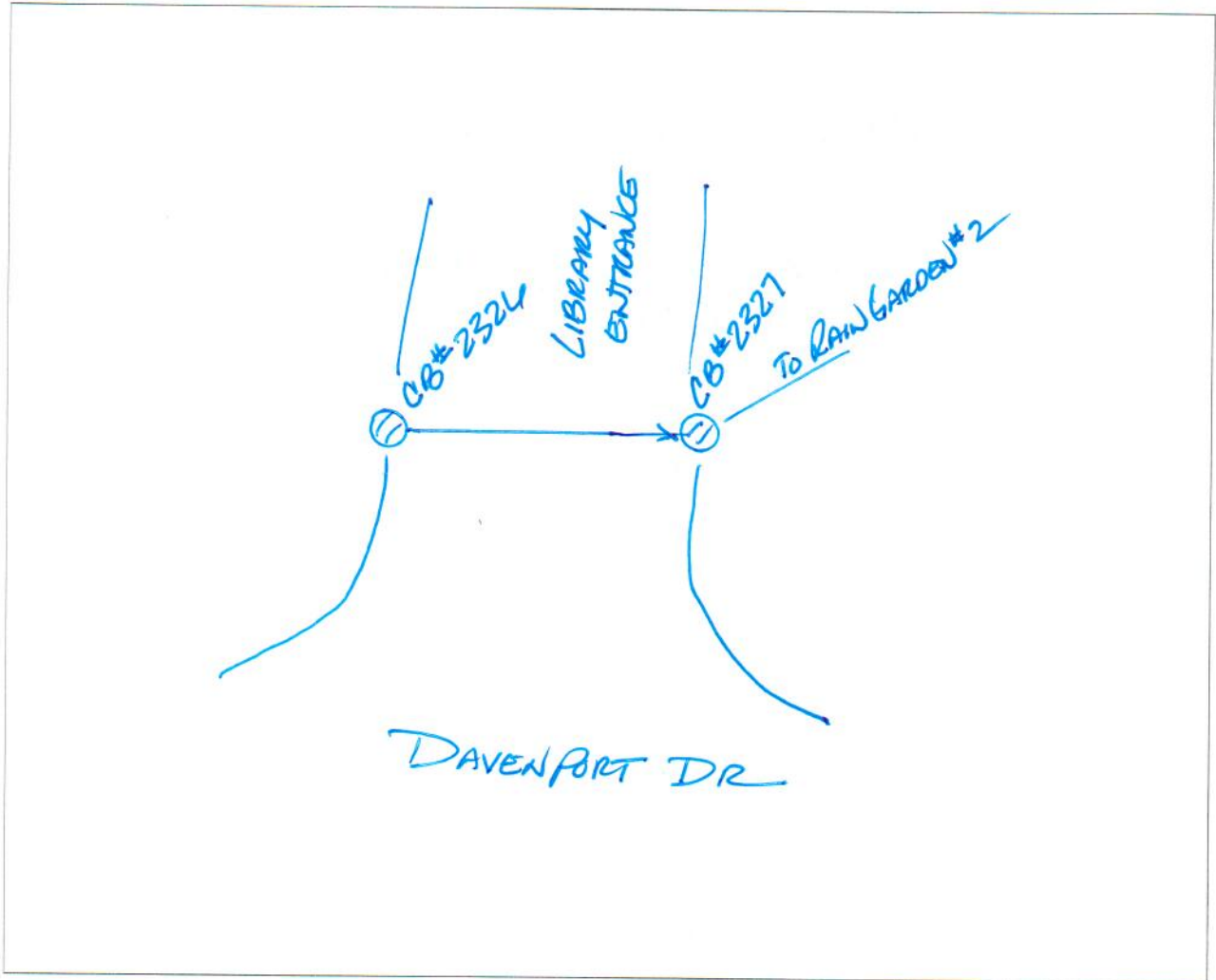


LOCATION SKETCH

CB# 2326 DISCHARGE # 2B

Description/Comment: CATCH BASIN WEST SIDE OF ENTRANCE

TO THE LIBRARY



# DRAINAGE SYSTEM INVENTORY

**GENERAL**

System ID: \_\_\_\_\_ Discharge ID: #5  
 Date: 9/14/10 Time: 10:50  
 Initial (1): \_\_\_\_\_ Initial (2): \_\_\_\_\_  
 Picture #'s: \_\_\_\_\_

**STRUCTURE TYPE**

- Discharging Pipe
- Manhole
- Catch Basin
- Culvert Outlet
- Point in Open Channel
- Not Found
- Blind Tie or Tap
- Non-point Source (circle below)
  - \*Seepage
  - \*Overland flow

**OWNERSHIP**

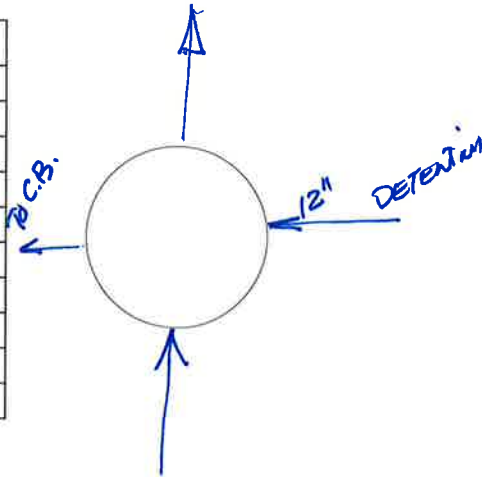
- Delta Township
- Drain Commissioner
- Private
- Road Commission
- Other
- Unknown

**LOCATION (see back side for location sketch)**

Latitude/State Plane: \_\_\_\_\_  
 Longitude/State Plane: \_\_\_\_\_  
 Cross-street: SNOW RD / MICHIGAN AVE  
 Offset Description: \_\_\_\_\_  
 Receiving Waterbody: \_\_\_\_\_  
 Inventory Comments: 12" PVC INTO ECDD MH. FROM GROUND STORAGE OVERFLOW & SMALL DETENTION BASIN - RESTRICTOR IN PIPE AT DETENTION BASIN.

CONDUIT INFORMATION						
Pipe ID	<u>#5</u>					
Direction from MH						
Shape						
Diameter (in)	<u>12"</u>					
Width (in) (Open Channel)						
Depth (in)						
Measure Down (ft) (Manhole)						
Invert Elevation (ft) (Pipes)						
Conduit Material						
Inlet/Outlet						

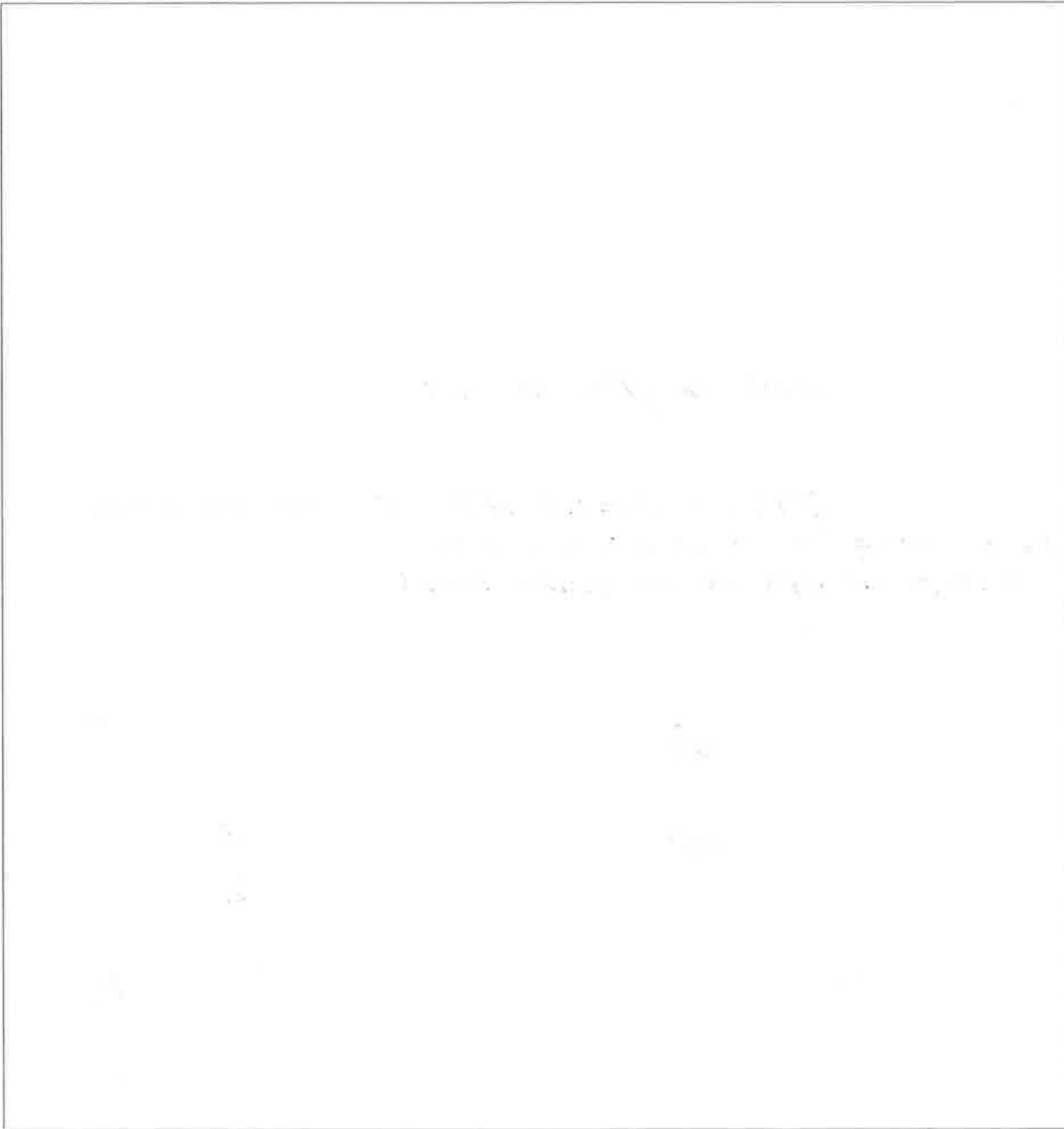
Canine hit:  Yes  No



## LOCATION SKETCH

### CHECKLIST

- Label street names
- Indicate north
- Locate manholes by dimensions from property lines, back of curb, or edge of pavement
- Sketch catch basins and connections (no measurements necessary)
- Indicate (if possible) distance to upstream and downstream manholes
- Flow direction
- Sample point
- Special access/traffic control notes
- Between mile markers \_\_\_\_ & \_\_\_\_ or \_\_\_\_ tenths past mile marker \_\_\_\_
- Velocity/depth measure location



## DRAINAGE SYSTEM INVENTORY

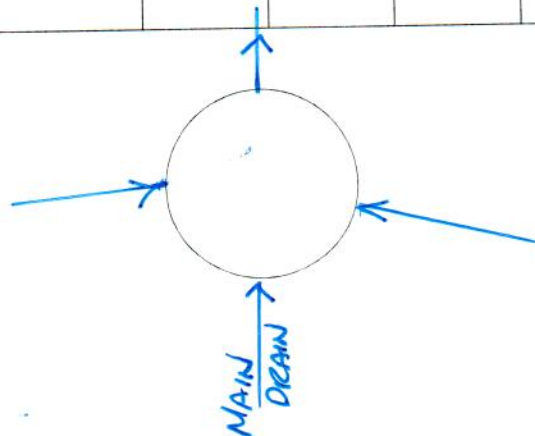
GENERAL	
Structure/Discharge ID:	<u>DISCHARGE PT #5 STM#823</u>
Date	<u>10/11/2018</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>495 <del>29</del> SNOW</u> <u><del>4901 W. MICHIGAN AVE.</del> (SNOW RD. GROUND STORAGE)</u>
Latitude/State Plane:	<u>13 055 230.50</u>
Longitude/State Plane:	<u>449 393.43</u>
Cross-street:	<u>MICHIGAN AVE / SNOW RD.</u>
Receiving Waterbody:	<u>MICHIGAN AVE DRAIN.</u>

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input checked="" type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION	
<u>Rim ELEV. = 862.92</u>	
Structure Material	
Structure Diameter	
Pipe ID	
Pipe Material	
Pipe Diameter	
Pipe Rim-Invert	

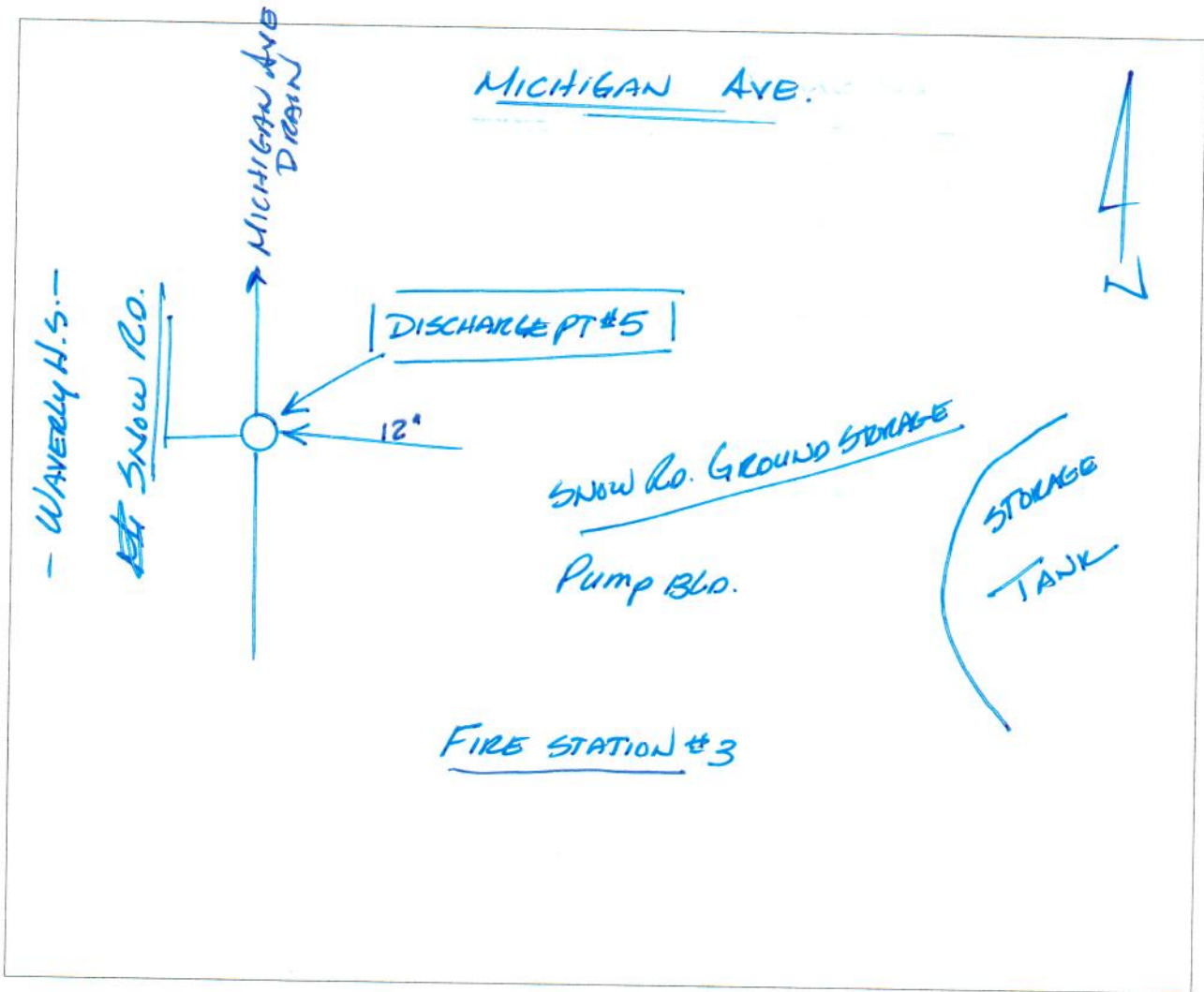




LOCATION SKETCH

Description/Comment: DISCHARGE #5  
MANHOLE OVER THE DRAIN.

COUNTY DRAIN (MICHIGAN AVE DRAIN)





## DRAINAGE SYSTEM INVENTORY

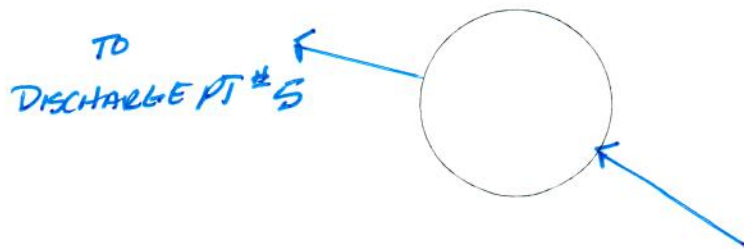
GENERAL	
Structure/Discharge ID:	<u>CB # 52482 (DISCHARGE # 5)</u>
Date	<u>10/10/2018</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>495 SNOW Rd. DRIVEWAY 15 FROM SNOW RD. 4901 W. MICHIGAN AVE. SNOW RD. GROUND STORAGE</u>
Latitude/State Plane:	<u>130 553 29.81</u>
Longitude/State Plane:	<u>44 93 79.96</u>
Cross-street:	<u>MICHIGAN AVE. / SNOW Rd.</u>
Receiving Waterbody:	<u>MICHIGAN AVE DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

Rim ELEV = <u>863.19</u>	STRUCTURE/PIPE INFORMATION				
Structure Material					
Structure Diameter					
Pipe ID					
Pipe Material					
Pipe Diameter					
Pipe Rim-Invert					



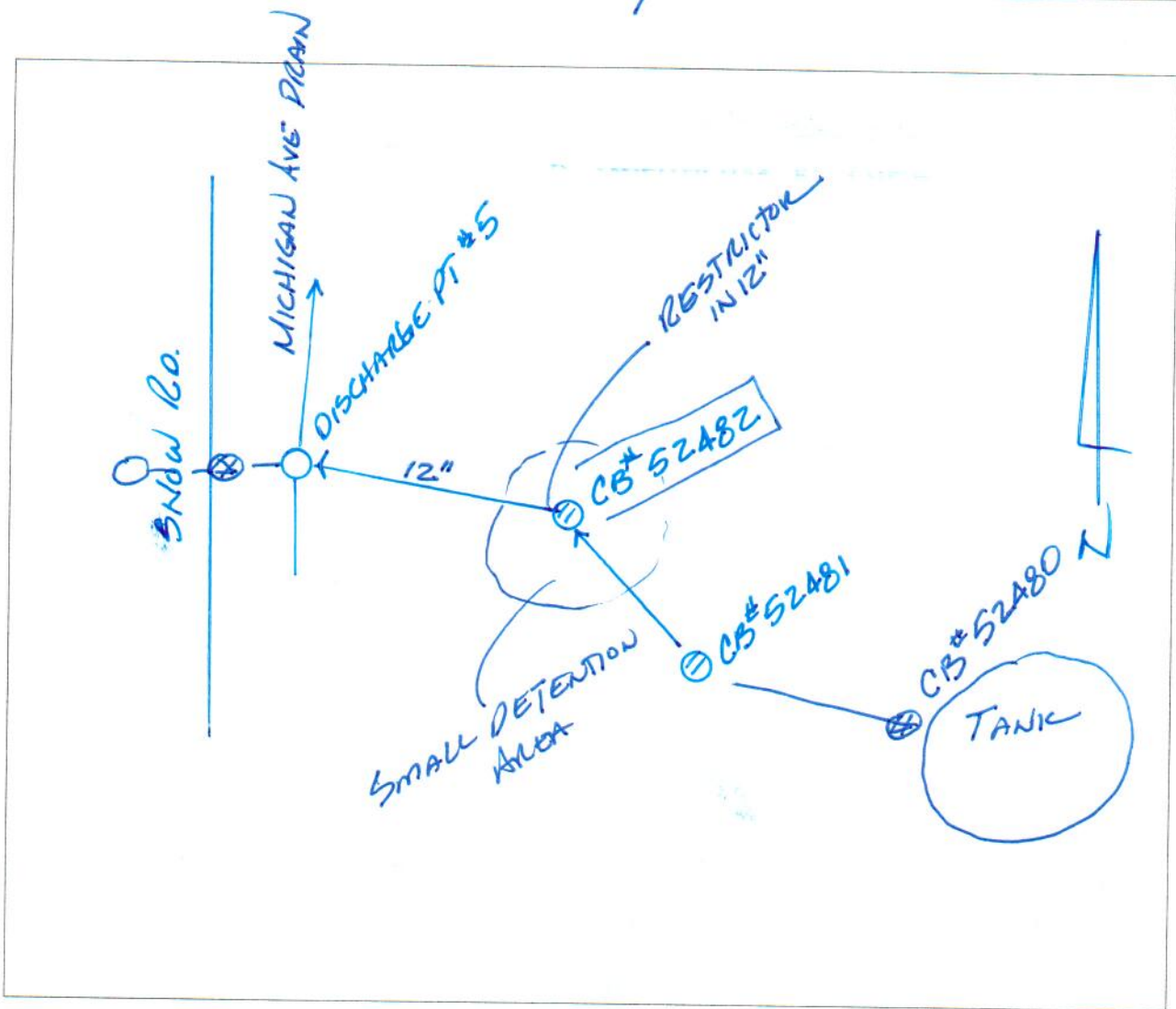
LOCATION SKETCH

Description/Comment: DISCHARGE #5  
SNOW RD. WATER GROUND STORAGE

ACROSS FROM WANDERLY H.S.

OVER FLOW FROM WATER STORAGE COMES INTO THIS C.B.

IN THE DETENTION AREA W/ RESTRICTOR



## DRAINAGE SYSTEM INVENTORY

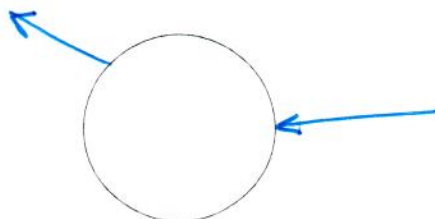
GENERAL	
Structure/Discharge ID:	<u>CB# 52481 (DISCHARGE#5)</u>
Date	<u>10/10/2018</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

	LOCATION <u>SNOW RD. GROUND STORAGE</u>
Address/Description:	<u>DRIVEWAY IS FROM SNOW RD.</u> <u><del>4901 W. MICHIGAN AVE.</del> 495 SNOW RD.</u>
Latitude/State Plane:	<u>13 056 378.29</u>
Longitude/State Plane:	<u>449 320.53</u>
Cross-street:	<u>MICHIGAN AVE / SNOW RD</u>
Receiving Waterbody:	<u>MICHIGAN AVE DRAIN</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

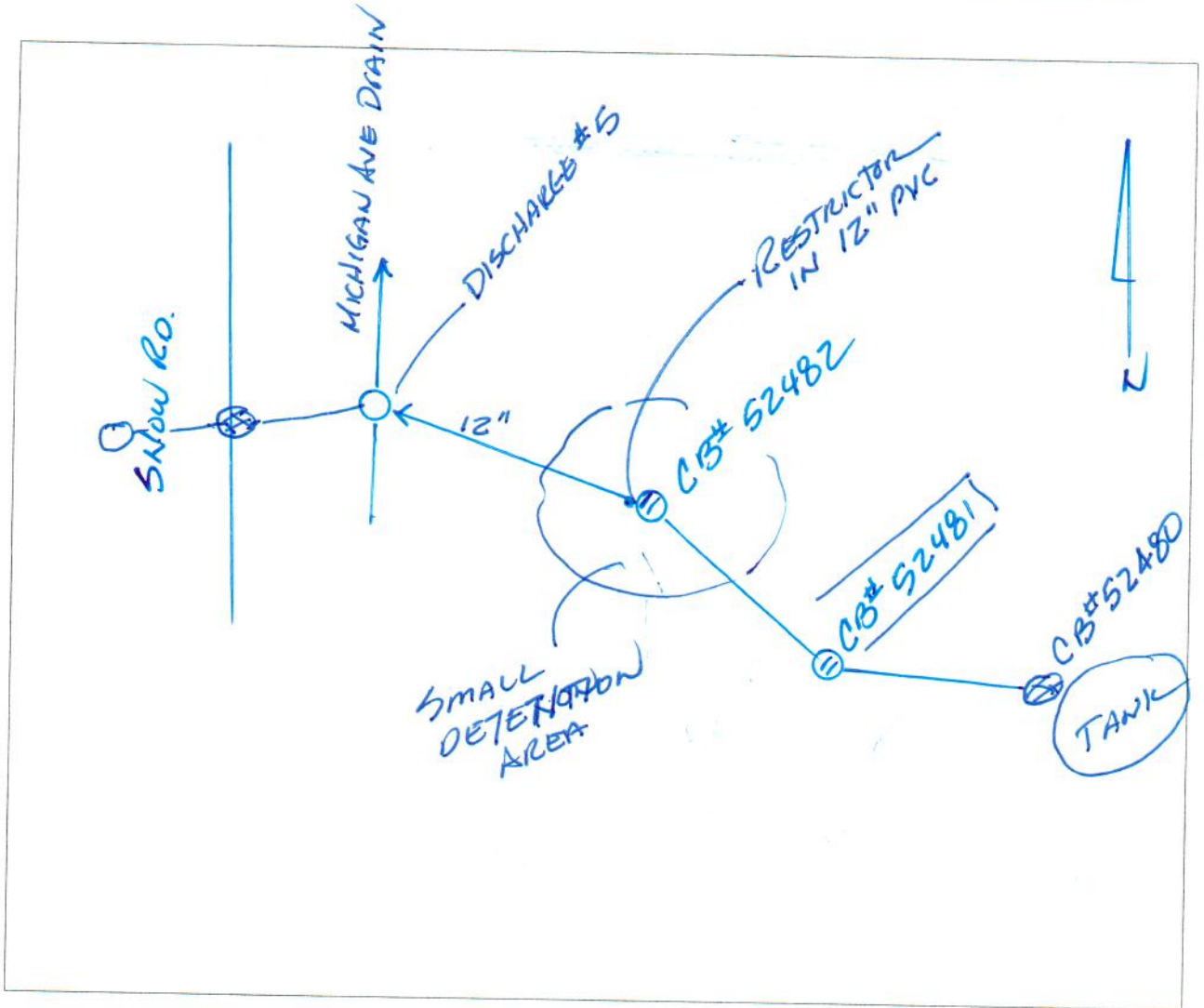
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
<u>Rim ELEV. =</u>						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: DISCHARGE #5  
SNOW RO. GROUND STORAGE, ACROSS FROM  
WAINWRIGHT H.S.



## DRAINAGE SYSTEM INVENTORY

GENERAL (DISCHARGE #5)	
Structure/Discharge ID:	<u>CB# 52480 OVERFLOW FROM STORAGE TANK</u>
Date	<u>10/10/2018</u> Time _____
Checked by	<u>W. KULASA</u> Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>DRIVEWAY IS FROM SNOW RD. <del>4901 W. MICHIGAN AVE.</del> 495 SNOW RD.</u>
Latitude/State Plane:	<u>13 055 437.60</u>
Longitude/State Plane:	<u>449 312.58</u>
Cross-street:	<u>MICHIGAN AVE / SNOW RD.</u>
Receiving Waterbody:	<u>MICHIGAN AVE DRAIN.</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

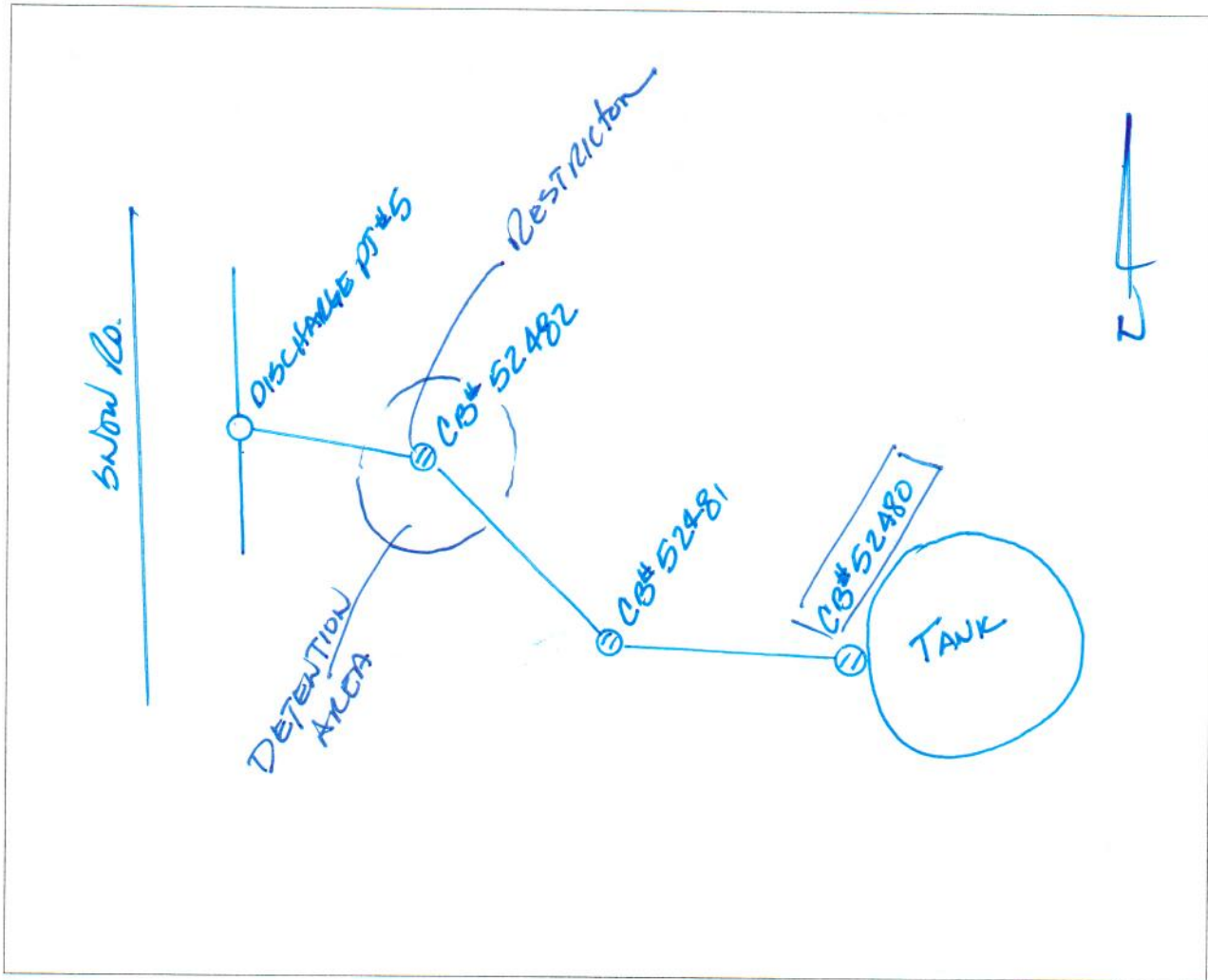
STRUCTURE/PIPE INFORMATION	
<u>Rim ELEV. =</u>	
Structure Material	
Structure Diameter	
Pipe ID	
Pipe Material	
Pipe Diameter	
Pipe Rim-Invert	



LOCATION SKETCH

Description/Comment: DISCHARGE #5

C.B. @ GROUND STORAGE TANK FOR OVERFLOW



# DRAINAGE SYSTEM INVENTORY

## GENERAL

System ID: \_\_\_\_\_ Discharge ID: #6  
 Date: 9/14/16 Time: 11:00  
 Initial (1): \_\_\_\_\_ Initial (2): \_\_\_\_\_  
 Picture #'s: \_\_\_\_\_

## STRUCTURE TYPE

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Discharging Pipe | <input type="checkbox"/> Not Found                       |
| <input checked="" type="checkbox"/> Manhole          | <input type="checkbox"/> Blind Tie or Tap                |
| <input type="checkbox"/> Catch Basin                 | <input type="checkbox"/> Non-point Source (circle below) |
| <input type="checkbox"/> Culvert Outlet              | *Seepage   |
| <input type="checkbox"/> Point in Open Channel       | *Overland flow   |

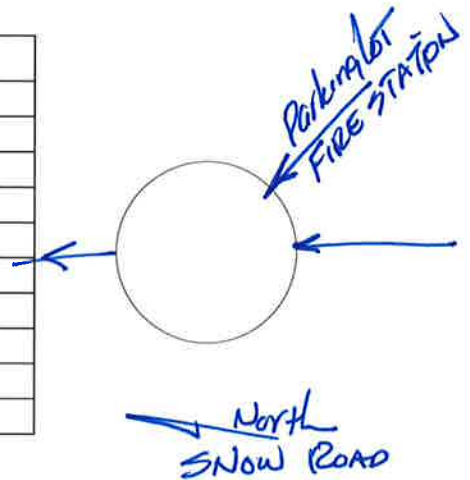
## OWNERSHIP

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Delta Township     | <input checked="" type="checkbox"/> Road Commission |
| <input checked="" type="checkbox"/> Drain Commissioner | <input type="checkbox"/> Other                      |
| <input type="checkbox"/> Private                       | <input type="checkbox"/> Unknown                    |

## LOCATION (see back side for location sketch)

Latitude/State Plane: \_\_\_\_\_  
 Longitude/State Plane: \_\_\_\_\_  
 Cross-street: SNOW RD / MICHIGAN AVE.  
 Offset Description: MANHOLE IN SIDEWALK  
 Receiving Waterbody: \_\_\_\_\_  
 Inventory Comments: 12" PVC COMES FROM THE C-B FOR FIRE STATION #3 PARKING LOT. THE OUTLET IS INTO A MANHOLE BLD BELONGING TO ECRC OR ECDO.

CONDUIT INFORMATION						
Pipe ID	<u>#6</u>					
Direction from MH						
Shape						
Diameter (in)	<u>12</u>					
Width (in) (Open Channel)						
Depth (in)						
Measure Down (ft) (Manhole)						
Invert Elevation (ft) (Pipes)						
Conduit Material						
Inlet/Outlet						



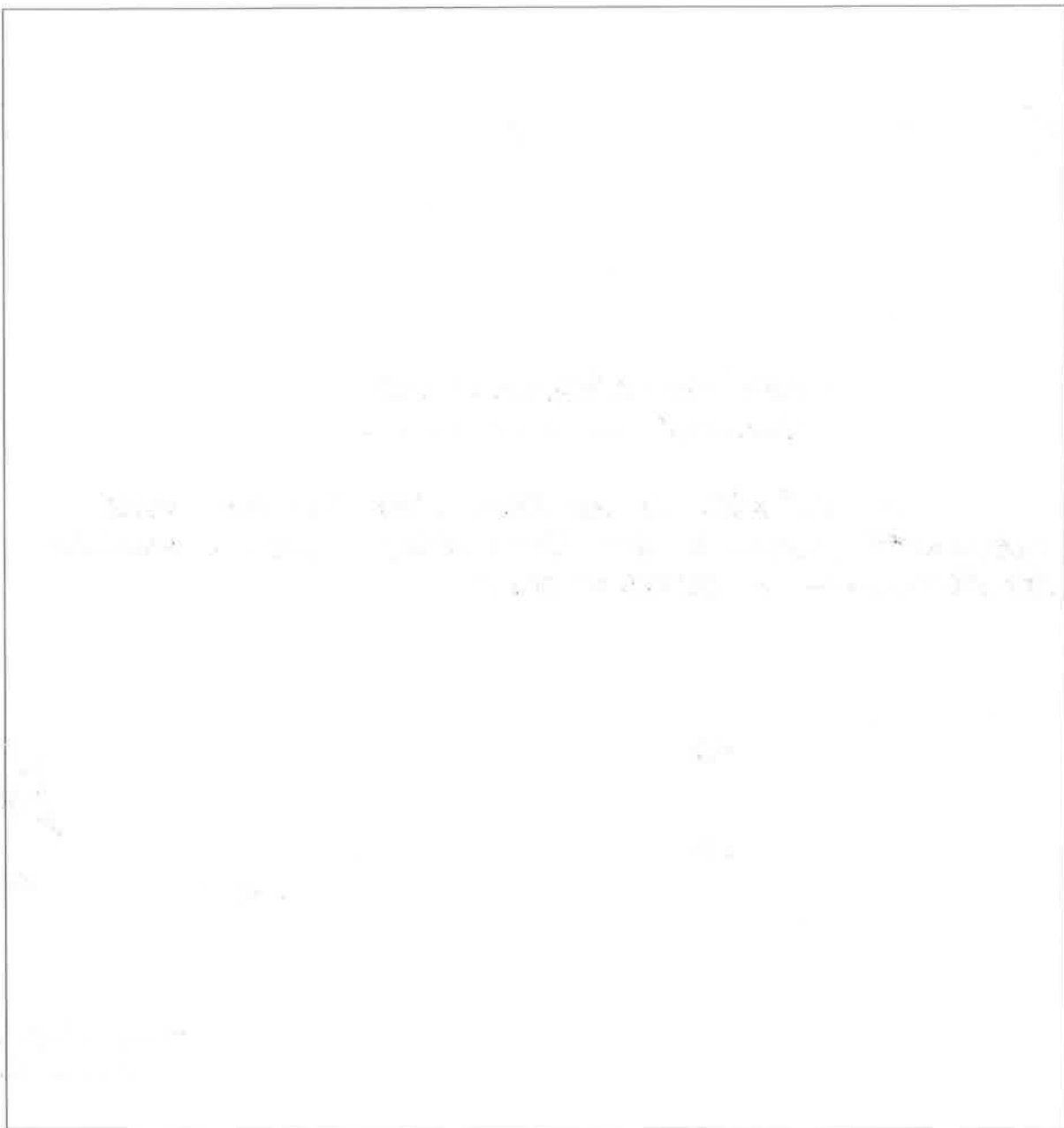
Canine hit:  Yes  No



## LOCATION SKETCH

### CHECKLIST

- Label street names
- Indicate north
- Locate manholes by dimensions from property lines, back of curb, or edge of pavement
- Sketch catch basins and connections (no measurements necessary)
- Indicate (if possible) distance to upstream and downstream manholes
- Flow direction
- Sample point
- Special access/traffic control notes
- Between mile markers \_\_\_\_ & \_\_\_\_ or \_\_\_\_ tenths past mile marker \_\_\_\_
- Velocity/depth measure location

A large, empty rectangular box with a thin black border, intended for a hand-drawn location sketch. The box is currently blank, with only some very faint, illegible ghosting of text visible from the reverse side of the page.



# DRAINAGE SYSTEM INVENTORY

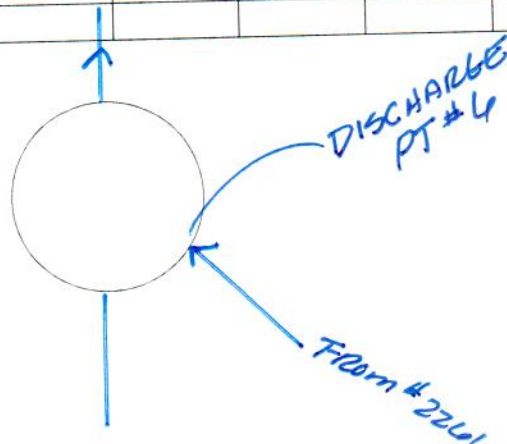
GENERAL	
Structure/Discharge ID:	DISCHARGE PT #6 (STM #822)
Date	9/26/2018
Time	
Checked by	W. KULASA
Checked by	
Picture #'s	

LOCATION	
Address/Description:	215 SNOW RD. (FIRE STA. #3)
Latitude/State Plane:	13 055 225.89
Longitude/State Plane:	449 252.12
Cross-street:	MICHIGAN AVE / SNOW RD
Receiving Waterbody:	MICHIGAN AVE DRAIN

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

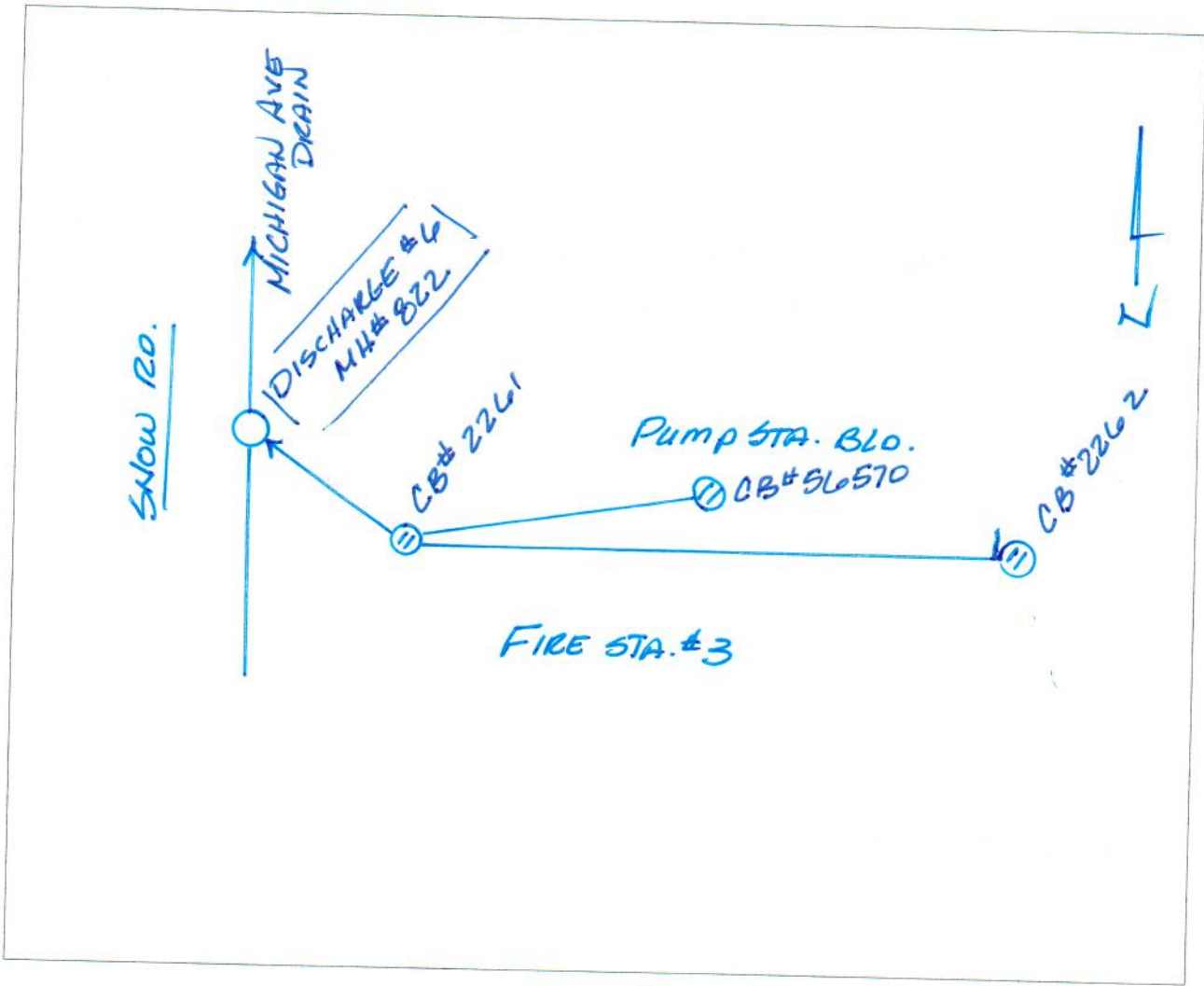
OWNERSHIP	
<input type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input checked="" type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION	
Rim Elev = 864.14	
Structure Material	
Structure Diameter	
Pipe ID	
Pipe Material	
Pipe Diameter	
Pipe Rim-Invert	



LOCATION SKETCH

Description/Comment: DISCHARGE #4  
MANHOLE OVER THE MICHIGAN AVE DRAIN





## DRAINAGE SYSTEM INVENTORY

GENERAL DISCHARGE # 6			
Structure/Discharge ID:	CB # 2261		
Date	9/26/2018 WED	Time	
Checked by	W. KULASA	Checked by	
Picture #'s			

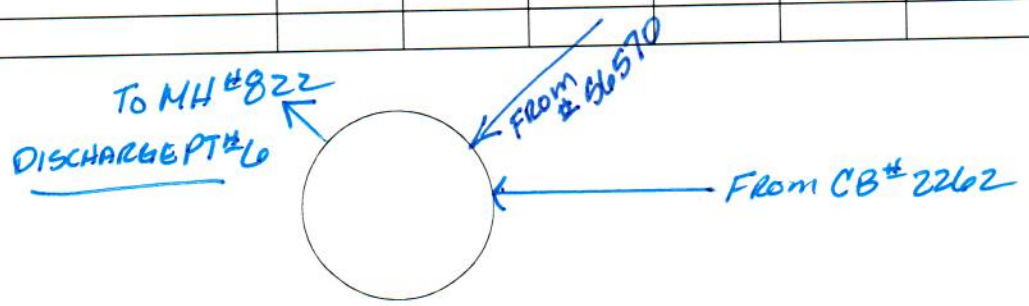
LOCATION	
Address/Description:	FIRE STATION # 3 (215 SNOW ROAD)
Latitude/State Plane:	13 055 249.13
Longitude/State Plane:	449 213.46
Cross-street:	MICHIGAN AVE - ST. JOE HWY.
Receiving Waterbody:	MICHIGAN AVE DRAIN

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						

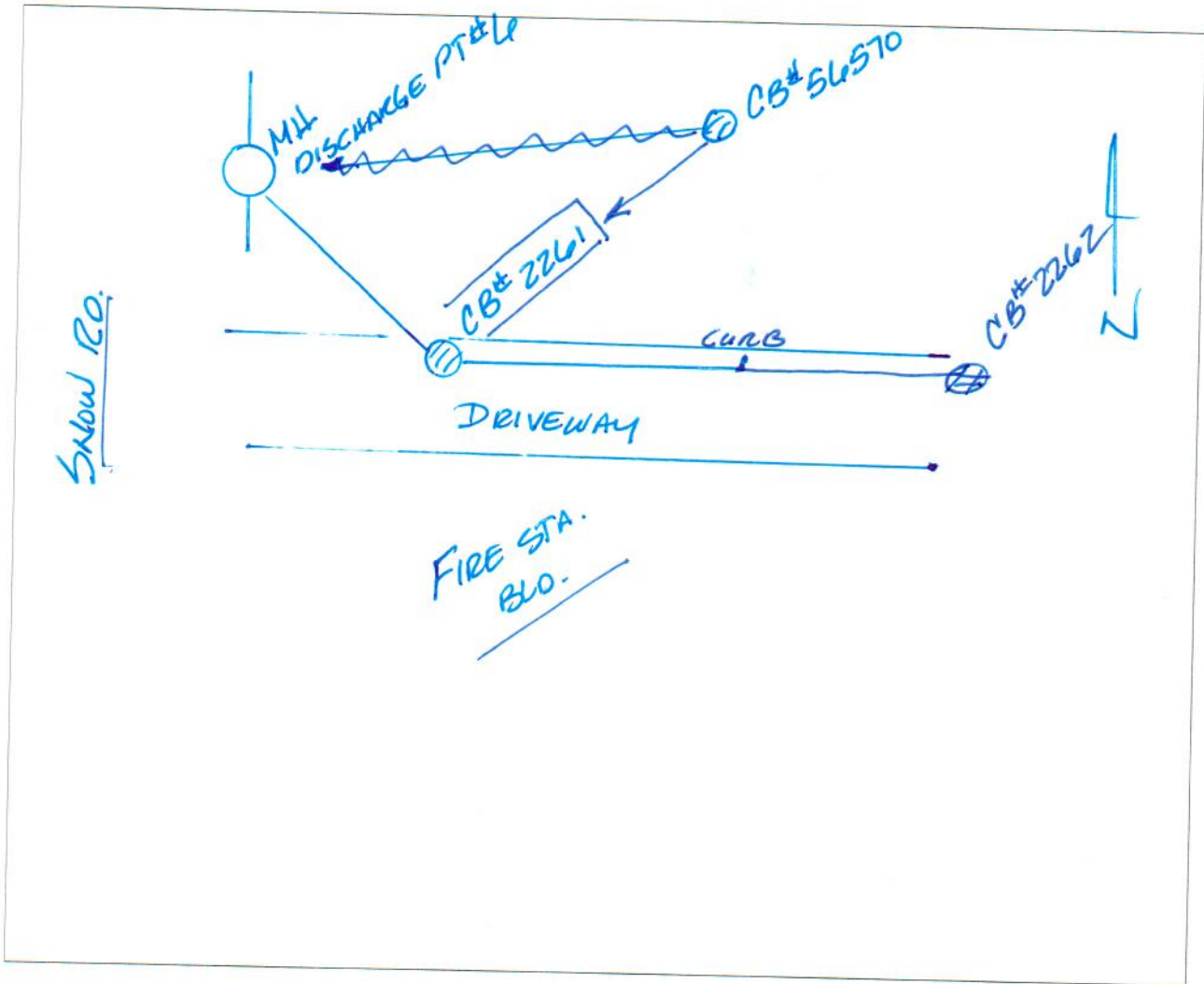
Lim ELEV = 865.35



LOCATION SKETCH

DISCHARGE #4

Description/Comment: CB @ NW COR of THE FIRE STA #3 IN  
THE DRIVEWAY.



## DRAINAGE SYSTEM INVENTORY

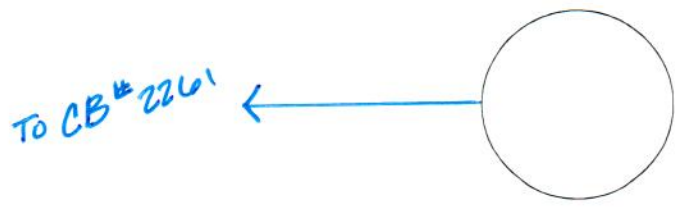
GENERAL DISCHARGE #10	
Structure/Discharge ID: <u>CB# 2262</u>	Time _____
Date <u>9/26/2018 WED.</u>	Checked by _____
Checked by <u>W. KULASA</u>	Picture #'s _____

LOCATION	
Address/Description: <u>FIRE STATION #3 (215 SNOW RD)</u>	
Latitude/State Plane: <u>13 055 501.19</u>	
Longitude/State Plane: <u>449 214.44</u>	
Cross-street: <u>MICHIGAN AVE - ST. JOE HWY.</u>	
Receiving Waterbody: <u>MICHIGAN AVE DRAIN</u>	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

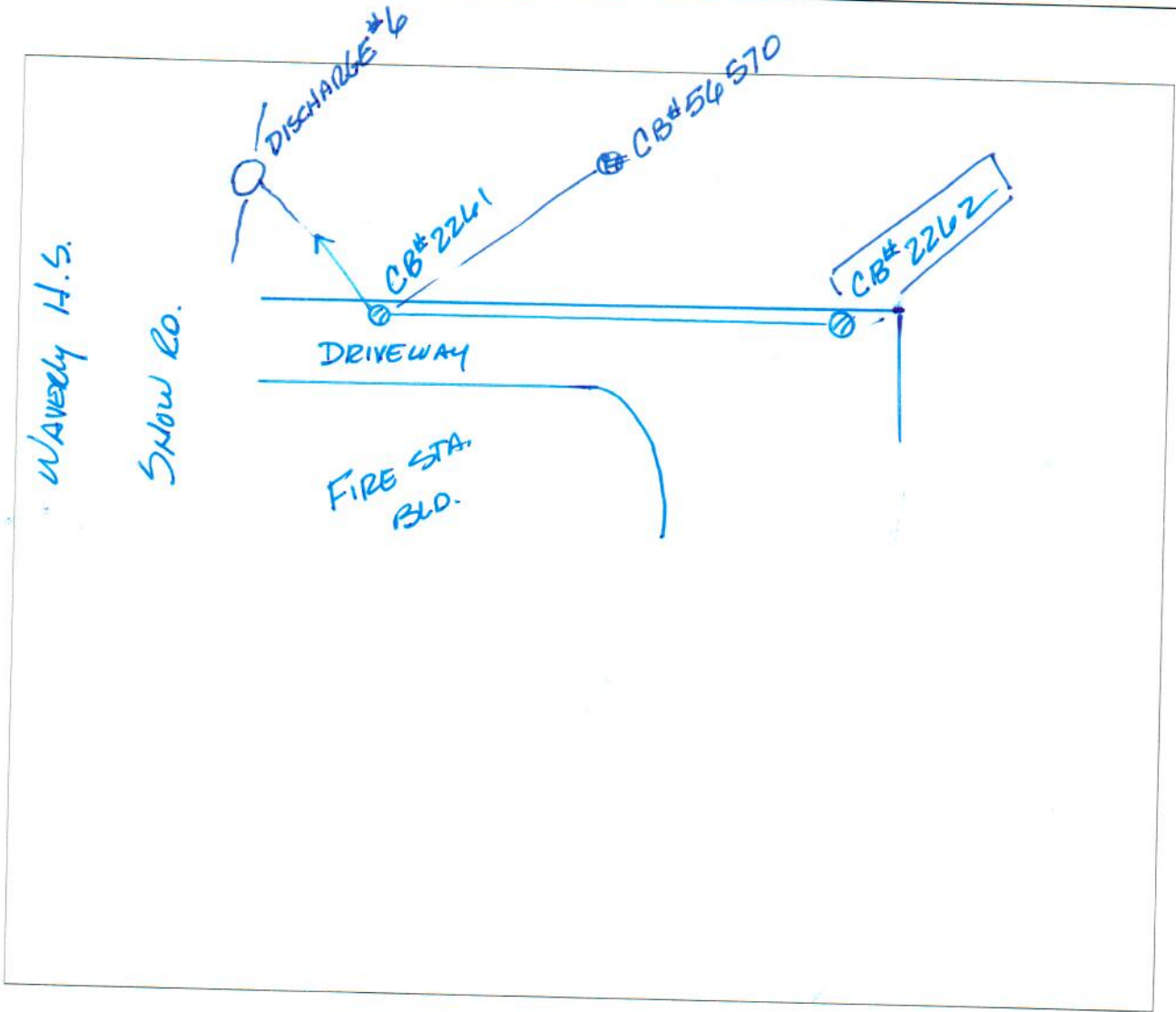
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

Lim ELEV = 865.25		STRUCTURE/PIPE INFORMATION					
Structure Material							
Structure Diameter							
Pipe ID							
Pipe Material							
Pipe Diameter							
Pipe Rim-Invert							



LOCATION SKETCH

Description/Comment: DISCHARGE #6  
CB @ THE NE COR. of THE FIRE STA. #3





# DRAINAGE SYSTEM INVENTORY

**GENERAL**     DISCHARGE # 6

Structure/Discharge ID: CB# 56570     IN FRONT OF BOOSTER PUMP BLD.

Date \_\_\_\_\_ Time \_\_\_\_\_

Checked by W. KULASA     Checked by \_\_\_\_\_

Picture #'s \_\_\_\_\_

495 SNOW RD     **LOCATION**

Address/Description: ~~4901 W MICHIGAN AVE. (215 SNOW RD. FIRE STA #3)~~

Latitude/State Plane: 13 055 334.83

Longitude/State Plane: 449 233.25

Cross-street: MICHIGAN AVE / SNOW RD.

Receiving Waterbody: MICHIGAN AVE. DRAIN

**STRUCTURE TYPE**

<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

**OWNERSHIP**

<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

Rim ELEV = 864.92     **STRUCTURE/PIPE INFORMATION**

Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						

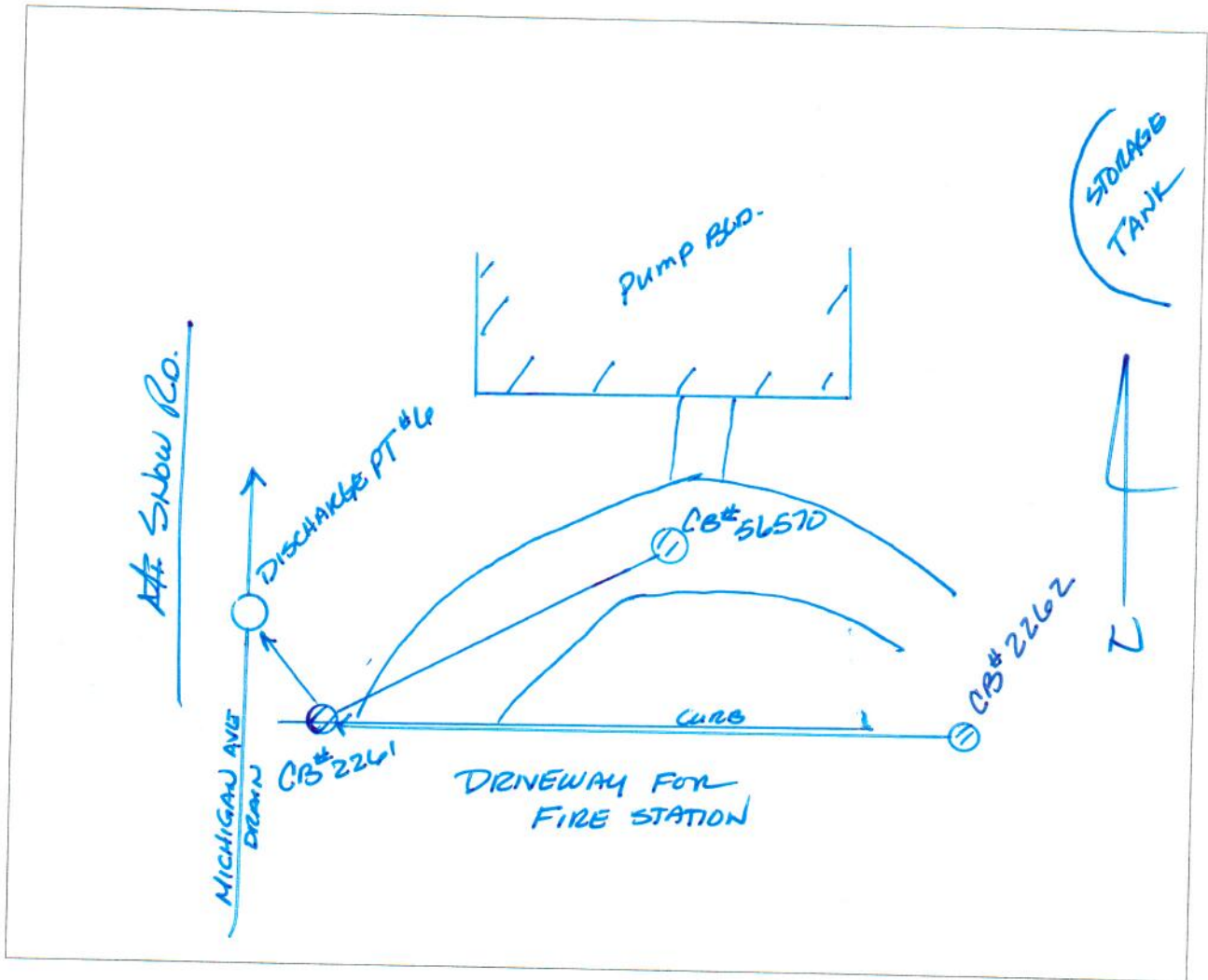




LOCATION SKETCH

DISCHARGE #6

Description/Comment: CATCH BASIN FOR THE DRIVEWAY IN FRONT  
OF THE BOOSTER PUMP BUILDING.



# DRAINAGE SYSTEM INVENTORY

**GENERAL**

System ID: 3 Discharge ID: B  
 Date: 9/14/2016 Time: 10AM  
 Initial (1): WCK Initial (2): \_\_\_\_\_  
 Picture #'s: \_\_\_\_\_

**STRUCTURE TYPE**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Discharging Pipe | <input type="checkbox"/> Not Found                       |
| <input checked="" type="checkbox"/> Manhole          | <input type="checkbox"/> Blind Tie or Tap                |
| <input type="checkbox"/> Catch Basin                 | <input type="checkbox"/> Non-point Source (circle below) |
| <input type="checkbox"/> Culvert Outlet              | *Seepage   |
| <input type="checkbox"/> Point in Open Channel       | *Overland flow   |

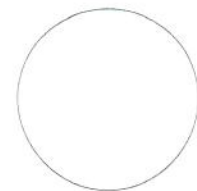
**OWNERSHIP**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Delta Township     | <input type="checkbox"/> Road Commission |
| <input checked="" type="checkbox"/> Drain Commissioner | <input type="checkbox"/> Other           |
| <input type="checkbox"/> Private                       | <input type="checkbox"/> Unknown         |

**LOCATION (see back side for location sketch)**

Latitude/State Plane: \_\_\_\_\_  
 Longitude/State Plane: \_\_\_\_\_  
 Cross-street: SNOW RD / ST. JOE  
 Offset Description: ACROSS FROM WAVERLY SCHOOL (JR. HIGH)  
 Receiving Waterbody: \_\_\_\_\_  
 Inventory Comments: 12" PVC FROM A CB UNDER THE OVERFLOW PIPE AT THE WATER TOWER TO A MANHOLE. DELTA OWNS PIPE TO MH, ECDO OWNS THE MH.

CONDUIT INFORMATION						
Pipe ID	<u>TE</u>					
Direction from MH						
Shape						
Diameter (in)	<u>12"</u>					
Width (in) (Open Channel)						
Depth (in)						
Measure Down (ft) (Manhole)						
Invert Elevation (ft) (Pipes)						
Conduit Material						
Inlet/Outlet						



Canine hit:  Yes  No

## LOCATION SKETCH

### CHECKLIST

- Label street names
- Indicate north
- Locate manholes by dimensions from property lines, back of curb, or edge of pavement
- Sketch catch basins and connections (no measurements necessary)
- Indicate (if possible) distance to upstream and downstream manholes
- Flow direction
- Sample point
- Special access/traffic control notes
- Between mile markers \_\_\_\_ & \_\_\_\_ or \_\_\_\_ tenths past mile marker \_\_\_\_
- Velocity/depth measure location

The sketch area is a large, empty rectangular box. It contains some very faint, illegible handwritten text, possibly bleed-through from the reverse side of the page. The text is mostly centered and appears to be a few lines of notes or a description, but it is too light to read accurately.

## DRAINAGE SYSTEM INVENTORY

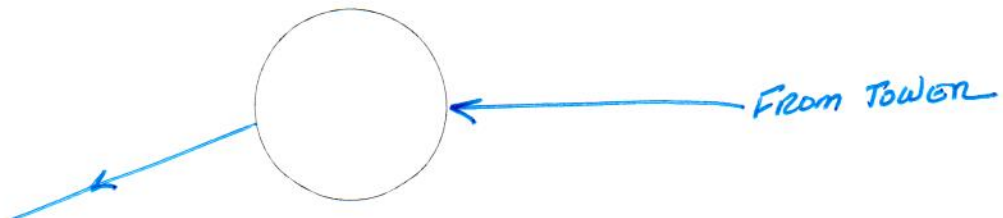
GENERAL	
Structure/Discharge ID: <u>DISCHARGE PT#8 (STM# 3275A)</u>	
Date _____	Time _____
Checked by <u>W. KULASA</u>	Checked by _____
Picture #'s _____	

LOCATION	
Address/Description: <u>209 SNOW RD.</u>	<u>(WATER TOWER ON SNOW RD)</u>
Latitude/State Plane: <u>13 055 056.59</u>	
Longitude/State Plane: <u>4 47 860.21</u>	
Cross-street: <u>SNOW RD/ ST. JOE</u>	
Receiving Waterbody: <u>MICHIGAN AVE. DRAIN</u>	

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

Rim Elev. = 870.41	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						

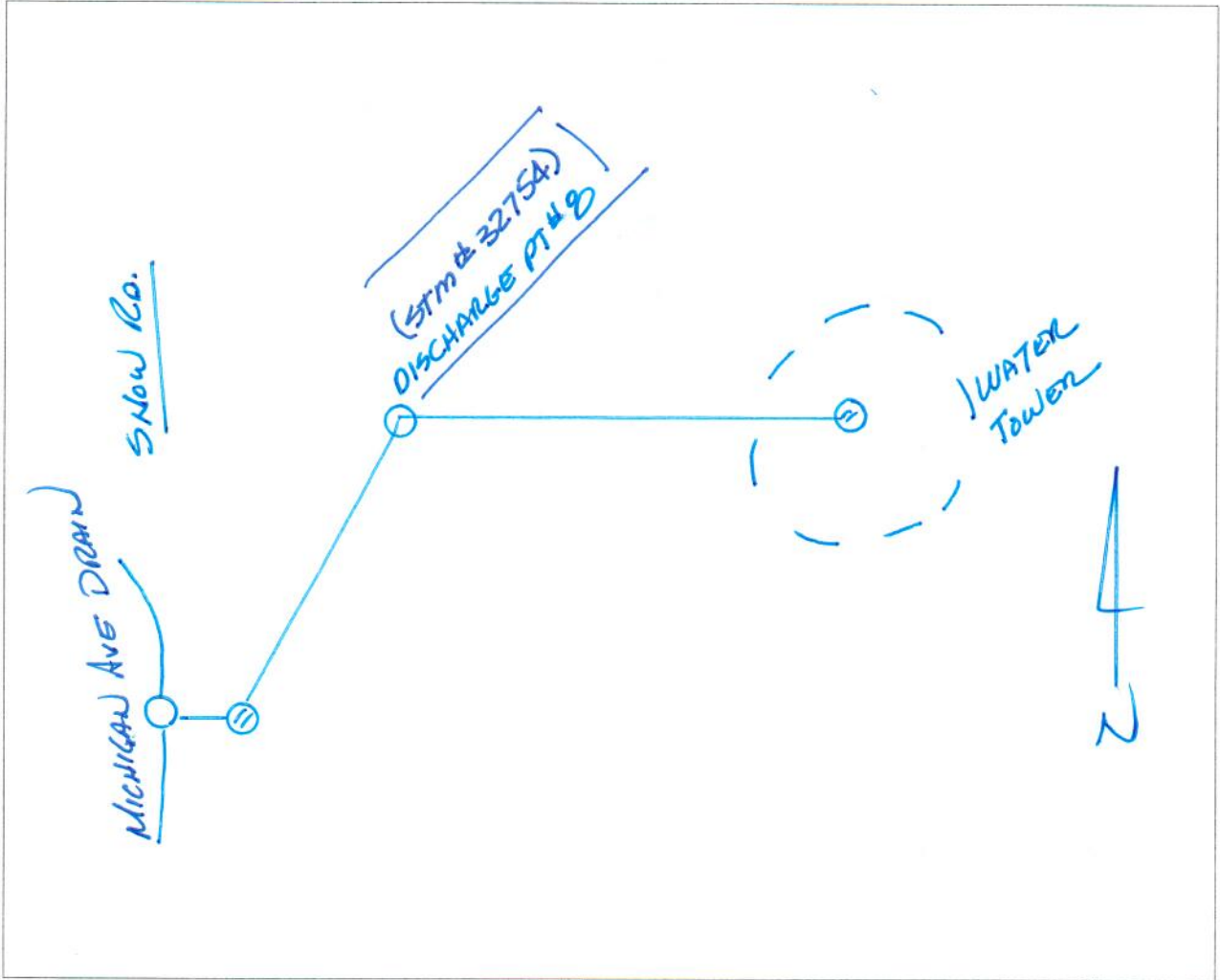


LOCATION SKETCH

DISCHARGE #8

Description/Comment: MANHOLE FROM WATER TOWER OVER FLOW

⊙ NEXT TO THE DRIVEWAY





# DRAINAGE SYSTEM INVENTORY

**GENERAL DISCHARGE #8**

Structure/Discharge ID: CB# 2257 AT THE TOWER

Date \_\_\_\_\_ Time \_\_\_\_\_

Checked by W. KULASA Checked by \_\_\_\_\_

Picture #'s \_\_\_\_\_

**LOCATION**

OVER FLOW FOR TOWER

Address/Description: 209 Snow Rd. UNDER WATER TOWER

Latitude/State Plane: 13 056 146.44

Longitude/State Plane: W446 447 857.53

Cross-street: SNOW RD. / ST. JOE

Receiving Waterbody: MICHIGAN AVE DRAIN

**STRUCTURE TYPE**

<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

**OWNERSHIP**

<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

Rim ELEV. = 871.08 **STRUCTURE/PIPE INFORMATION**

Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						

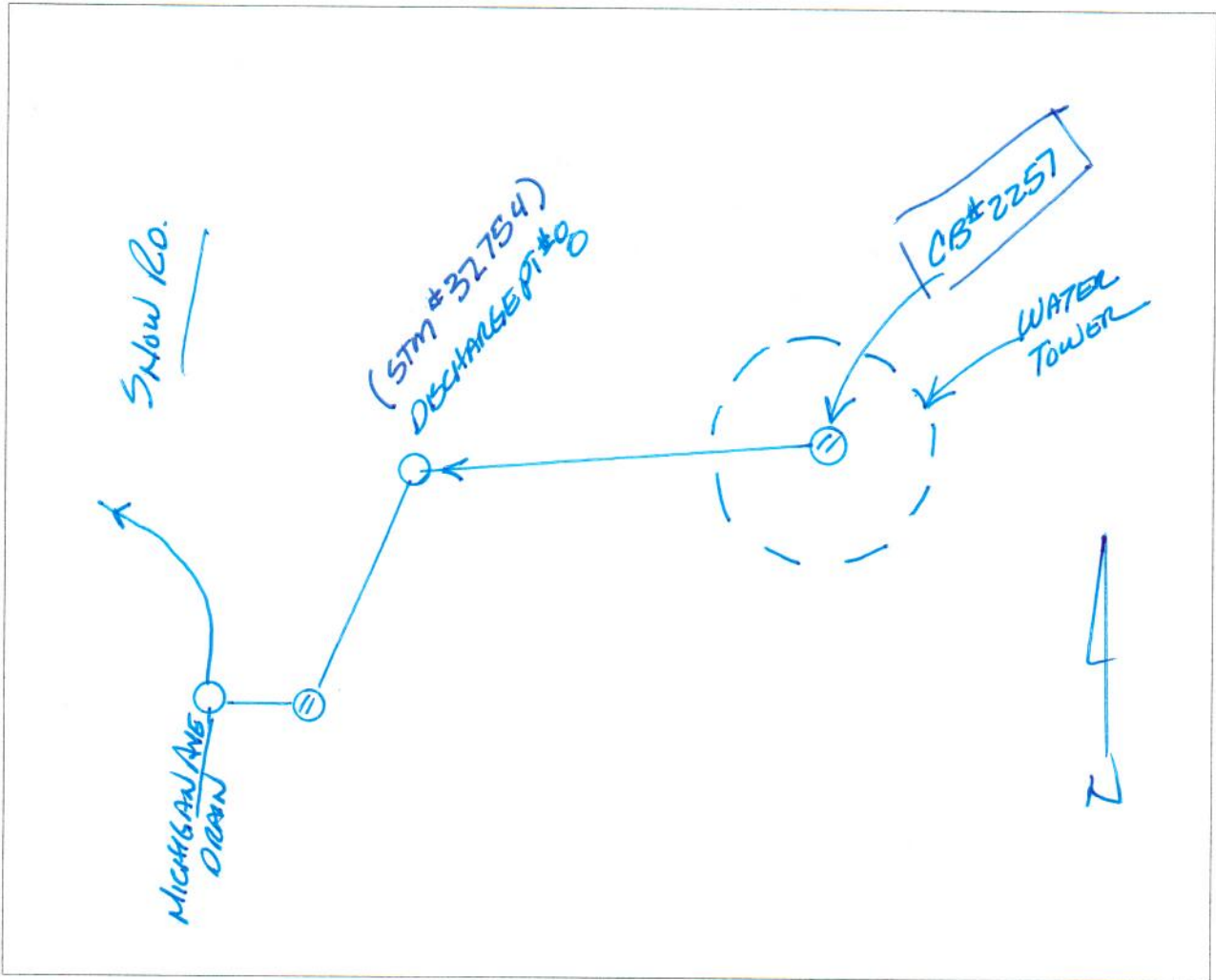


LOCATION SKETCH

DISCHARGE #8

Description/Comment: CATCH BASIN IS ONLY FOR THE OVERFLOW

THERE CONC SIDES AROUND THE BASIN TO CONTAIN THE  
OVER FLOW. "NO OVER LAND WATER"



# DRAINAGE SYSTEM INVENTORY

**GENERAL**

System ID: \_\_\_\_\_ Discharge ID: # 4010  
 Date 9/14/2010 Time 2:00  
 Initial (1) \_\_\_\_\_ Initial (2) \_\_\_\_\_  
 Picture #'s \_\_\_\_\_

**STRUCTURE TYPE**

- Discharging Pipe
- Manhole
- Catch Basin
- Culvert Outlet
- Point in Open Channel
- Not Found
- Blind Tie or Tap
- Non-point Source (circle below)
  - \*Seepage
  - \*Overland flow

**OWNERSHIP**

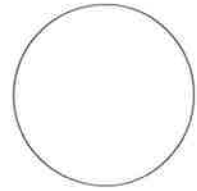
- Delta Township
- Drain Commissioner
- Private
- Road Commission
- Other
- Unknown

**LOCATION (see back side for location sketch)**

Latitude/State Plane: \_\_\_\_\_  
 Longitude/State Plane: \_\_\_\_\_  
 Cross-street: \_\_\_\_\_  
 Offset Description: \_\_\_\_\_  
 Receiving Waterbody: \_\_\_\_\_

Inventory Comments: OVERFLOW PIPE IN SHARP PARK POND. WE NEED FURTHER INVESTIGATING TO WHERE IT OUT LETS.

CONDUIT INFORMATION						
Pipe ID						
Direction from MH						
Shape						
Diameter (in)						
Width (in) (Open Channel)						
Depth (in)						
Measure Down (ft) (Manhole)						
Invert Elevation (ft) (Pipes)						
Conduit Material						
Inlet/Outlet						



Canine hit:  Yes  No



## LOCATION SKETCH

### CHECKLIST

- Label street names
- Indicate north
- Locate manholes by dimensions from property lines, back of curb, or edge of pavement
- Sketch catch basins and connections (no measurements necessary)
- Indicate (if possible) distance to upstream and downstream manholes
- Flow direction
- Sample point
- Special access/traffic control notes
- Between mile markers \_\_\_\_ & \_\_\_\_ or \_\_\_\_ tenths past mile marker \_\_\_\_
- Velocity/depth measure location





## DRAINAGE SYSTEM INVENTORY

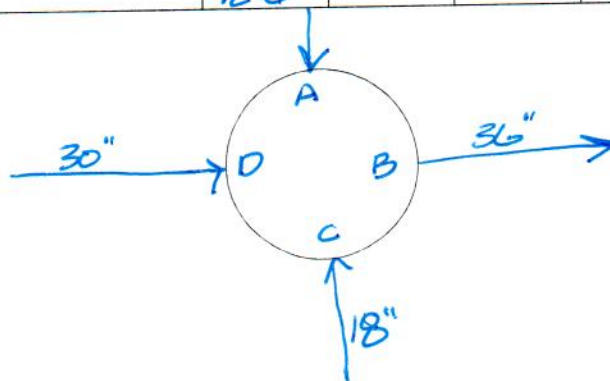
GENERAL DISCHARGE # 10	
Structure/Discharge ID: <u>OUTFALL PT # 10 (MH @ VILLAGE ALBAREGREEN APT.)</u>	
Date: <u>10/26/2018 FRI</u>	Time: <u>11:30am</u>
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description:	<u>5200 MALL DRIVE WEST</u>
Latitude/State Plane:	<u>13 054 085.74</u>
Longitude/State Plane:	<u>4 54 608.52</u>
Cross-street:	<u>ELMWOOD / MALL DRIVE WEST</u>
Receiving Waterbody:	<u>Bollman Damon DRAIN</u>

STRUCTURE TYPE	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input checked="" type="checkbox"/> Private	<input type="checkbox"/> Unknown

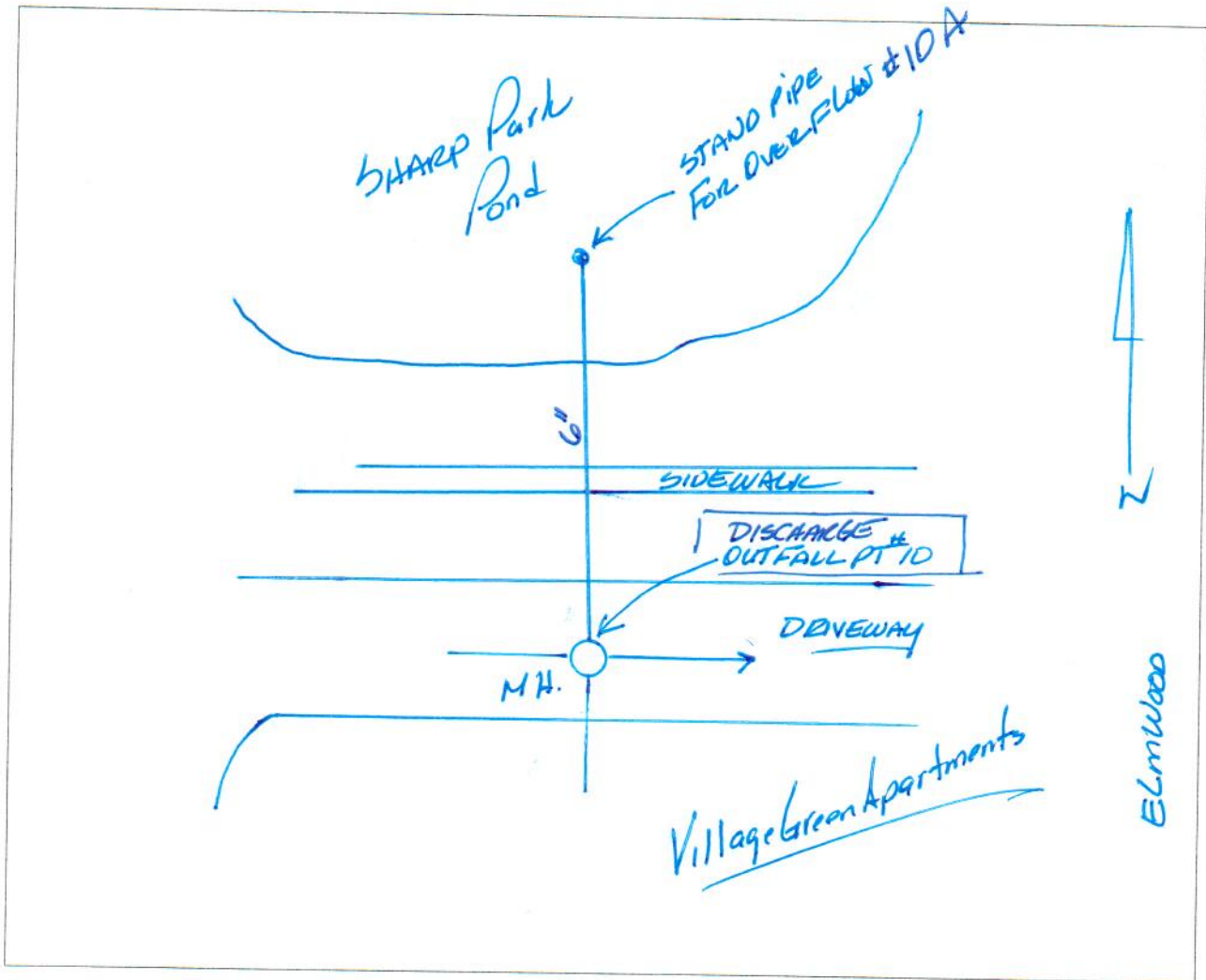
STRUCTURE/PIPE INFORMATION	
Structure Material	
Structure Diameter	
Pipe ID	<u>A</u>
Pipe Material	
Pipe Diameter	
Pipe Rim-Invert	<u>12.6</u>



LOCATION SKETCH

DISCHARGE # 10

Description/Comment: DYE TESTED OVERFLOW IN SHARP PARK POND. FOUND IT TO FLOW INTO A MANHOLE IN THE DRIVEWAY FOR Village Green Apartments.





## DRAINAGE SYSTEM INVENTORY

STAND PIPE OVERFLOW GENERAL DISCHARGE #10

Structure/Discharge ID: OUTFALL # 10A STAND PIPE IN POND

Date: 6/5/2019 WED Time: 10:00 AM

Checked by: \_\_\_\_\_ Checked by: \_\_\_\_\_

Picture #'s: \_\_\_\_\_

**LOCATION**

Address/Description: POND @ SHARP PARK 5200 HALL DR. WEST

Latitude/State Plane: 130 541 25.74

Longitude/State Plane: 45 47 18.20

Cross-street: ELMWOOD / HALL DR. WEST

Receiving Waterbody: BOLLMAN DAMON DRAIN

**STRUCTURE TYPE**

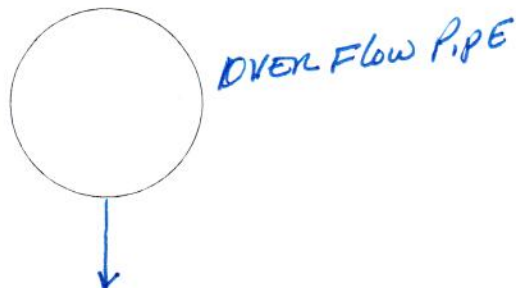
Manhole
  Point in Open Channel  
 Catch Basin
  Not Found  
 Outlet
  Blind Tie or Tap

**OWNERSHIP**

Delta Township
  Road Commission  
 Drain Commissioner
  Other  
 Private
  Unknown

TOP OF OVERFLOW 858.76 **STRUCTURE/PIPE INFORMATION**

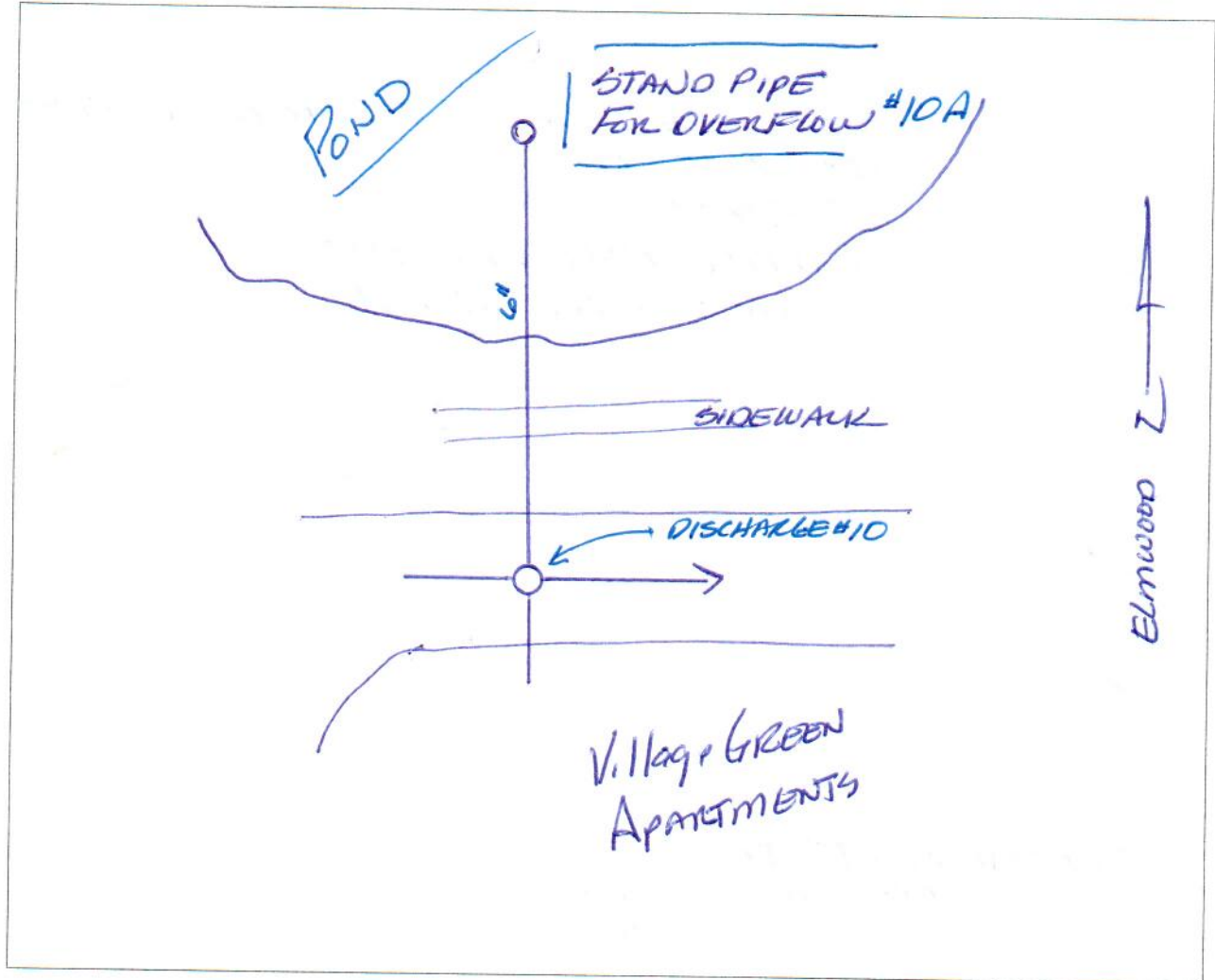
Structure Material	<u>OVERFLOW</u>	<u>PVC</u>					
Structure Diameter		<u>6"</u>					
Pipe ID							
Pipe Material							
Pipe Diameter							
Pipe Rim-Invert							



# LOCATION SKETCH

Description/Comment: DISCHARGE #10

STAND PIPE IN THE POND TO KEEP THE POND AT A CERTAIN LEVEL.





## DRAINAGE SYSTEM INVENTORY

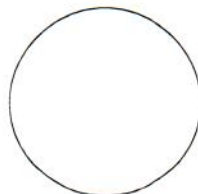
GENERAL			
Structure/Discharge ID:	DISCHARGE #14 END OF PIPE		
Date	6/5/19	Time	
Checked by		Checked by	
Picture #'s			

LOCATION	
Address/Description:	7612 W. Willow Hwy
Latitude/State Plane:	13,042,858.415
Longitude/State Plane:	459,131.416
Cross-street:	
Receiving Waterbody:	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input checked="" type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

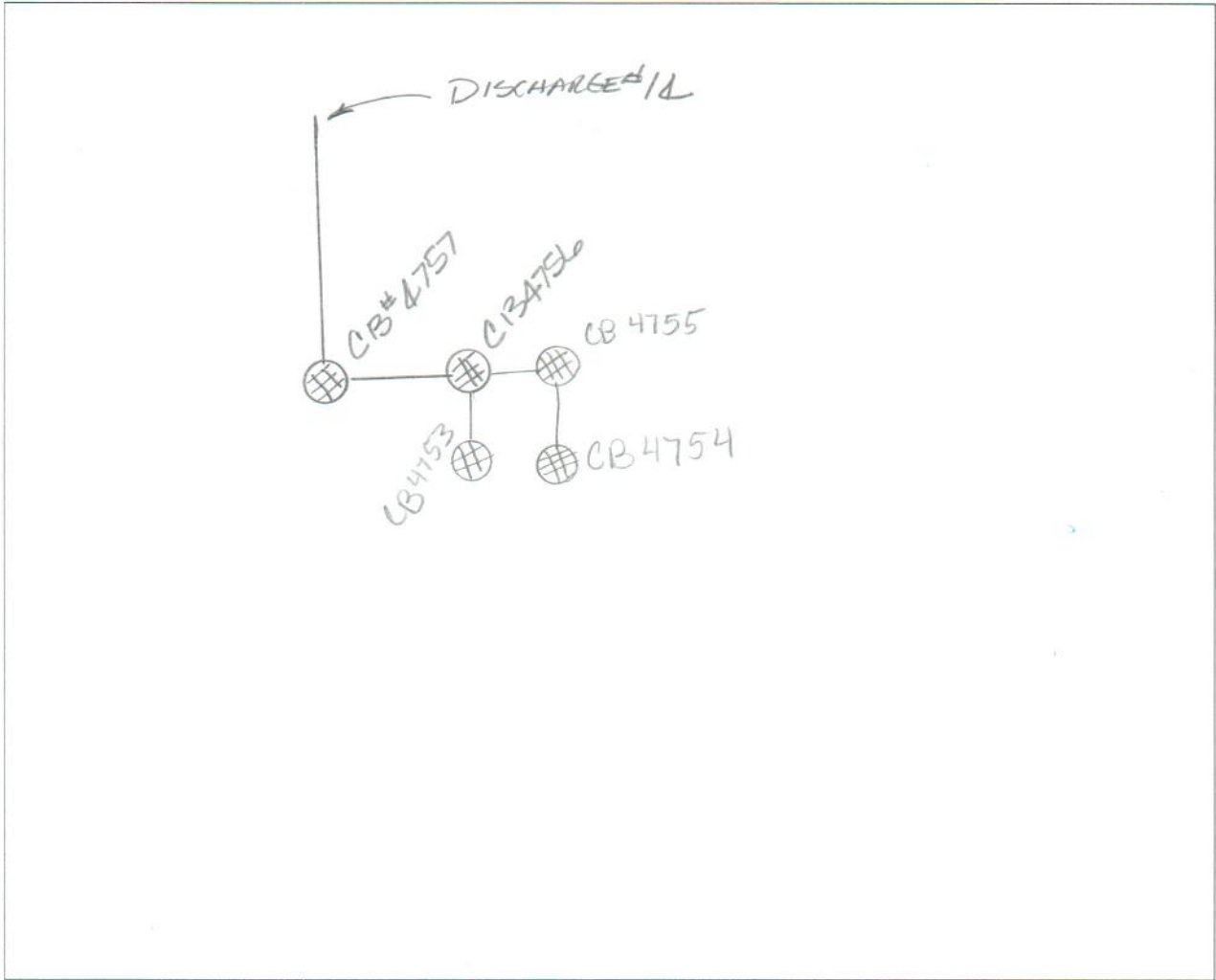
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: DISCHARGE # 14, end of pipe





## DRAINAGE SYSTEM INVENTORY

GENERAL	
Structure/Discharge ID:	CB #4757 → Discharge #14
Date	6/5/19
Time	
Checked by	
Picture #'s	

LOCATION	
Address/Description:	7812 W. Willow Hwy
Latitude/State Plane:	13,042,854.522
Longitude/State Plane:	458,878.414
Cross-street:	
Receiving Waterbody:	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole <input checked="" type="checkbox"/> Catch Basin <input type="checkbox"/> Outlet	<input type="checkbox"/> Point in Open Channel <input type="checkbox"/> Not Found <input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township <input type="checkbox"/> Drain Commissioner <input type="checkbox"/> Private	<input type="checkbox"/> Road Commission <input type="checkbox"/> Other <input type="checkbox"/> Unknown

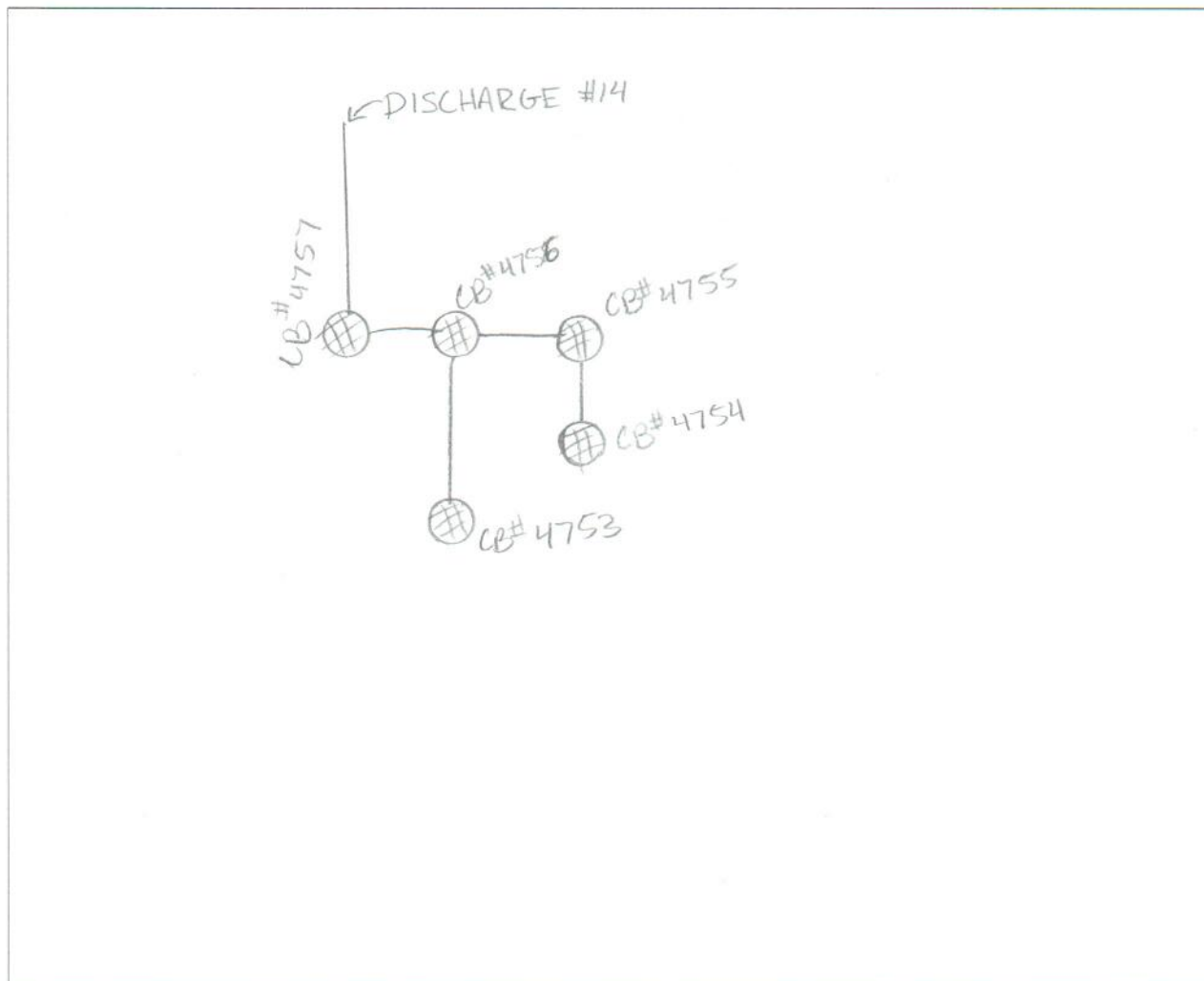
STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						





LOCATION SKETCH

Description/Comment: CB# 4757, Discharge # 14





# DRAINAGE SYSTEM INVENTORY

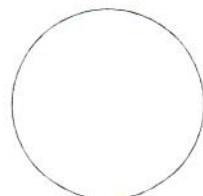
GENERAL	
Structure/Discharge ID:	CB # 4756 → Discharge #14
Date	6/5/19
Time	
Checked by	
Checked by	
Picture #'s	

LOCATION	
Address/Description:	7812 W. Willow Hwy
Latitude/State Plane:	13,042,975.185
Longitude/State Plane:	458,870.629
Cross-street:	
Receiving Waterbody:	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



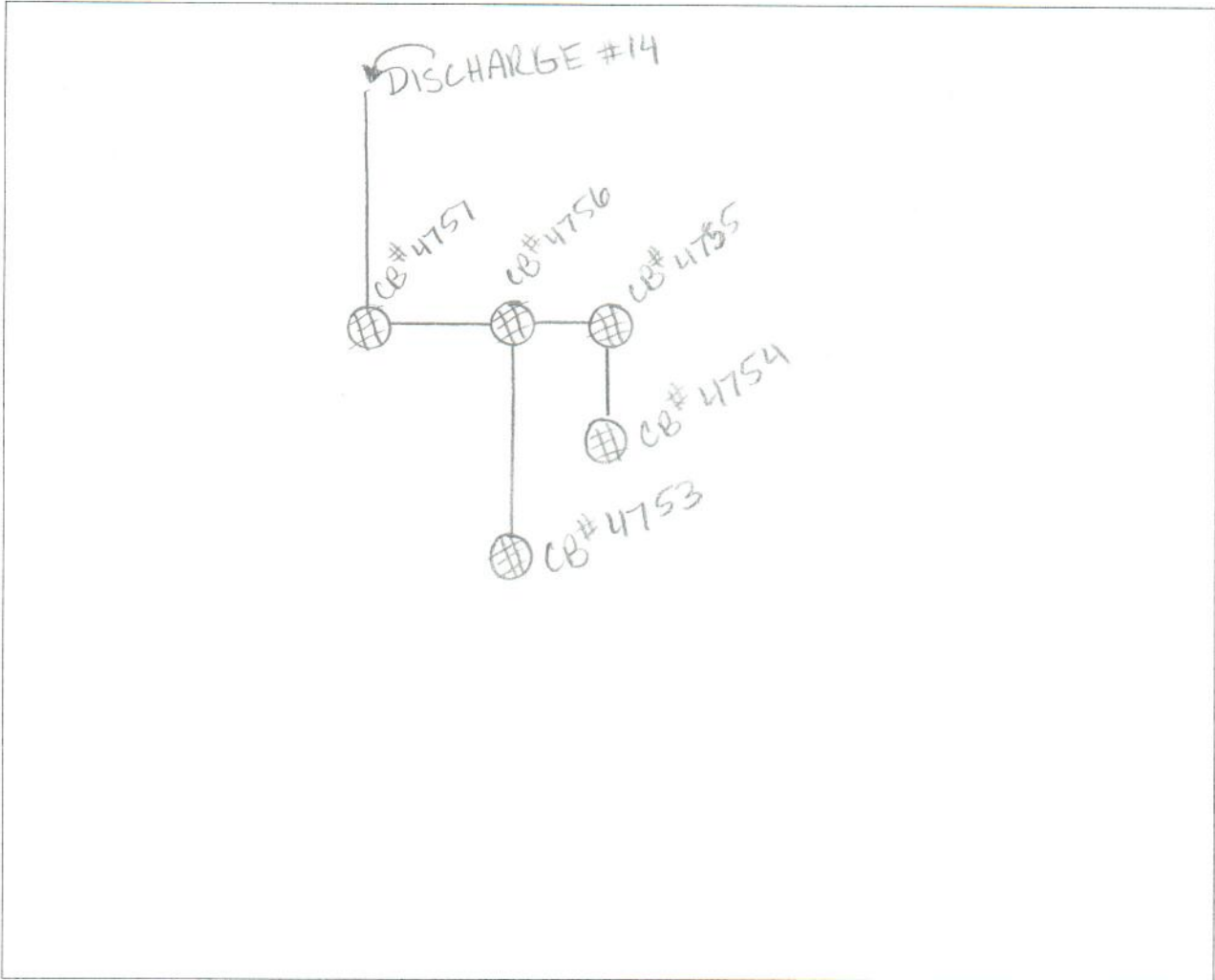
LOCATION SKETCH

Description/Comment: CB#4756, Discharge #14

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# DRAINAGE SYSTEM INVENTORY

GENERAL			
Structure/Discharge ID:	CB # 4755 → Discharge #14		
Date	6/5/19	Time	
Checked by		Checked by	
Picture #'s			

LOCATION	
Address/Description:	7812 W. Willow Hwy
Latitude/State Plane:	13,043,010.215
Longitude/State Plane:	458,670.629
Cross-street:	
Receiving Waterbody:	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



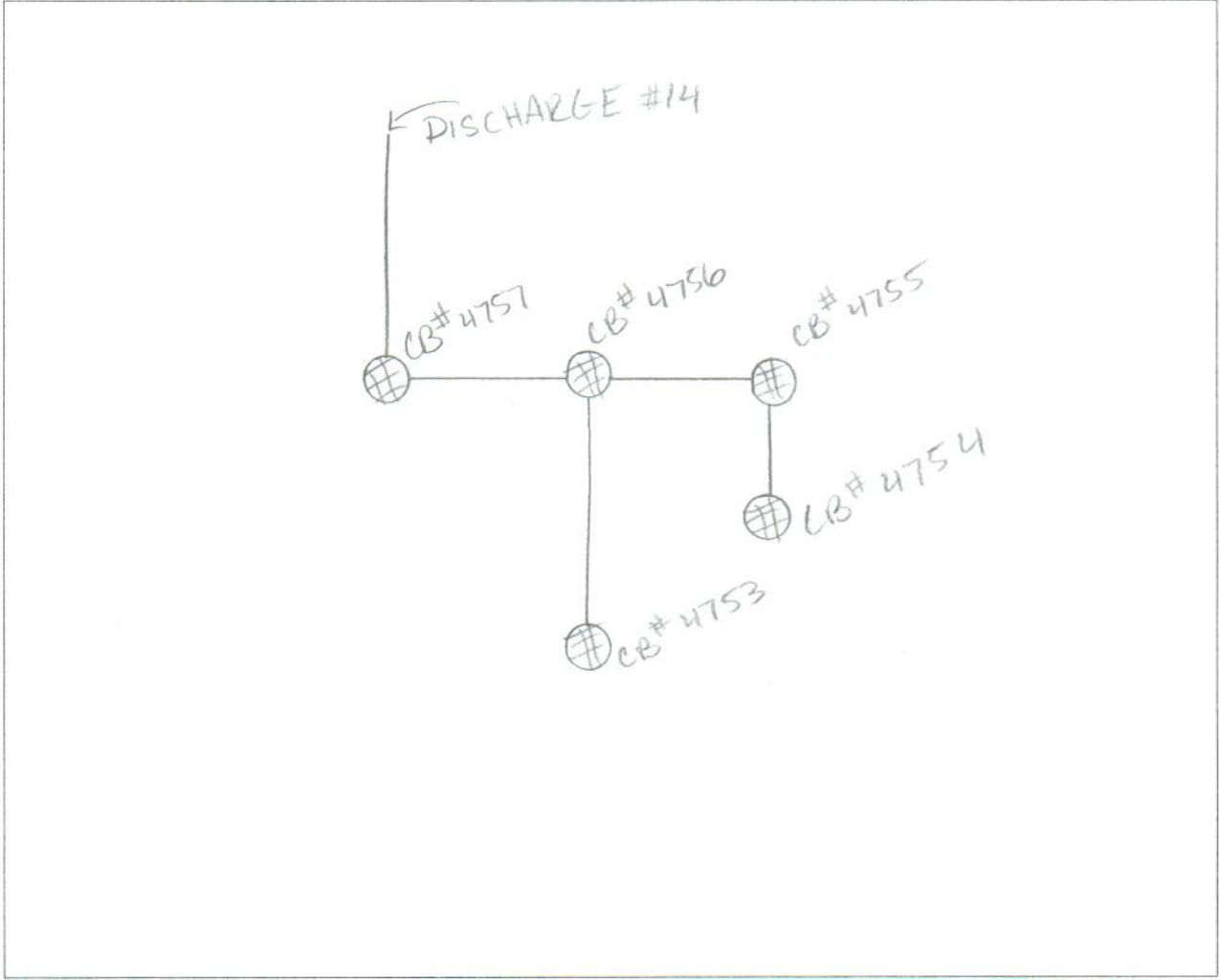
LOCATION SKETCH

Description/Comment: CB# 4755, discharge # 14

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## DRAINAGE SYSTEM INVENTORY

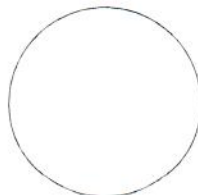
GENERAL	
Structure/Discharge ID:	CB #4754 → Discharge #14
Date _____	Time _____
Checked by _____	Checked by _____
Picture #'s _____	

LOCATION	
Address/Description:	7812 W. Willow Hwy
Latitude/State Plane:	13,043,006.323
Longitude/State Plane:	458,738.290
Cross-street:	
Receiving Waterbody:	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

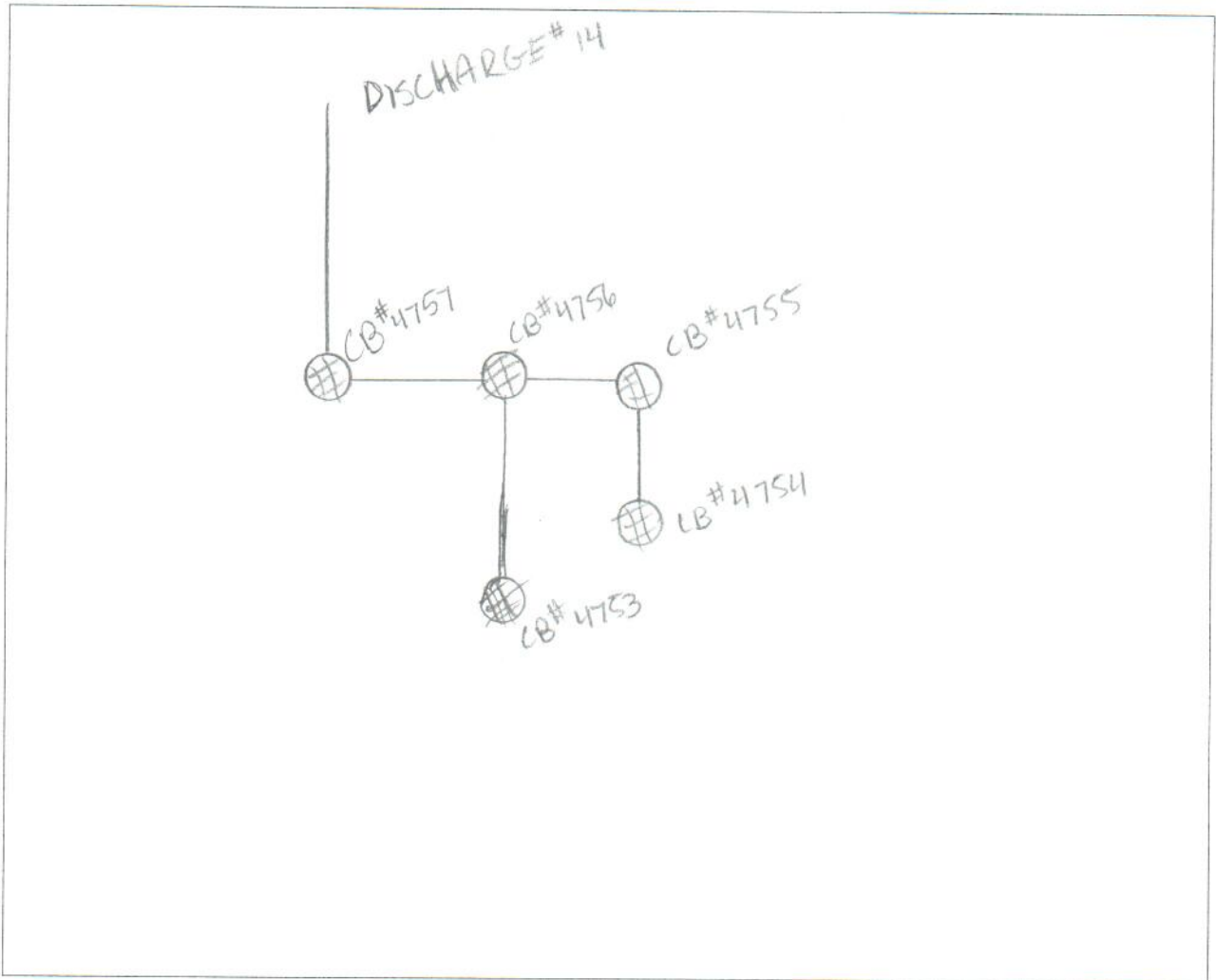
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: CB# 4754, Discharge # 14





## DRAINAGE SYSTEM INVENTORY

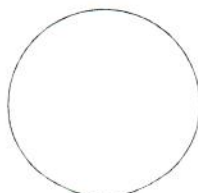
GENERAL	
Structure/Discharge ID:	<u>CB # 4753 → Discharge #14</u>
Date _____	Time _____
Checked by _____	Checked by _____
Picture #'s _____	

LOCATION	
Address/Description:	<u>7812 W. Willow Hwy</u>
Latitude/State Plane:	<u>13,042,967.400</u>
Longitude/State Plane:	<u>458,683.798</u>
Cross-street:	_____
Receiving Waterbody:	_____

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						





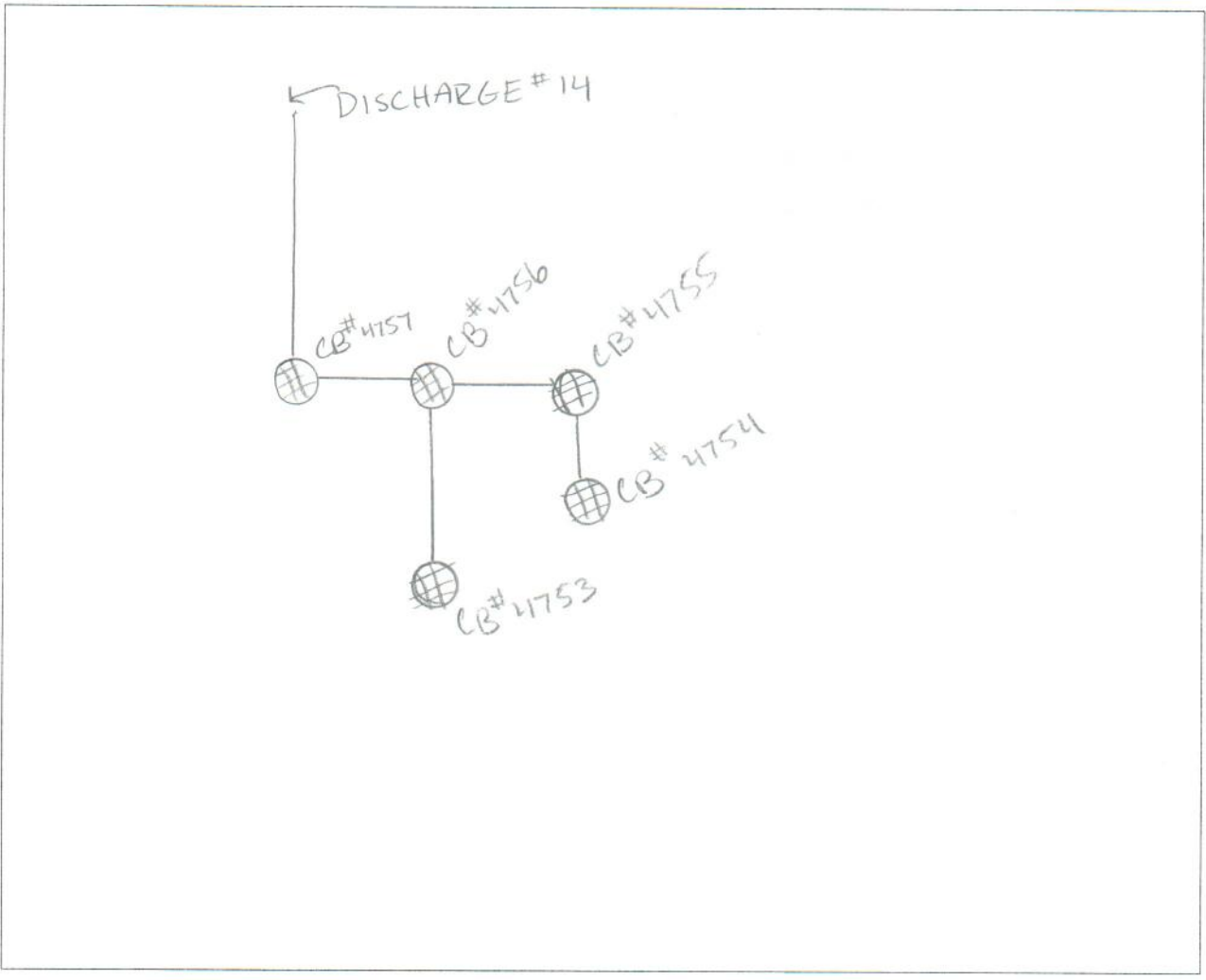
LOCATION SKETCH

Description/Comment: CB# 4753, discharge# 14

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# DRAINAGE SYSTEM INVENTORY

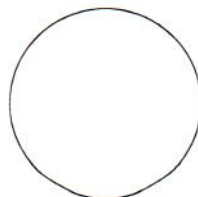
GENERAL	
Structure/Discharge ID:	DISCHARGE #15 END OF PIPE
Date	6/5/19
Time	
Checked by	
Checked by	
Picture #'s	

LOCATION	
Address/Description:	7812 W. Willow Hwy, G.C. (Water Operations Bld.)
Latitude/State Plane:	13,042,438.043 DELTA TWP
Longitude/State Plane:	458,450.258
Cross-street:	
Receiving Waterbody:	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input checked="" type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



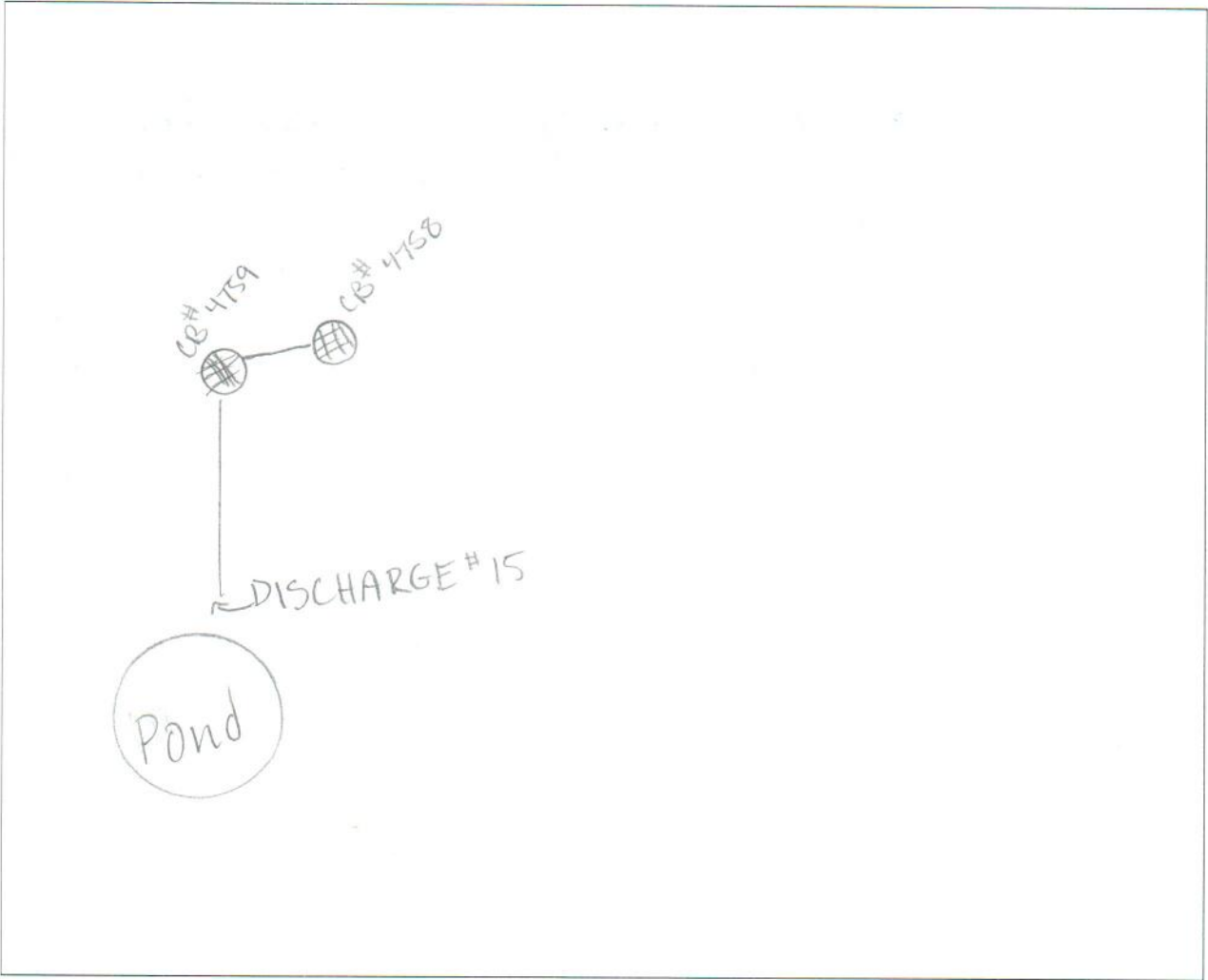
LOCATION SKETCH

Description/Comment: Discharge# 15 end of pipe

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## DRAINAGE SYSTEM INVENTORY

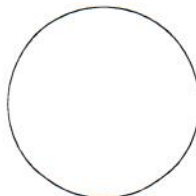
<b>GENERAL</b> <i>DISCHARGE #15</i>	
Structure/Discharge ID: <u>CB#4789</u>	
Date: <u>6/5/19</u>	Time: _____
Checked by: _____	Checked by: _____
Picture #'s: _____	

<b>LOCATION</b>	
Address/Description: <u>7812 W. Willow Hwy</u>	
Latitude/State Plane: <u>13,042,854.522</u>	
Longitude/State Plane: <u>458,539.781</u>	
Cross-street: _____	
Receiving Waterbody: _____	

<b>STRUCTURE TYPE</b>	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

<b>OWNERSHIP</b>	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



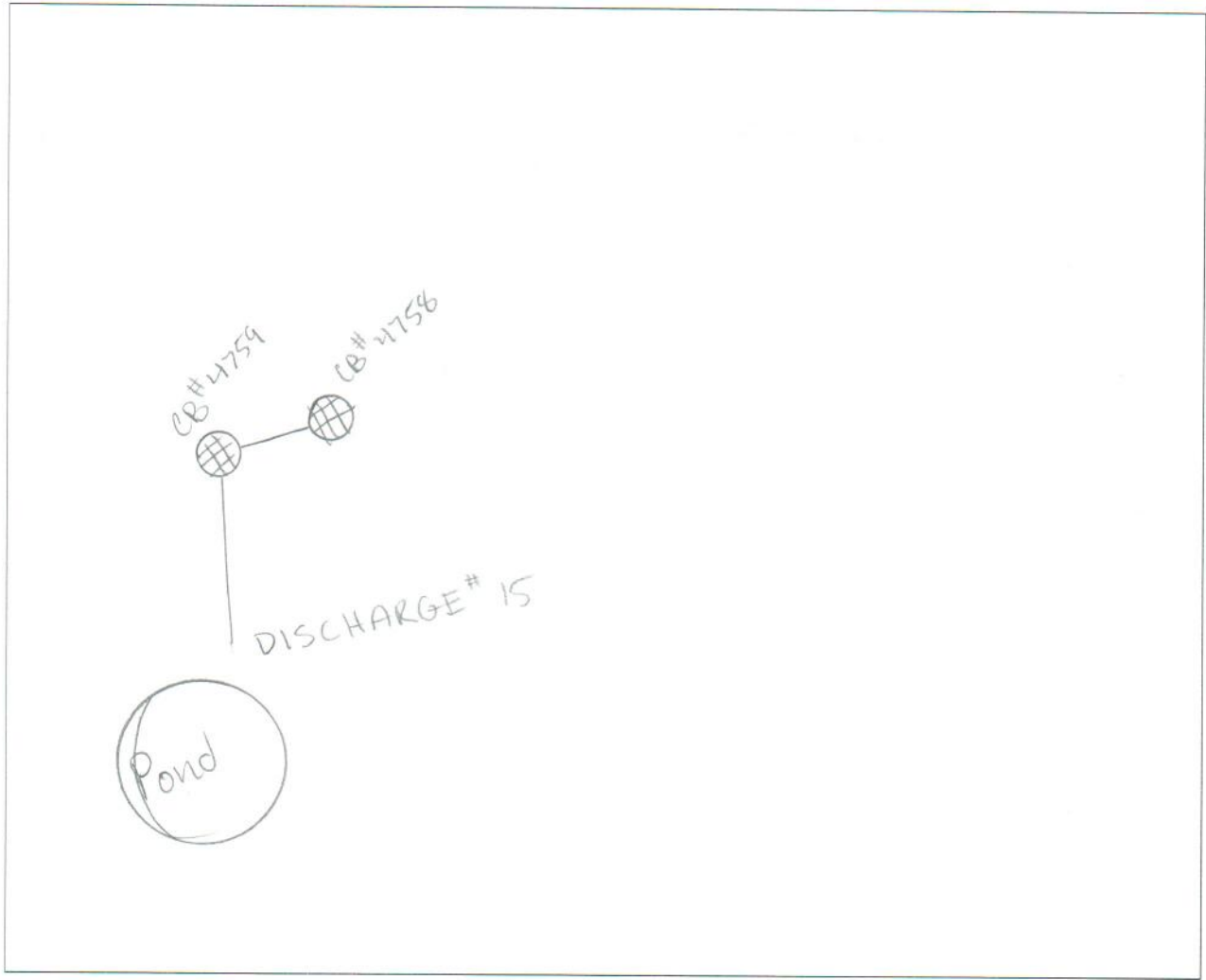
LOCATION SKETCH

Description/Comment: CB# 4759, discharge# 15

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# DRAINAGE SYSTEM INVENTORY

<b>GENERAL DISCHARGE #15</b>	
Structure/Discharge ID: <u>CB#4758</u>	
Date <u>6/5/19</u>	Time _____
Checked by _____	Checked by _____
Picture #'s _____	

<b>LOCATION</b>	
Address/Description: <u>7812 W. Willow Hwy.</u>	
Latitude/State Plane: <u>13.042, 897.338</u>	
Longitude/State Plane: <u>458.567.028</u>	
Cross-street: _____	
Receiving Waterbody: _____	

<b>STRUCTURE TYPE</b>	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

<b>OWNERSHIP</b>	
<input type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



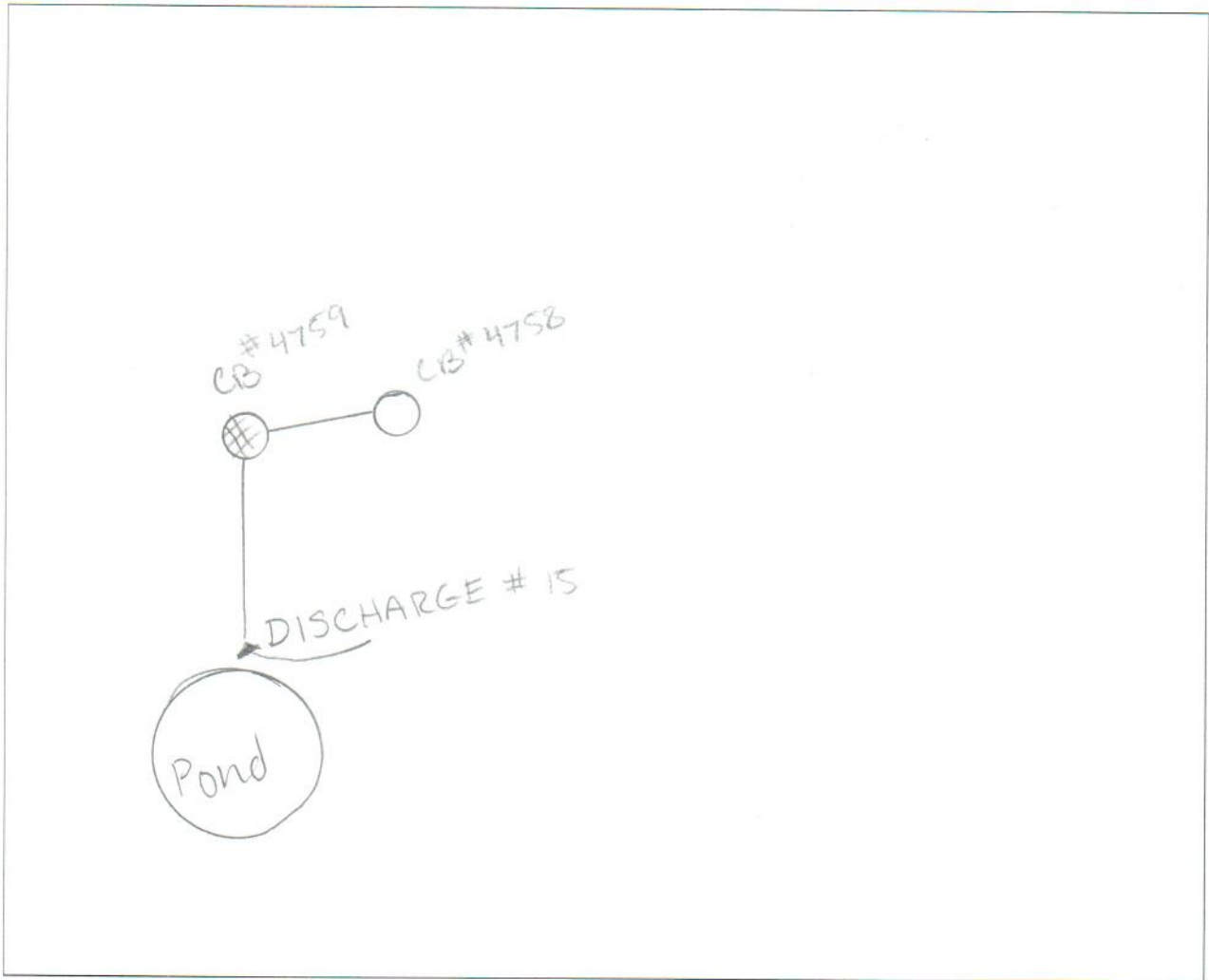
LOCATION SKETCH

Description/Comment: CB#4758, discharge# 15

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# DRAINAGE SYSTEM INVENTORY

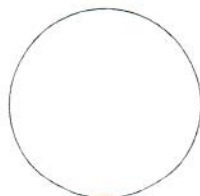
GENERAL	
Structure/Discharge ID:	<u>DISCHARGE # 16</u>
Date	<u>6/5/19</u> Time _____
Checked by	Checked by _____
Picture #'s	_____

LOCATION	
Address/Description:	<u>7812 W. Willow Hwy</u>
Latitude/State Plane:	<u>13,042,990.754</u>
Longitude/State Plane:	<u>458,154.441</u>
Cross-street:	_____
Receiving Waterbody:	_____

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input checked="" type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						





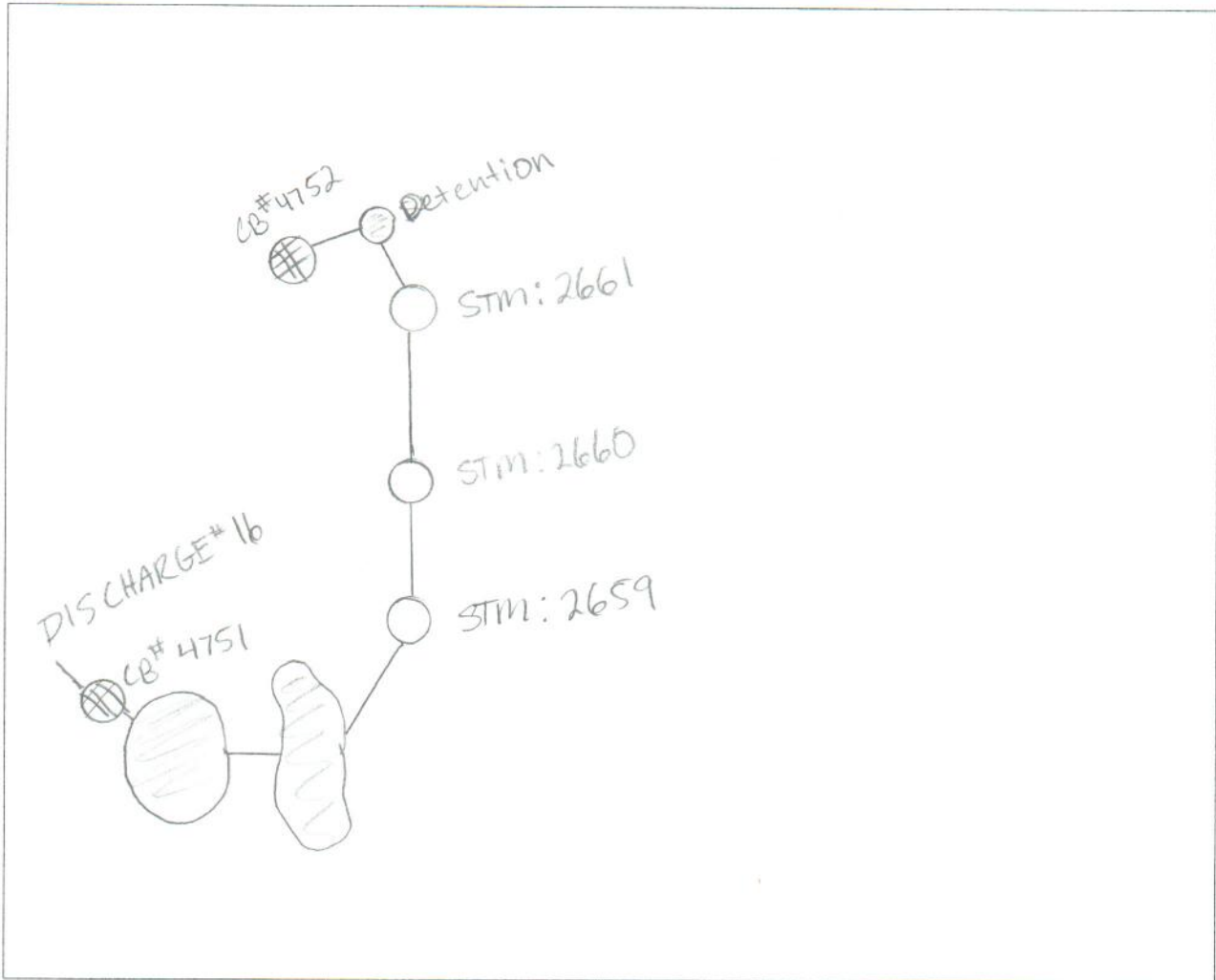
LOCATION SKETCH

Description/Comment: DISCHARGE #16, end of pipe

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# DRAINAGE SYSTEM INVENTORY

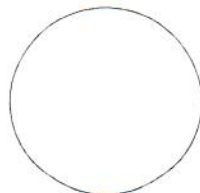
<b>GENERAL</b> <i>Discharge #16</i>	
Structure/Discharge ID: <u>CB #4751</u>	
Date <u>6/5/19</u>	Time _____
Checked by _____	Checked by _____
Picture #'s _____	

<b>LOCATION</b>	
Address/Description: <u>7812 W. Willow Hwy</u>	
Latitude/State Plane: <u>13,043,021.892</u>	
Longitude/State Plane: <u>458,138,671</u>	
Cross-street: _____	
Receiving Waterbody: _____	

<b>STRUCTURE TYPE</b>	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

<b>OWNERSHIP</b>	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



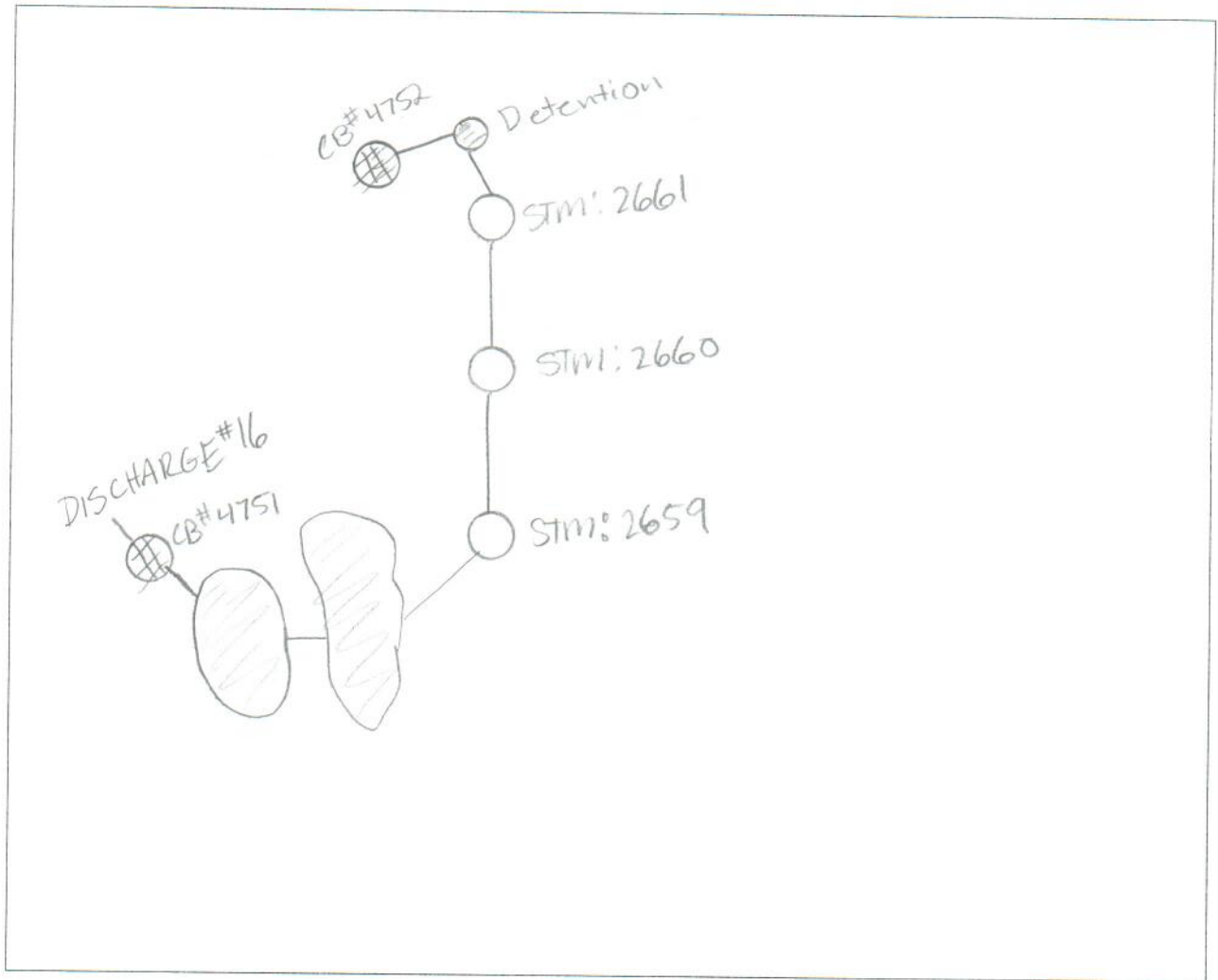
LOCATION SKETCH

Description/Comment: LB# 4751, discharge # 16

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# DRAINAGE SYSTEM INVENTORY

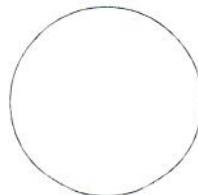
<b>GENERAL</b> <i>Discharge #16</i>			
Structure/Discharge ID:	<u>STM: 2659</u>		
Date	<u>6/5/19</u>	Time	_____
Checked by	_____	Checked by	_____
Picture #'s	_____		

<b>LOCATION</b>	
Address/Description:	<u>7812 W. Willow Hwy</u>
Latitude/State Plane:	<u>13.043, 341.064</u>
Longitude/State Plane:	<u>458, 310.134</u>
Cross-street:	_____
Receiving Waterbody:	_____

<b>STRUCTURE TYPE</b>	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

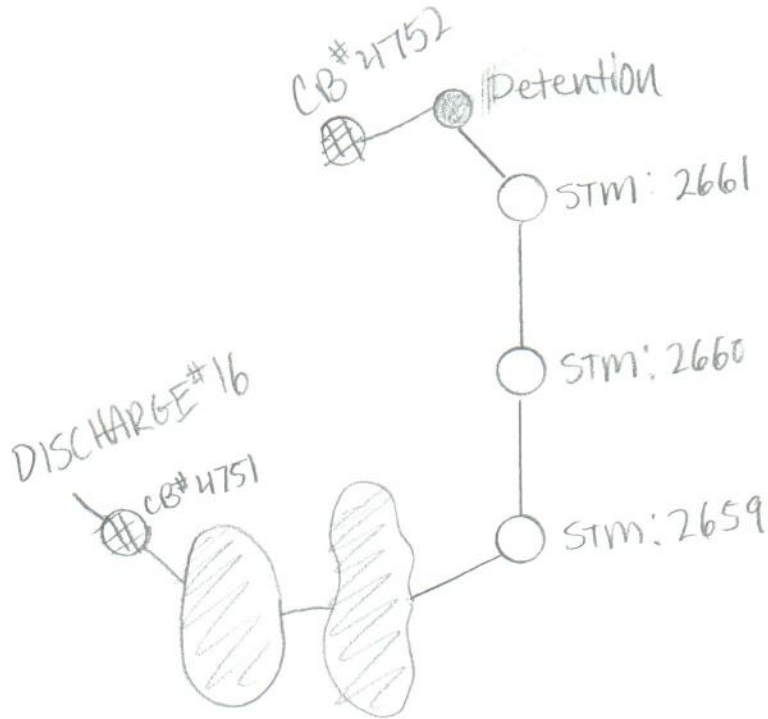
<b>OWNERSHIP</b>	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

<b>STRUCTURE/PIPE INFORMATION</b>						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: STM: 2659, discharge #16





# DRAINAGE SYSTEM INVENTORY

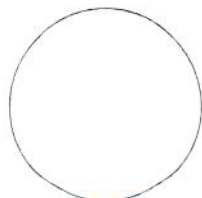
<b>GENERAL</b> <i>Discharge #16</i>	
Structure/Discharge ID:	<i>STM: 2660</i>
Date	<i>6/5/19</i> Time _____
Checked by _____	Checked by _____
Picture #'s _____	

<b>LOCATION</b>	
Address/Description:	<i>7812 W. Willow Hwy</i>
Latitude/State Plane:	<i>13,043,341.064</i>
Longitude/State Plane:	<i>458,567.028</i>
Cross-street:	_____
Receiving Waterbody:	_____

<b>STRUCTURE TYPE</b>	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

<b>OWNERSHIP</b>	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



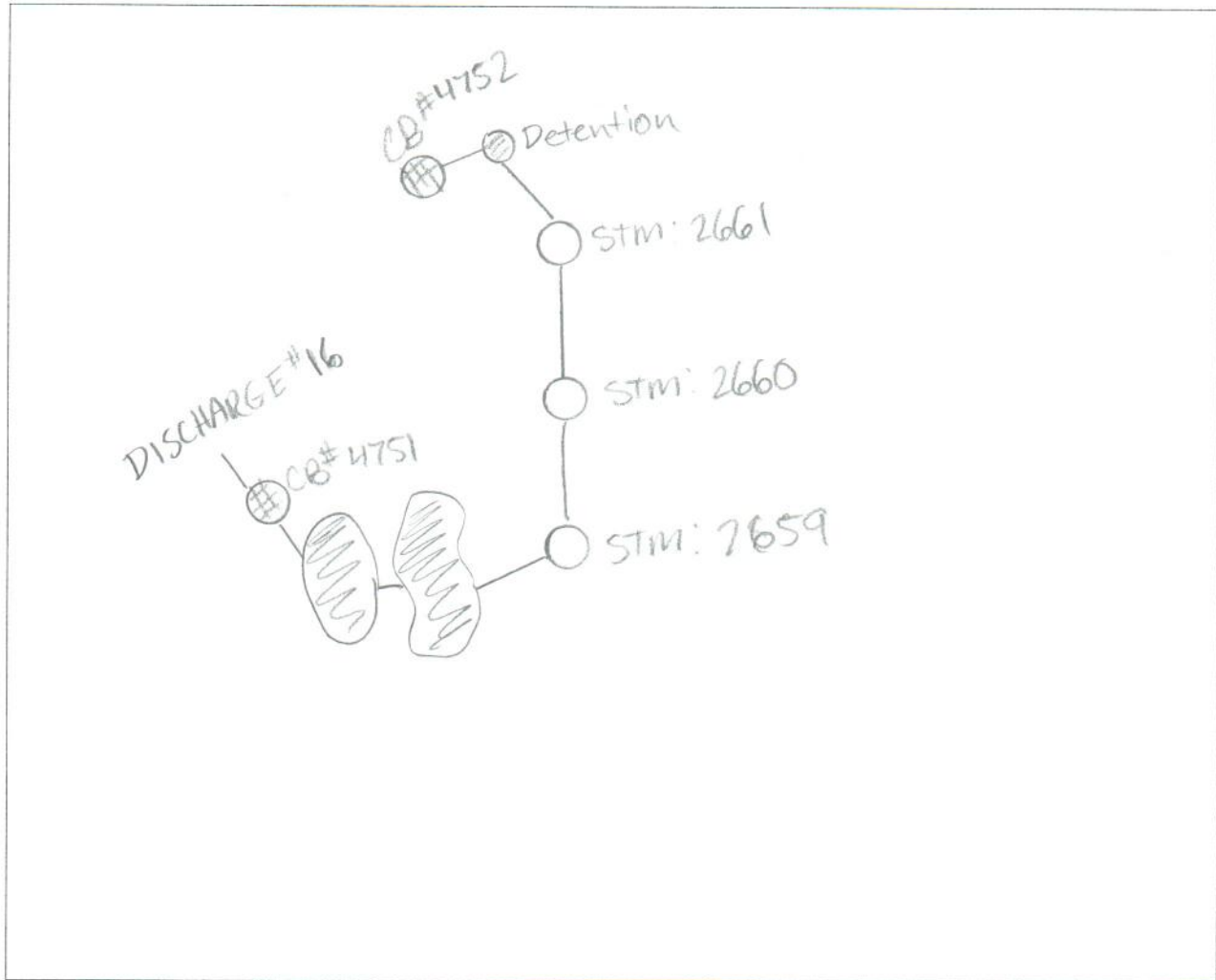
LOCATION SKETCH

Description/Comment: STM: 2660, discharge# 16

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# DRAINAGE SYSTEM INVENTORY

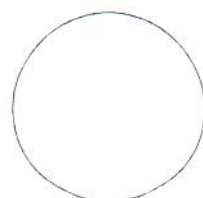
<b>GENERAL</b> <i>Discharge #16</i>			
Structure/Discharge ID:	<u>STM: 2661</u>		
Date	<u>6/5/19</u>	Time	_____
Checked by	_____	Checked by	_____
Picture #'s	_____		

<b>LOCATION</b>	
Address/Description:	<u>7812 W Willow Hwy</u>
Latitude/State Plane:	<u>13,043,341.064</u>
Longitude/State Plane:	<u>458,839.491</u>
Cross-street:	_____
Receiving Waterbody:	_____

<b>STRUCTURE TYPE</b>	
<input checked="" type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

<b>OWNERSHIP</b>	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

<b>STRUCTURE/PIPE INFORMATION</b>						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						





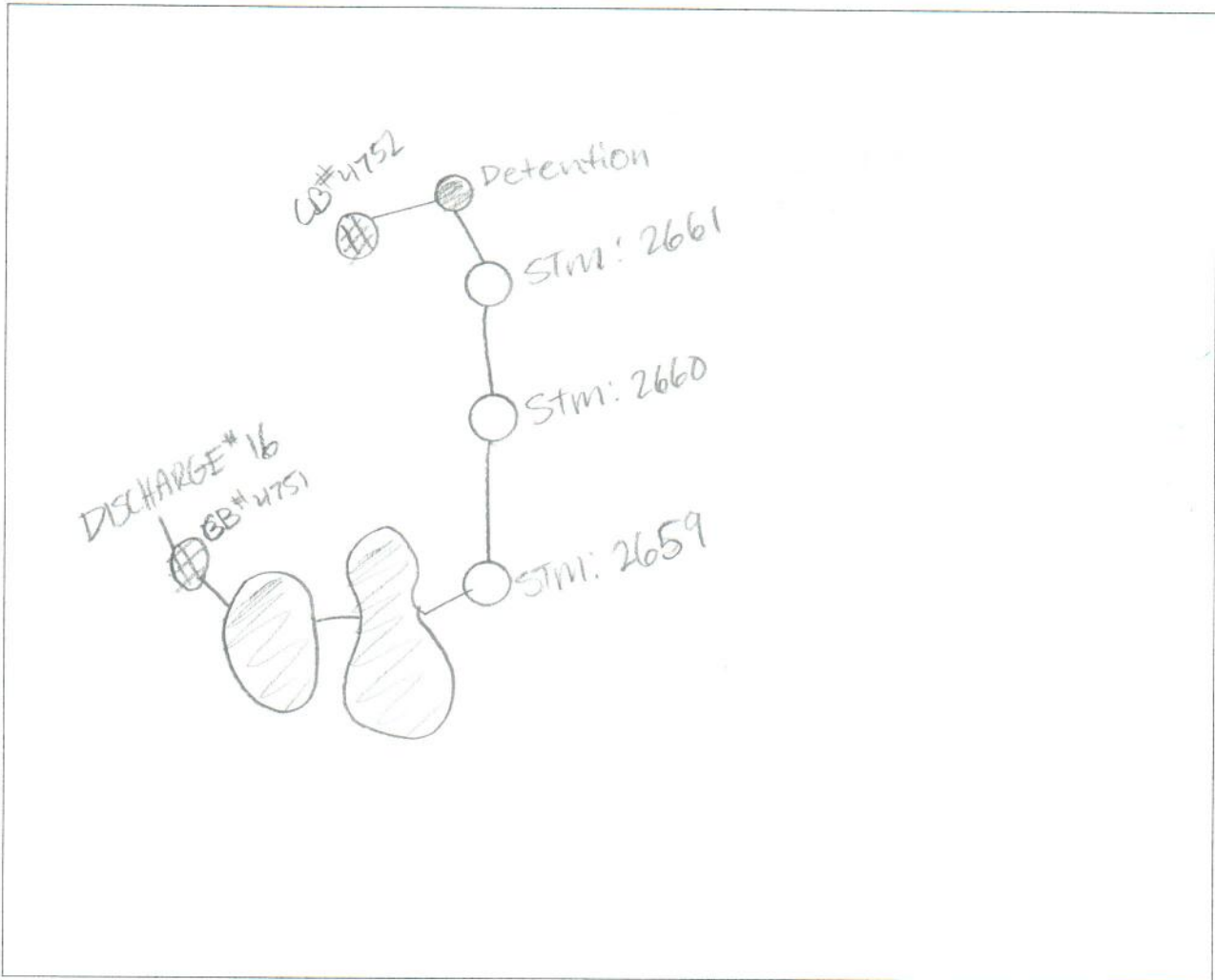
LOCATION SKETCH

Description/Comment: STM: 2661, discharge # 16

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## DRAINAGE SYSTEM INVENTORY

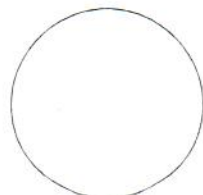
GENERAL	
Structure/Discharge ID:	CB # 4752
Date	6/5/19
Checked by	
Picture #'s	

LOCATION	
Address/Description:	792 W. Willow Hwy
Latitude/State Plane:	13,043,185.370
Longitude/State Plane:	458,812.245
Cross-street:	
Receiving Waterbody:	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



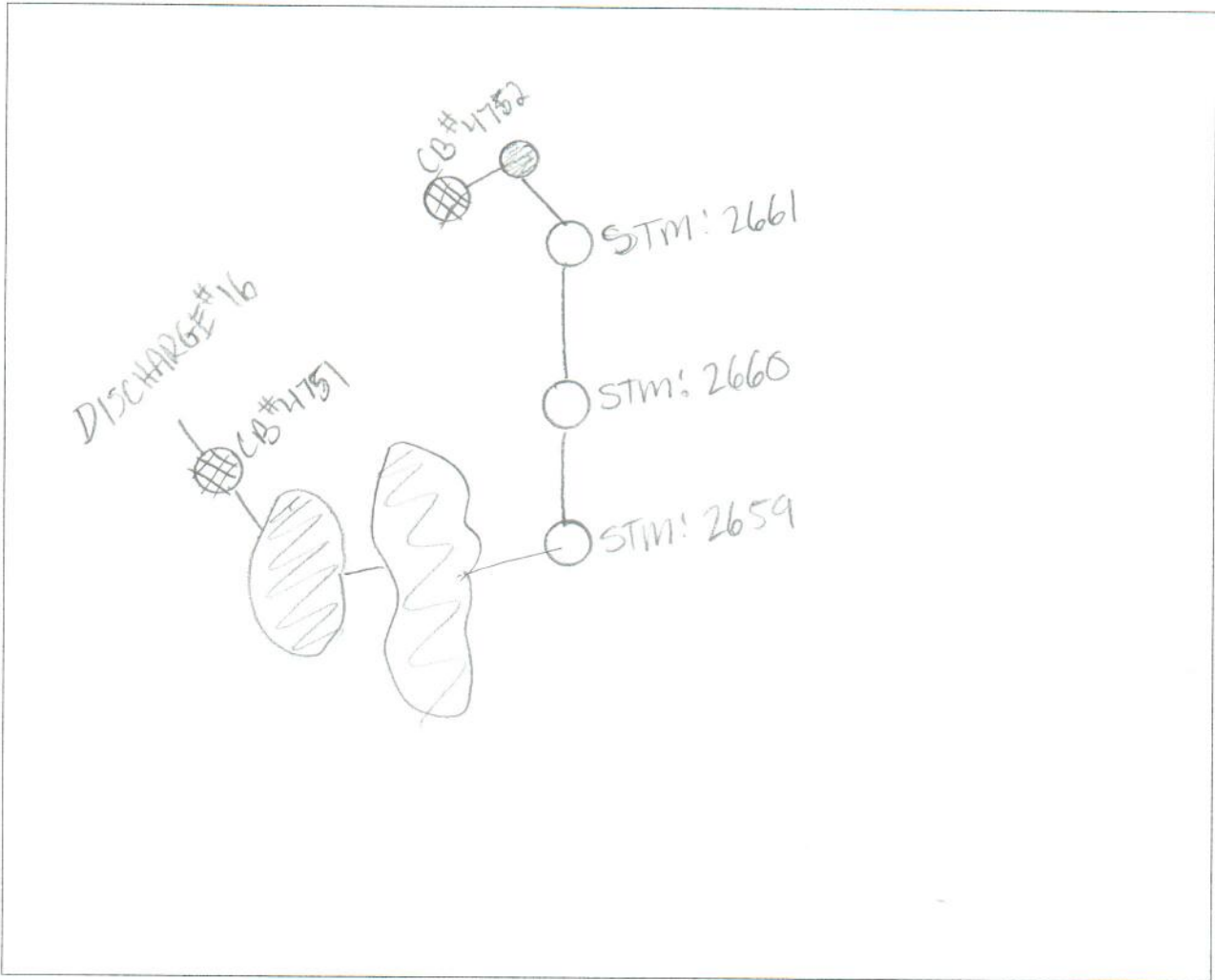
LOCATION SKETCH

Description/Comment: CB# 4752, discharge # 16

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## DRAINAGE SYSTEM INVENTORY

GENERAL	
Structure/Discharge ID: <u>DISCHARGE#17 CB#31044</u>	
Date: <u>9/4/2019</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

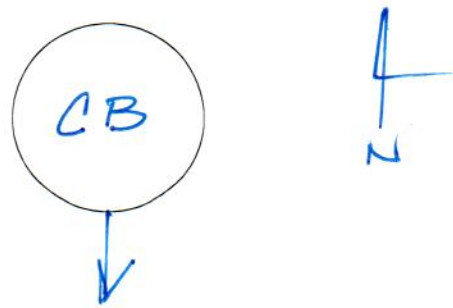
LOCATION	
Address/Description:	<u>7560 W. Willow Hwy. (DELTA Community Center)</u>
Latitude/State Plane:	<u>13044154.111</u>
Longitude/State Plane:	<u>457945.098</u>
Cross-street:	<u>CANAL/W. WILLOW</u>
Receiving Waterbody:	<u>CARRIER CREEK</u>

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

STRUCTURE/PIPE INFORMATION						
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						

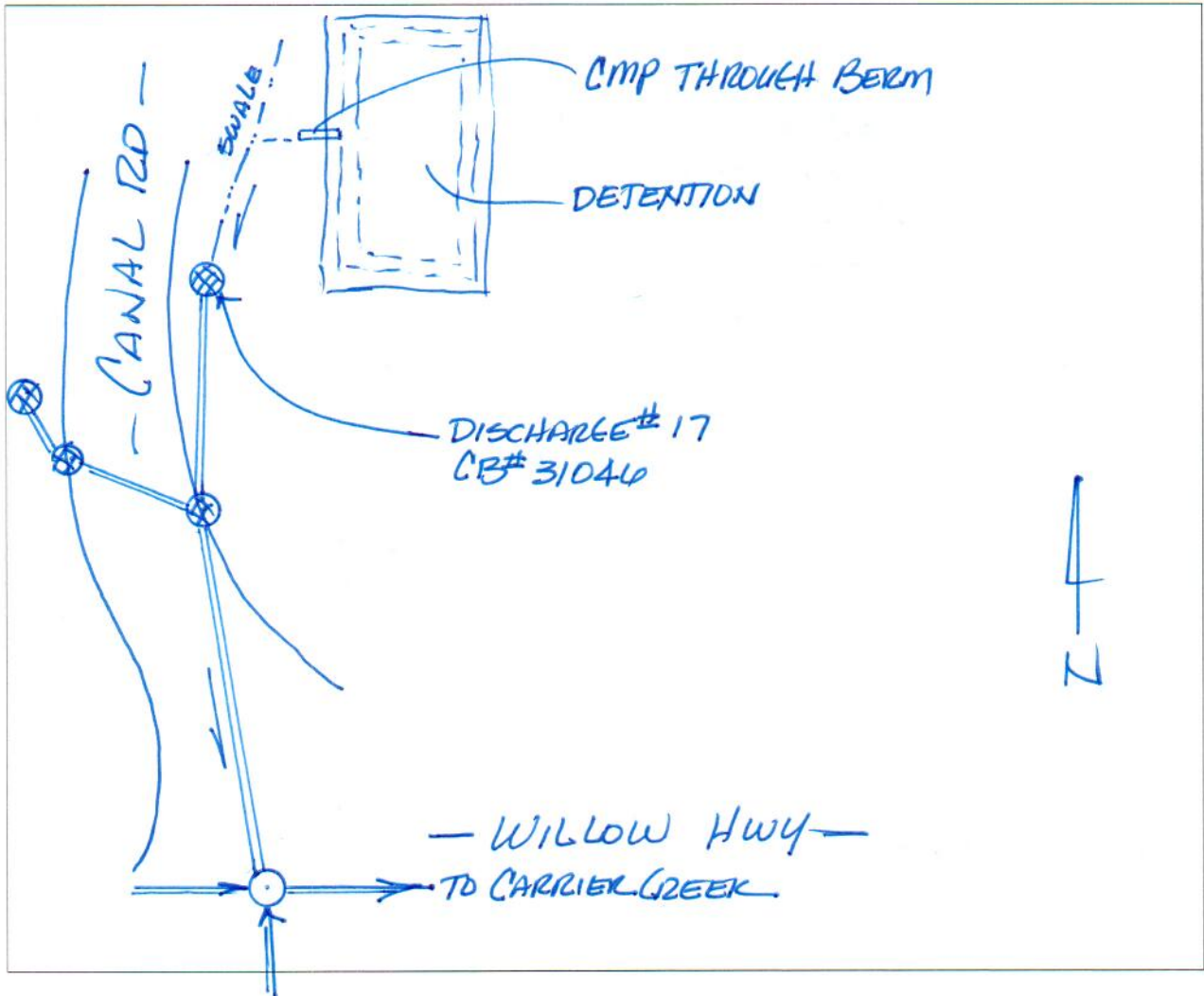
Rim = 847.83



LOCATION SKETCH

Description/Comment: DISCHARGE #17

BEEHIVE C.B. DETENTION FLOWS THROUGH 4" CMP TO  
SWALE THAT FLOWS TO CATCH BASIN. THE PARKING LOT  
FLOWS THROUGH CURB CUT TO DETENTION.



## DRAINAGE SYSTEM INVENTORY

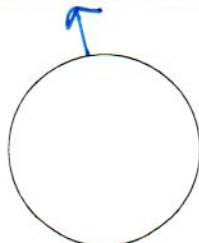
GENERAL	
Structure/Discharge ID: <u>DISCHARGE PT # 18 (OB # 54886)</u>	
Date: <u>10/15/2018</u>	Time: _____
Checked by: <u>W. KULASA</u>	Checked by: _____
Picture #'s: _____	

LOCATION	
Address/Description: <u>5717 MILLETT Hwy (RECYCLING CENTER)</u>	
Latitude/State Plane: <u>13091857.06</u>	
Longitude/State Plane: <u>436407.14</u>	
Cross-street: <u>SANDERS / MILLETT</u>	
Receiving Waterbody: <u>HUNTER + BRANCHES DRAIN</u>	

STRUCTURE TYPE	
<input type="checkbox"/> Manhole	<input type="checkbox"/> Point in Open Channel
<input checked="" type="checkbox"/> Catch Basin	<input type="checkbox"/> Not Found
<input type="checkbox"/> Outlet	<input type="checkbox"/> Blind Tie or Tap

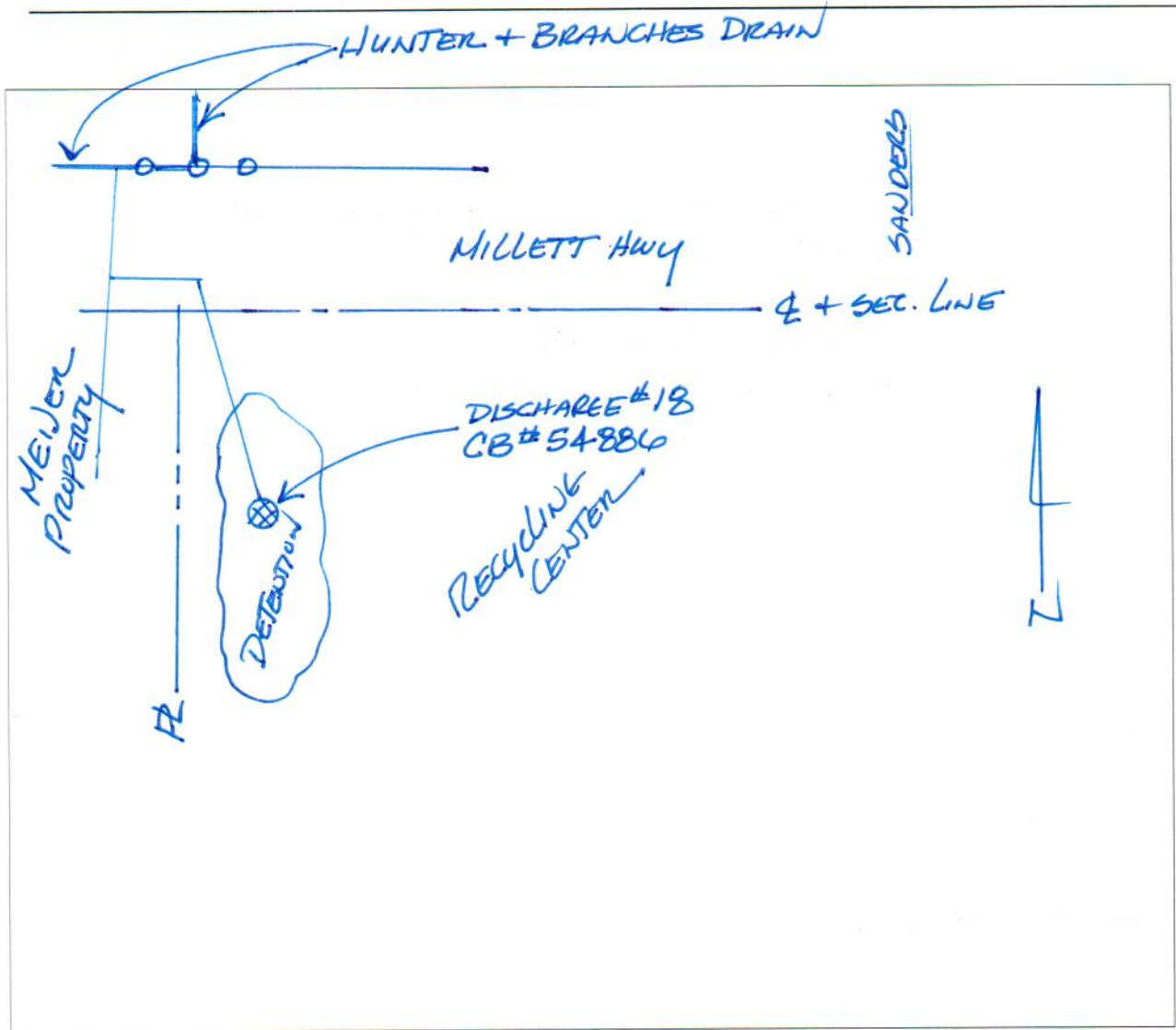
OWNERSHIP	
<input checked="" type="checkbox"/> Delta Township	<input type="checkbox"/> Road Commission
<input type="checkbox"/> Drain Commissioner	<input type="checkbox"/> Other
<input type="checkbox"/> Private	<input type="checkbox"/> Unknown

RIM ELEV = 869.01	STRUCTURE/PIPE INFORMATION					
Structure Material						
Structure Diameter						
Pipe ID						
Pipe Material						
Pipe Diameter						
Pipe Rim-Invert						



LOCATION SKETCH

Description/Comment: CB IS AN OVERFLOW FOR THE  
DETENTION POND. THE PARKING/PAVEMENT AND ALL PROPERTY  
FLOWS INTO THE DETENTION.



**DELTA CHARTER TOWNSHIP**

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**Stormwater Management Program (SWMP)**



**DELTA**  
**T O W N S H I P**

**APPENDIX G**

**DRY WEATHER SCREENING**



# DRAINAGE SYSTEM SCREENING

GENERAL			
System ID:		Discharge ID: <u>1A</u>	
Date: <u>9/13/2016</u>	Time: <u>9:30AM</u>	Air Temp: <u>70°+</u>	Last rain date/time <u>SEVERAL DAYS BEFORE</u> (48-72 hours of dry weather is required)
Chk'd By:		<input type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain	
DRY WEATHER FLOW PRESENT?			
<input checked="" type="checkbox"/> Yes, dry weather flow present <input type="checkbox"/> Trace, insufficient flow to sample <input type="checkbox"/> No dry weather flow present <input type="checkbox"/> Standing water <input type="checkbox"/> Submerged <input type="checkbox"/> Inundated <input type="checkbox"/> N/A			

## FLOW MEASUREMENTS

Pipe Sampled: \_\_\_\_\_ Size (in) 12" Direction POINTED NORTH

Method:  Area \* Velocity

General Data	Travel Time Trials
Depth (in) _____	#1 (sec) _____
Dist Traveled (ft) _____	#2 (sec) _____
Bucket Vol (l) _____	#3 (sec) _____
Channel slope (%) _____	Avg (sec) _____
Channel material _____	Vel (fps) _____
Channel, n _____	

Flow: VERY SLOW

- Intermittent  Not checked
- Flow Check  Left sand bag in channel
- Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs—put in comments section.*

## DISCHARGE OBSERVATIONS (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input checked="" type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input checked="" type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds	<input type="checkbox"/> Other	<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other		<input type="checkbox"/> Other

## Description:

FLOW WAS VERY SLOW. HAD TO TAKE SAMPLES AFTER FLOWING  
ACROSS THE PIPE END SECTION. CAN SEE TRACES OF ANIMALS.  
SMALL PONDING AT END. DISCHARGE INTO WET LAND.

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: 9/14/2014 LAB SAMPLE COLLECTED ID: #75118

NAME OF LAB: FIBERTEC + WATER TECH + KAR. LAB.

**FIELD ANALYSIS**

Surfactants	<u>20.5</u>	mg/L (.5)	Temperature	<u>63.5°</u>
Ammonia (as N)	<u>0.10</u>	mg/L (1)	pH (6-9)	<u>8.4</u>
Hardness		mg/L	Specific cond.	<u>@ THE GRAB</u>
Fluoride	<u>U</u>	mg/L		
E. coli	<u>&gt;2420</u>	Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date 9/14/2014
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

TEST FOUND THAT THERE WAS HIGH E-COLI. HOWEVER  
THE LAB SAID SAMPLE WAS RECEIVED PAST ANALYZED  
HOLD TIME. WE USED FIBERTEC FOR ALL TESTING, THEY  
HAD TO SEE THE E-COLI SAMPLE TO WATERTECH. FIBERTEC  
"DIDNOT" GET SAMPLE TO LAB ON TIME. WE RETESTED  
FOR E-COLI.

# DRAINAGE SYSTEM SCREENING

GENERAL			
System ID:		Discharge ID: <u>1A</u>	
Date: <u>10/5/14</u>	Time: <u>8:28AM</u>	Air Temp: <u>70°</u>	Last rain date/time <u>3 days AGO</u> (48-72 hours of dry weather is required)
Chk'd By: <u>WK</u>		<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain	

### DRY WEATHER FLOW PRESENT?

<input checked="" type="checkbox"/>	Yes, dry weather flow present
<input checked="" type="checkbox"/>	Trace, insufficient flow to sample
<input type="checkbox"/>	No dry weather flow present
<input type="checkbox"/>	Standing water
<input type="checkbox"/>	Submerged
<input type="checkbox"/>	Inundated
<input type="checkbox"/>	N/A

RE-SAMPLE FOR E-coli

### FLOW MEASUREMENTS

Pipe Sampled:	Size (in) <u>12"</u>	Direction	
Method: <input type="checkbox"/> Area * Velocity	<b>General Data</b>		<b>Travel Time Trials</b>
	Depth (in)		#1 (sec)
	Dist Traveled (ft)		#2 (sec)
	Bucket Vol (l)		#3 (sec)
	Channel slope (%)		Avg (sec)
	Channel material		Vel (fps)
	Channel, n		

Flow: slow

- Intermittent  Not checked
- Flow Check  Left sand bag in channel
- Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs—put in comments section.*

### DISCHARGE OBSERVATIONS (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input checked="" type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input checked="" type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input checked="" type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds	<input type="checkbox"/> Other	<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other		<input type="checkbox"/> Other

### Description:

RE-SAMPLING FOR E-coli

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**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: 10/5/2014 LAB SAMPLE COLLECTED ID: 94113-01

NAME OF LAB: FIBERTEC WATERTECH

**FIELD ANALYSIS**

Surfactants	_____	mg/L (.5)	Temperature	_____
Ammonia (as N)	_____	mg/L (1)	pH (6-9)	_____
Hardness	_____	mg/L	Specific cond.	_____
Fluoride	_____	mg/L		
E. coli	<u>4</u>	Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date 10/5/2014
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

TEST CAME BACK BELOW WHAT IS REQUIRED.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

# DRAINAGE SYSTEM SCREENING

GENERAL			
System ID:		Discharge ID: <u>1B</u>	
Date: <u>9-13-16</u>	Time: <u>10AM</u>	Air Temp: <u>70°f</u>	Last rain date/time <u>SEVERAL DAYS BEFORE</u> (48-72 hours of dry weather is required)
Chk'd By:		<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain	
DRY WEATHER FLOW PRESENT?			
<input type="checkbox"/> Yes, dry weather flow present <input checked="" type="checkbox"/> Trace, insufficient flow to sample <input type="checkbox"/> No dry weather flow present <input type="checkbox"/> Standing water <input type="checkbox"/> Submerged <input type="checkbox"/> Inundated <input type="checkbox"/> N/A			

## FLOW MEASUREMENTS

Pipe Sampled: \_\_\_\_\_ Size (in) 12" Direction \_\_\_\_\_

Method:  Area \* Velocity

General Data		Travel Time Trials
Depth (in)	_____	#1 (sec) _____
Dist Traveled (ft)	_____	#2 (sec) _____
Bucket Vol (l)	_____	#3 (sec) _____
Channel slope (%)	_____	Avg (sec) _____
Channel material	_____	Vel (fps) _____
Channel, n	_____	

Flow: \_\_\_\_\_

Intermittent  Not checked

Flow Check  Left sand bag in channel

Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs—put in comments section.*

## DISCHARGE OBSERVATIONS (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input checked="" type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

## Description:

WHEN DEQ DID OUR AUDIT, TRACE OF WATER PRESENT AND PIPE WAS COLLAPSING. WE COULD NOT SAMPLE UNTIL REPAIR WAS MADE.

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

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# DRAINAGE SYSTEM SCREENING

GENERAL			
System ID: _____		Discharge ID: <u>1 B</u>	
Date: <u>10/11/2016</u>	Time: <u>10 AM</u>	Air Temp: <u>60°f</u>	Last rain date/time <u>10/9/7/2016</u> (48-72 hours of dry weather is required)
Chk'd By: <u>WK</u>		<input type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain	
DRY WEATHER FLOW PRESENT?			
<input type="checkbox"/> Yes, dry weather flow present <input type="checkbox"/> Trace, insufficient flow to sample <input checked="" type="checkbox"/> No dry weather flow present <input type="checkbox"/> Standing water <input type="checkbox"/> Submerged <input type="checkbox"/> Inundated <input type="checkbox"/> N/A			

## FLOW MEASUREMENTS

Pipe Sampled: \_\_\_\_\_ Size (in) \_\_\_\_\_ Direction \_\_\_\_\_

Method:  Area \* Velocity

General Data		Travel Time Trials	
Depth (in)	_____	#1 (sec)	_____
Dist Traveled (ft)	_____	#2 (sec)	_____
Bucket Vol (l)	_____	#3 (sec)	_____
Channel slope (%)	_____	Avg (sec)	_____
Channel material	_____	Vel (fps)	_____
Channel, n	_____		

Flow: \_\_\_\_\_

- Intermittent  Not checked
- Flow Check  Left sand bag in channel
- Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs—put in comments section.*

## DISCHARGE OBSERVATIONS (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description:

RECHECKED FOR FLOW. NONE PRESENT AFTER REPAIR HAS BEEN DONE.

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

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**DRAINAGE SYSTEM SCREENING**

**GENERAL**

Date 9/14/2016 Time 9AM ID 2A  
 Crew Initials WIC Chk By: \_\_\_\_\_ Air Temp 70+  Clear/Sunny  
 Photographs: Roll # \_\_\_\_\_ Picture # \_\_\_\_\_ Rain  Yes  No  Partly Cloudy  
 Overcast

**FLOW MEASUREMENTS**

Pipe Sampled: Size (in) 15" Direction \_\_\_\_\_

Depth: <input checked="" type="checkbox"/> Dry, No Water Present	<b>General Data</b>	<b>Travel Time Trials</b>
<input type="checkbox"/> Trace, insufficient to quantify	Depth, (in) _____	#1 (sec) _____
Velocity: <input type="checkbox"/> Insufficient to quantify	Dist Traveled, (ft) _____	#2 (sec) _____
Method: <input type="checkbox"/> Area * Velocity	Bucket Vol, (gal) _____	#3 (sec) _____
<input type="checkbox"/> Bucket	Channel Slope (%) _____	Avg (sec) _____
<input type="checkbox"/> Manning's	Channel Material _____	Vel (fps) _____
Flow: _____	Channel, n _____	

Intermittent  Not Checked  
 Flow Check  Left Sand Bag in Channel  
 Removed Sand Bag, intermittent DWF present  Yes  No  
*if possible describe frequency, duration, time of day of flow slugs - put in comments section*

**OBSERVATIONS** (if "other" checked fill in description at bottom of page)

<b>Odor</b>	<input type="checkbox"/> None	<input type="checkbox"/> Musty	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Gas	<input type="checkbox"/> Oil	<input type="checkbox"/> Other
<b>Color</b>	<input type="checkbox"/> Clear	<input type="checkbox"/> Light Brown	<input type="checkbox"/> Dark Brown	<input type="checkbox"/> Green	<input type="checkbox"/> Grey	<input type="checkbox"/> Black	<input type="checkbox"/> Other
<b>Turbidity</b>	<input type="checkbox"/> Clear	<input type="checkbox"/> Slightly Turbid	<input type="checkbox"/> Moderate Turbid	<input type="checkbox"/> Highly Turbid	<input type="checkbox"/> Opaque		<input type="checkbox"/> Other
<b>Floatables</b>	<input type="checkbox"/> None	<input type="checkbox"/> Trash	<input type="checkbox"/> Sewage	<input type="checkbox"/> Green Scum	<input type="checkbox"/> Oil Sheen		<input type="checkbox"/> Other
<b>Deposits/Stains</b>	<input type="checkbox"/> None	<input type="checkbox"/> Mineral	<input type="checkbox"/> Sediment	<input type="checkbox"/> Oily	<input type="checkbox"/> Grease		<input type="checkbox"/> Other
<b>Vegetation</b>	<input type="checkbox"/> None	<input type="checkbox"/> Normal	<input type="checkbox"/> Excessive	<input type="checkbox"/> Algae			<input type="checkbox"/> Other
<b>Structural</b>	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking	<input type="checkbox"/> Spalling	<input type="checkbox"/> Corrosion	<input type="checkbox"/> Settlement		<input type="checkbox"/> Other

**CHEMICAL ANALYSIS**  
 FIELD ANALYSIS

LAB SAMPLE COLLECTED Chem. Sample ID \_\_\_\_\_  
 Bact. Sample ID \_\_\_\_\_

Temperature \_\_\_\_\_ °F  
 pH \_\_\_\_\_

Chemistry

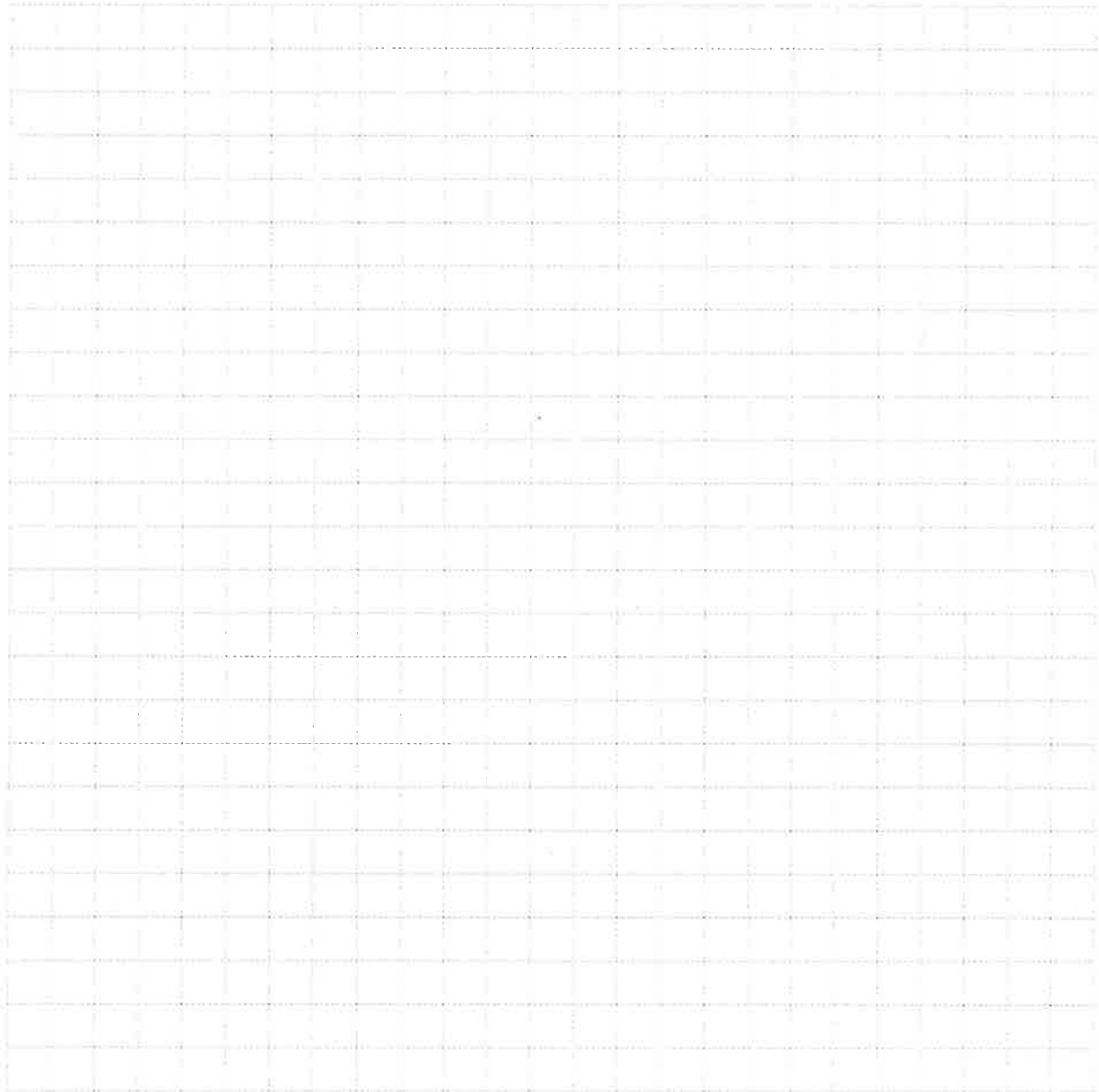
Fluoride	_____	mg/L
Ammonia (as N)	_____	mg/L
Hardness (as CaCO3)	_____	mg/L
Total Organic Carbon	_____	mg/L
Surfactant	_____	mg/L
Other (if necessary)	_____	
<input type="checkbox"/> E. Coli	_____	per 100ml

Comments 15" CONC END SECTION, NO FLOW, FLOWS INTO A RAIN GARDEN BEHIND LIBRARY, NEXT TO PATHWAY, NEAR THE WOODS

## LOCATION SKETCH

### LOCATION SKETCH CHECK LIST

- Label Street Names
- Indicate North
- Locate manholes by dimensions from property lines, back of curb, or edge of pavement
- Sketch catch basins and connections (no measurements necessary).
- Indicate (if possible) distance to upstream and downstream manholes
- Landmarks/nearest address, if any
- Flow direction
- Sample point
- Special access/traffic control notes
- Sample and velocity/depth measure location



**DRAINAGE SYSTEM SCREENING**

**GENERAL**

Date 9/14/2016 Time 9:5AM ID 2B  
 Crew Initials WJC Chk By: \_\_\_\_\_ Air Temp 70+  Clear/Sunny  
 Photographs: Roll # \_\_\_\_\_ Picture # \_\_\_\_\_ Rain  Yes  No  Partly Cloudy  
 Overcast

**FLOW MEASUREMENTS**

Pipe Sampled: Size (in) 15" Direction \_\_\_\_\_  
 Depth:  Dry, No Water Present  Trace, insufficient to quantify **General Data**  
 Velocity:  Insufficient to quantify **Depth, (in)** \_\_\_\_\_  
 Method:  Area \* Velocity **Dist Traveled, (ft)** \_\_\_\_\_ #1 (sec) \_\_\_\_\_  
 Bucket **Bucket Vol, (gal)** \_\_\_\_\_ #2 (sec) \_\_\_\_\_  
 Manning's **Channel Slope (%)** \_\_\_\_\_ #3 (sec) \_\_\_\_\_  
**Channel Material** \_\_\_\_\_ Avg (sec) \_\_\_\_\_  
**Channel, n** \_\_\_\_\_ Vel (fps) \_\_\_\_\_  
 Intermittent  Not Checked  
 Flow Check  Left Sand Bag in Channel  
 Removed Sand Bag, intermittent DWF present  Yes  No  
*if possible describe frequency, duration, time of day of flow slugs - put in comments section*

**OBSERVATIONS** (if "other" checked fill in description at bottom of page)

<b>Odor</b>	<input type="checkbox"/> None	<input type="checkbox"/> Musty	<input type="checkbox"/> Sewage	<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Gas	<input type="checkbox"/> Oil	<input type="checkbox"/> Other
<b>Color</b>	<input type="checkbox"/> Clear	<input type="checkbox"/> Light Brown	<input type="checkbox"/> Dark Brown	<input type="checkbox"/> Green	<input type="checkbox"/> Grey	<input type="checkbox"/> Black	<input type="checkbox"/> Other
<b>Turbidity</b>	<input type="checkbox"/> Clear	<input type="checkbox"/> Slightly Turbid	<input type="checkbox"/> Moderate Turbid	<input type="checkbox"/> Highly Turbid	<input type="checkbox"/> Opaque		<input type="checkbox"/> Other
<b>Floatables</b>	<input type="checkbox"/> None	<input type="checkbox"/> Trash	<input type="checkbox"/> Sewage	<input type="checkbox"/> Green Scum	<input type="checkbox"/> Oil Sheen		<input type="checkbox"/> Other
<b>Deposits/ Stains</b>	<input type="checkbox"/> None	<input type="checkbox"/> Mineral	<input type="checkbox"/> Sediment	<input type="checkbox"/> Oily	<input type="checkbox"/> Grease		<input type="checkbox"/> Other
<b>Vegetation</b>	<input type="checkbox"/> None	<input type="checkbox"/> Normal	<input type="checkbox"/> Excessive	<input type="checkbox"/> Algae			<input type="checkbox"/> Other
<b>Structural</b>	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking	<input type="checkbox"/> Spalling	<input type="checkbox"/> Corrosion	<input type="checkbox"/> Settlement		<input type="checkbox"/> Other

**CHEMICAL ANALYSIS**

**FIELD ANALYSIS**

LAB SAMPLE COLLECTED Chem. Sample ID \_\_\_\_\_  
 Bact. Sample ID \_\_\_\_\_

Temperature \_\_\_\_\_ °F  
 pH \_\_\_\_\_

**Chemistry**  
 Fluoride \_\_\_\_\_ mg/L  
 Ammonia (as N) \_\_\_\_\_ mg/L  
 Hardness (as CaCO3) \_\_\_\_\_ mg/L  
 Total Organic Carbon \_\_\_\_\_ mg/L  
 Surfactant \_\_\_\_\_ mg/L  
 Other (if necessary) \_\_\_\_\_  
 E. Coli \_\_\_\_\_ per 100ml

Comments NO FLOW, CONC. END SECTION. FLOWS ONTO THE GROUND. BEHIND LIBRARY, NEAR THE WOODS.

## LOCATION SKETCH

### LOCATION SKETCH CHECK LIST

- Label Street Names
- Indicate North
- Locate manholes by dimensions from property lines, back of curb, or edge of pavement
- Sketch catch basins and connections (no measurements necessary).
- Indicate (if possible) distance to upstream and downstream manholes
- Landmarks/nearest address, if any
- Flow direction
- Sample point
- Special access/traffic control notes
- Sample and velocity/depth measure location

A large grid of graph paper for sketching, consisting of approximately 20 columns and 30 rows of small squares. The grid is intended for drawing a location sketch of manholes and catch basins.

# DRAINAGE SYSTEM SCREENING

GENERAL			
System ID:		Discharge ID: <u>#4</u>	
Date: <u>9/14/14</u>	Time: <u>10:30</u>	Air Temp: <u>70°F</u>	Last rain date/time <u>SEVERAL DAYS BEFORE</u> (48-72 hours of dry weather is required)
Chk'd By:		<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain	
DRY WEATHER FLOW PRESENT?			
<input type="checkbox"/> Yes, dry weather flow present <input type="checkbox"/> Trace, insufficient flow to sample <input checked="" type="checkbox"/> No dry weather flow present <input type="checkbox"/> Standing water <input type="checkbox"/> Submerged <input type="checkbox"/> Inundated <input type="checkbox"/> N/A			

## FLOW MEASUREMENTS

Pipe Sampled: \_\_\_\_\_ Size (in) \_\_\_\_\_ Direction \_\_\_\_\_

Method:  Area \* Velocity

General Data		Travel Time Trials	
Depth (in)	_____	#1 (sec)	_____
Dist Traveled (ft)	_____	#2 (sec)	_____
Bucket Vol (l)	_____	#3 (sec)	_____
Channel slope (%)	_____	Avg (sec)	_____
Channel material	_____	Vel (fps)	_____
Channel, n	_____		

Flow: \_\_\_\_\_

- Intermittent  Not checked
- Flow Check  Left sand bag in channel
- Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs—put in comments section.*

## DISCHARGE OBSERVATIONS (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

**Description:**

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**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

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# DRAINAGE SYSTEM SCREENING

<b>GENERAL</b>			
System ID:		Discharge ID: <b># 5</b>	
Date: <b>9/12/14</b>	Time: <b>10:50</b>	Air Temp: <b>70 ±</b>	Last rain date/time: <b>SEVERAL Days Before</b> (48-72 hours of dry weather is required)
Chk'd By:		<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain	
<b>DRY WEATHER FLOW PRESENT?</b>			
<input type="checkbox"/> Yes, dry weather flow present <input type="checkbox"/> Trace, insufficient flow to sample <input checked="" type="checkbox"/> No dry weather flow present <input type="checkbox"/> Standing water <input type="checkbox"/> Submerged <input type="checkbox"/> Inundated <input type="checkbox"/> N/A			

## FLOW MEASUREMENTS

Pipe Sampled: \_\_\_\_\_ Size (in) \_\_\_\_\_ Direction \_\_\_\_\_

Method:  Area \* Velocity

	General Data	Travel Time Trials
Depth (in)	_____	#1 (sec) _____
Dist Traveled (ft)	_____	#2 (sec) _____
Bucket Vol (l)	_____	#3 (sec) _____
Channel slope (%)	_____	Avg (sec) _____
Channel material	_____	Vel (fps) _____
Channel, n	_____	

Flow: \_\_\_\_\_

Intermittent  Not checked

Flow Check  Left sand bag in channel

Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs—put in comments section.*

## DISCHARGE OBSERVATIONS (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

**Description:**

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**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

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# DRAINAGE SYSTEM SCREENING

GENERAL			
System ID: _____		Discharge ID: <u>#6</u>	
Date: <u>9/14/14</u>	Time: <u>11:00</u>	Air Temp: <u>70°</u>	Last rain date/time <u>SEVERAL DAYS BEFORE</u> (48-72 hours of dry weather is required)
Chk'd By: _____		<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain	
DRY WEATHER FLOW PRESENT?			
<input type="checkbox"/> Yes, dry weather flow present <input type="checkbox"/> Trace, insufficient flow to sample <input checked="" type="checkbox"/> No dry weather flow present <input type="checkbox"/> Standing water <input type="checkbox"/> Submerged <input type="checkbox"/> Inundated <input type="checkbox"/> N/A			

## FLOW MEASUREMENTS

Pipe Sampled: _____	Size (in) _____		Direction _____
Method: <input type="checkbox"/> Area * Velocity	<b>General Data</b>		<b>Travel Time Trials</b>
	Depth (in) _____		#1 (sec) _____
	Dist Traveled (ft) _____		#2 (sec) _____
	Bucket Vol (l) _____		#3 (sec) _____
	Channel slope (%) _____		Avg (sec) _____
	Channel material _____		Vel (fps) _____
	Channel, n _____		

Flow: \_\_\_\_\_

- Intermittent  Not checked
- Flow Check  Left sand bag in channel
- Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs—put in comments section.*

## DISCHARGE OBSERVATIONS (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

**Description:**

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**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

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# DRAINAGE SYSTEM SCREENING

<b>GENERAL</b>			
System ID:	Discharge ID: <b>8</b>		
Date: <b>9/14/2014</b>	Time: <b>10am</b>	Air Temp: <b>70°+</b>	Last rain date/time (48-72 hours of dry weather is required)
Chk'd By: <b>WK</b>		<input type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain	
<b>DRY WEATHER FLOW PRESENT?</b>			
<input type="checkbox"/> Yes, dry weather flow present <input type="checkbox"/> Trace, insufficient flow to sample <input checked="" type="checkbox"/> No dry weather flow present <input type="checkbox"/> Standing water <input type="checkbox"/> Submerged <input type="checkbox"/> Inundated <input type="checkbox"/> N/A			

## FLOW MEASUREMENTS

Pipe Sampled: \_\_\_\_\_ Size (in) \_\_\_\_\_ Direction \_\_\_\_\_

Method:  Area \* Velocity

General Data	Travel Time Trials
Depth (in) _____	#1 (sec) _____
Dist Traveled (ft) _____	#2 (sec) _____
Bucket Vol (l) _____	#3 (sec) _____
Channel slope (%) _____	Avg (sec) _____
Channel material _____	Vel (fps) _____
Channel, n _____	

Flow: \_\_\_\_\_

Intermittent  Not checked

Flow Check  Left sand bag in channel

Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs—put in comments section.*

## DISCHARGE OBSERVATIONS (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds	<input type="checkbox"/> Other	<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other		<input type="checkbox"/> Other

## Description:

**DISCHARGE WOULD BE FROM ANY OVERFLOW OF THE WATER TOWER.**

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____	mg/L (.5)	Temperature	_____
Ammonia (as N)	_____	mg/L (1)	pH (6-9)	_____
Hardness	_____	mg/L	Specific cond.	_____
Fluoride	_____	mg/L		
E. coli	_____	Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisive – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

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# DRAINAGE SYSTEM SCREENING

GENERAL			
System ID:			Discharge ID: <u>#6 10</u>
Date: <u>9/14/2016</u>	Time: <u>2:00</u>	Air Temp: <u>70°±</u>	Last rain date/time (48-72 hours of dry weather is required)
Chk'd By:		<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain	
DRY WEATHER FLOW PRESENT?			
<input type="checkbox"/> Yes, dry weather flow present <input type="checkbox"/> Trace, insufficient flow to sample <input checked="" type="checkbox"/> No dry weather flow present <input type="checkbox"/> Standing water <input type="checkbox"/> Submerged <input type="checkbox"/> Inundated <input type="checkbox"/> N/A			

## FLOW MEASUREMENTS

Pipe Sampled: \_\_\_\_\_ Size (in) \_\_\_\_\_ Direction \_\_\_\_\_

Method:  Area \* Velocity

	General Data	Travel Time Trials
Depth (in)	_____	#1 (sec) _____
Dist Traveled (ft)	_____	#2 (sec) _____
Bucket Vol (l)	_____	#3 (sec) _____
Channel slope (%)	_____	Avg (sec) _____
Channel material	_____	Vel (fps) _____
Channel, n	_____	_____

Flow: \_\_\_\_\_

- Intermittent  Not checked
- Flow Check  Left sand bag in channel
- Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs—put in comments section.*

## DISCHARGE OBSERVATIONS (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description:

THESE IS A OVERFLOW PIPE STICKING ABOVE THE WATER  
IN A POND IN SHARP PARK. THE POND WAS NOT OVERFLOWING

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

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# DRAINAGE SYSTEM SCREENING

GENERAL			
System ID: <b># 1A</b>	Discharge ID: _____		
Date: <b>8/1/17 TUE</b>	Time: <b>1:40 pm</b>	Air Temp: <b>80°</b>	Last rain date/time: <b>SEVERAL DAYS AGO</b> (48-72 hours of dry weather is required)
Chk'd By: 		<input type="checkbox"/> Clear/Sunny <input checked="" type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain	
DRY WEATHER FLOW PRESENT?			
<input checked="" type="checkbox"/> Yes, dry weather flow present <input type="checkbox"/> Trace, insufficient flow to sample <input type="checkbox"/> No dry weather flow present <input type="checkbox"/> Standing water <input type="checkbox"/> Submerged <input type="checkbox"/> Inundated <input type="checkbox"/> N/A			

## FLOW MEASUREMENTS

Pipe Sampled: _____	Size (in) _____	Direction _____	
Method: <input type="checkbox"/> Area * Velocity	<b>General Data</b>		<b>Travel Time Trials</b>
	Depth (in) _____	#1 (sec) _____	
	Dist Traveled (ft) _____	#2 (sec) _____	
	Bucket Vol (l) _____	#3 (sec) _____	
	Channel slope (%) _____	Avg (sec) _____	
	Channel material _____	Vel (fps) _____	
	Channel, n _____		

Flow: \_\_\_\_\_

Intermittent  Not checked

Flow Check  Left sand bag in channel

Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs---put in comments section.*

## DISCHARGE OBSERVATIONS (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

### Description:

**WATER FLOWING FROM TWP. HALL BLD. THE AIR CONDITIONING CONDENSATE DUMPS INTO THIS STORM DRAIN. ALL PARKS GARAGE FLOOR DRAINS HAVE BEEN PLUGGED**

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

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# DRAINAGE SYSTEM SCREENING

GENERAL			
System ID: _____	#1B	Discharge ID: _____	
Date: 8/1/2017 <sup>TUE</sup>	Time: 1:37pm	Air Temp: _____	Last rain date/time: <u>SEVERAL DAYS AGO</u> (48-72 hours of dry weather is required)
Chk'd By: <u>Walter Kulasek</u>		80°+	<input type="checkbox"/> Clear/Sunny <input checked="" type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain
DRY WEATHER FLOW PRESENT?			
<input type="checkbox"/> Yes, dry weather flow present <input type="checkbox"/> Trace, insufficient flow to sample <input checked="" type="checkbox"/> No dry weather flow present <input type="checkbox"/> Standing water <input type="checkbox"/> Submerged <input type="checkbox"/> Inundated <input type="checkbox"/> N/A			

## FLOW MEASUREMENTS

Pipe Sampled: \_\_\_\_\_ Size (in) \_\_\_\_\_ Direction \_\_\_\_\_

Method:  Area \* Velocity

	General Data	Travel Time Trials
	Depth (in) _____	#1 (sec) _____
	Dist Traveled (ft) _____	#2 (sec) _____
	Bucket Vol (l) _____	#3 (sec) _____
	Channel slope (%) _____	Avg (sec) _____
	Channel material _____	Vel (fps) _____
	Channel, n _____	

Flow: \_\_\_\_\_

Intermittent  Not checked

Flow Check  Left sand bag in channel

Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs—put in comments section.*

## DISCHARGE OBSERVATIONS (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds	<input type="checkbox"/> Other	<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

### Description:

NO WATER PRESENT. THIS IS THE NEW RECONSTRUCTED PIPE. CONSTRUCTION WAS DONE THIS YEAR ~~2016~~ 2017

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

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# DRAINAGE SYSTEM SCREENING

<b>GENERAL</b>			
System ID: <u>1A</u>	Discharge ID: _____		
Date: <u>10/3/17 TUE</u> Time: <u>7:55am</u>	Air Temp: <u>55°</u>	Last rain date/time: <u>SEVERAL DAYS AGO</u> (48-72 hours of dry weather is required)	
Chk'd By: <u>Walter Johnson</u>	<input type="checkbox"/> Clear/Sunny <input checked="" type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain		

**DRY WEATHER FLOW PRESENT?**

<input checked="" type="checkbox"/> Yes, dry weather flow present <input type="checkbox"/> Trace, insufficient flow to sample <input type="checkbox"/> No dry weather flow present <input type="checkbox"/> Standing water <input type="checkbox"/> Submerged <input type="checkbox"/> Inundated <input type="checkbox"/> N/A	<p><u>TOOK SAMPLE 10/3/17</u></p> <p><u>SURFACTANTS TO FIBERTEC</u></p> <p><u>AMMONIA, FLUORIDE, E-COL TO</u> <u>BWL</u></p>
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**FLOW MEASUREMENTS**

Pipe Sampled: \_\_\_\_\_ Size (in) 8" PVC Direction \_\_\_\_\_

Method:  Area \* Velocity

General Data	Travel Time Trials
Depth (in) _____	#1 (sec) _____
Dist Traveled (ft) _____	#2 (sec) _____
Bucket Vol (l) _____	#3 (sec) _____
Channel slope (%) _____	Avg (sec) _____
Channel material _____	Vel (fps) _____
Channel, n _____	

Flow: \_\_\_\_\_

Intermittent  Not checked

Flow Check  Left sand bag in channel

Removed sand bag, intermittent DWF present  Yes  No

*If possible, describe frequency, duration, time of day of flow slugs—put in comments section.*

**DISCHARGE OBSERVATIONS** (if "other" checked, fill in description at bottom of page)

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

**Description:**

RE SAMPLE AFTER CORRECTIONS WERE MADE.

LAST SAMPLE TAKEN WAS 9/13/2014

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: 1A

NAME OF LAB: BWL 10/3/17 FIBERTEC 10/13/17 KAR LAB. 10/12/17

**FIELD ANALYSIS**

Surfactants	<u>&lt; 0.5</u>	mg/L (.5)	Temperature	<u>18.1 C°</u>
Ammonia (as N)	<u>ND 0.10</u>	mg/L (1)	pH (6-9)	<u>8.3</u>
Hardness	_____	mg/L	Specific cond.	_____
Fluoride	<u>.25</u>	mg/L		
E. coli	<u>42</u>	Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date 10/4/17
- Illicit discharge (e.g. undocumented connection). Date \_\_\_\_\_
- Pending. Date \_\_\_\_\_
- Notify MDEQ. Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

**Comments:**

NO PRESENTS OF ILLICIT DISCHARGE.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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## DRAINAGE SYSTEM SCREENING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>		
Discharge/Structure ID: <u>#2A</u>		
Date: <u>9-17-18 MON</u>	Time: <u>11:00am</u>	Air Temp: <u>87°</u>
Chk'd By: <u>W KULASA</u>		Last rain date/time <u>LAST WEEK</u> (48-72 hours of dry weather is required)
		<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain

LOCATION	
Address/Description:	<u>5130 DAVENPORT DR DELTA LIBRARY</u>
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	_____

DRY WEATHER FLOW PRESENTS?	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method: <input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>	
	Depth (in) _____	#1 (sec)	_____
	Dist Traveled (ft) _____	#2 (sec)	_____
	Bucket Vol (l) _____	#3 (sec)	_____
	Channel slope (%) _____	Avg (sec)	_____
	Channel material _____	Vel (fps)	_____
	Channel, n _____		
Flow: _____			
Intermittent <input type="checkbox"/> Not checked			
Flow Check <input type="checkbox"/> Left sand bag in channel			
<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

**DISCHARGE OBSERVATIONS**

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants _____	mg/L (.5)	Temperature _____
Ammonia (as N) _____	mg/L (1)	pH (6-9) _____
Hardness _____	mg/L	Specific cond. _____
Fluoride _____	mg/L	
E. coli _____	Per 100ml (1000)	

**RESULTS**

<input type="checkbox"/> Illicit discharge ruled out.	Date _____
<input type="checkbox"/> Illicit discharge (e.g. undocumented connection)	Date _____
<input type="checkbox"/> Pending	Date _____
<input type="checkbox"/> Notify MDEQ	Date _____

**ACTION**

<input type="checkbox"/> None required, not an illicit discharge
<input type="checkbox"/> Illicit discharge eliminated on _____
<input type="checkbox"/> Dye test – Date completed _____
<input type="checkbox"/> Televisive – Date completed _____
<input type="checkbox"/> Investigate further – Date completed _____
<input type="checkbox"/> Illicit discharge/connection – Notified responsible party on _____

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



## DRAINAGE SYSTEM SCREENING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
Discharge/Structure ID: # <u>2 B</u>			
Date: <u>9-17-18 MON</u>	Time: <u>11:30am</u>	Air Temp: <u>87°</u>	Last rain date/time <u>LAST WEEK</u> (48-72 hours of dry weather is required)
Chk'd By: <u>W KULASA</u>		<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain	

LOCATION	
Address/Description:	<u>5130 DAVENPORT DR DELTA LIBRARY</u>
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	_____

DRY WEATHER FLOW PRESENTS?	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method: <input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>	
	Depth (in) _____	#1 (sec)	_____
	Dist Traveled (ft) _____	#2 (sec)	_____
	Bucket Vol (l) _____	#3 (sec)	_____
	Channel slope (%) _____	Avg (sec)	_____
	Channel material _____	Vel (fps)	_____
	Channel, n _____		
Flow: _____			
Intermittent <input type="checkbox"/> Not checked			
Flow Check <input type="checkbox"/> Left sand bag in channel			
<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

**DISCHARGE OBSERVATIONS**

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants _____	mg/L (.5)	Temperature _____
Ammonia (as N) _____	mg/L (1)	pH (6-9) _____
Hardness _____	mg/L	Specific cond. _____
Fluoride _____	mg/L	
E. coli _____	Per 100ml (1000)	

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisive – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_





## DRAINAGE SYSTEM SCREENING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
<b>Discharge/Structure ID:</b> <u>OUTFALL PT#10 MH @ Village Green Apt.</u>			
Date: <u>10/26/2018</u>	Time: <u>11:30 AM</u>	Air Temp:	Last rain date/time <u>3 days Ago</u> (48-72 hours of dry weather is required)
Chk'd By: <u>W. KULASA</u>		<u>50°</u>	<input type="checkbox"/> Clear/Sunny <input checked="" type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain

LOCATION	
Address/Description:	<u>5200 MALL DRIVE WEST</u>
Latitude/State Plane:	<u>13 054 085.74</u>
Longitude/State Plane:	<u>454 608.52</u>
Cross-street:	<u>MALL DRIVE WEST / ELMWOOD</u>
Receiving Waterbody:	<u>BELLMAN RAMON DRAIN</u>

DRY WEATHER FLOW PRESENTS?	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method: <input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>	
	Depth (in) _____	#1 (sec)	_____
	Dist Traveled (ft) _____	#2 (sec)	_____
	Bucket Vol (l) _____	#3 (sec)	_____
	Channel slope (%) _____	Avg (sec)	_____
	Channel material _____	Vel (fps)	_____
	Channel, n _____		
Flow: _____			
Intermittent <input type="checkbox"/> Not checked			
Flow Check <input type="checkbox"/> Left sand bag in channel			
<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

**DISCHARGE OBSERVATIONS**

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

<input type="checkbox"/> Illicit discharge ruled out.	Date _____
<input type="checkbox"/> Illicit discharge (e.g. undocumented connection)	Date _____
<input type="checkbox"/> Pending	Date _____
<input type="checkbox"/> Notify MDEQ	Date _____

**ACTION**

<input type="checkbox"/> None required, not an illicit discharge
<input type="checkbox"/> Illicit discharge eliminated on _____
<input type="checkbox"/> Dye test – Date completed _____
<input type="checkbox"/> Televisive – Date completed _____
<input type="checkbox"/> Investigate further – Date completed _____
<input type="checkbox"/> Illicit discharge/connection – Notified responsible party on _____

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



## DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
Discharge/Structure ID: <u>1A</u>			
Date: <u>9-6-19</u>	Time: <u>9:20</u>	Air Temp: _____	Last rain date/time: <u>SEVERAL DAYS</u>
Screened By: <u>Walter Kulow</u>		Air Temp: <u>60°</u>	<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain Inches of Rain in 24hrs. _____

LOCATION	
Address/Description:	<u>7710 W. W. SARINAW Hwy (Admin. Bld)</u>
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	_____

DRY WEATHER FLOW OR WET WEATHER SAMPLING	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	<input type="checkbox"/> Wet Weather Sampling

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method: <input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>	
	Depth (in) _____	#1 (sec)	_____
	Dist Traveled (ft) _____	#2 (sec)	_____
	Bucket Vol (l) _____	#3 (sec)	_____
	Channel slope (%) _____	Avg (sec)	_____
	Channel material _____	Vel (fps)	_____
	Channel, n _____		
Flow: _____			
Intermittent	<input type="checkbox"/> Not checked		
Flow Check	<input type="checkbox"/> Left sand bag in channel		
	<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

### DISCHARGE OBSERVATIONS

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### CHEMICAL ANALYSIS

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

#### FIELD ANALYSIS

Surfactants _____ mg/L (.5)	Temperature _____
Ammonia (as N) _____ mg/L (1)	pH (6-9) _____
Hardness _____ mg/L	Specific cond. _____
Fluoride _____ mg/L	
E. coli _____ Per 100ml (1000)	

### RESULTS

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

### ACTION

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisé – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

Comments: \_\_\_\_\_



# DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
Discharge/Structure ID: <u>1 B</u>			
Date: <u>9-6-19</u>	Time: <u>9:30</u>	Air Temp:	Last rain date/time <u>SEVERAL DAYS</u>
Screened By: <u>Walter Kuban</u>		<u>60</u>	<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain Inches of Rain in 24hrs. _____

LOCATION	
Address/Description:	<u>811 CANAL RD. FIRE STA #1</u>
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	_____

DRY WEATHER FLOW OR WET WEATHER SAMPLING	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	<input type="checkbox"/> Wet Weather Sampling

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method:	<input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>
		Depth (in) _____	#1 (sec) _____
		Dist Traveled (ft) _____	#2 (sec) _____
		Bucket Vol (l) _____	#3 (sec) _____
		Channel slope (%) _____	Avg (sec) _____
		Channel material _____	Vel (fps) _____
		Channel, n _____	
Flow:	_____		
Intermittent	<input type="checkbox"/> Not checked		
Flow Check	<input type="checkbox"/> Left sand bag in channel		
	<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

**DISCHARGE OBSERVATIONS**

<b>Odor</b>	<b>Floatables</b>	<b>Deposits/Stains</b>	<b>Vegetation</b>	<b>Structural</b>
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_  
 NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisé – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

Comments: \_\_\_\_\_



# DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
<b>Discharge/Structure ID:</b> <u>2A</u>			
Date: <u>9-3-19</u>	Time: <u>1:45</u>	Air Temp: _____	Last rain date/time: <u>4 days AGO</u>
Screened By: <u>Walter Kulasa</u>		Air Temp: <u>80</u>	<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain Inches of Rain in 24hrs. _____

LOCATION	
Address/Description:	<u>5130 DAVENPORT DR DELTA LIB.</u>
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	_____

DRY WEATHER FLOW OR WET WEATHER SAMPLING	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	<input type="checkbox"/> Wet Weather Sampling

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method:	<input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>
		Depth (in) _____	#1 (sec) _____
		Dist Traveled (ft) _____	#2 (sec) _____
		Bucket Vol (l) _____	#3 (sec) _____
		Channel slope (%) _____	Avg (sec) _____
		Channel material _____	Vel (fps) _____
		Channel, n _____	
Flow:	_____		
Intermittent	<input type="checkbox"/> Not checked		
Flow Check	<input type="checkbox"/> Left sand bag in channel		
	<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

**DISCHARGE OBSERVATIONS**

<b>Odor</b>	<b>Floatables</b>	<b>Deposits/Stains</b>	<b>Vegetation</b>	<b>Structural</b>
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

<input type="checkbox"/> Illicit discharge ruled out.	Date _____
<input type="checkbox"/> Illicit discharge (e.g. undocumented connection)	Date _____
<input type="checkbox"/> Pending	Date _____
<input type="checkbox"/> Notify MDEQ	Date _____

**ACTION**

<input type="checkbox"/> None required, not an illicit discharge
<input type="checkbox"/> Illicit discharge eliminated on _____
<input type="checkbox"/> Dye test – Date completed _____
<input type="checkbox"/> Televisе – Date completed _____
<input type="checkbox"/> Investigate further – Date completed _____
<input type="checkbox"/> Illicit discharge/connection – Notified responsible party on _____

Comments: \_\_\_\_\_





# DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)

Discharge/Structure ID:

2B

Date: 9-3-19

Time: 1:48

Air Temp:

80°

Last rain date/time: 4 days ago

Screened By:

Walter Kulas

Clear/Sunny  Partly Cloudy

Overcast  Rain

Inches of Rain in 24hrs. \_\_\_\_\_

## LOCATION

Address/Description: 5130 DANFORTH DR DELTA U.B.

Latitude/State Plane: \_\_\_\_\_

Longitude/State Plane: \_\_\_\_\_

Cross-street: \_\_\_\_\_

Receiving Waterbody: \_\_\_\_\_

## DRY WEATHER FLOW OR WET WEATHER SAMPLING

Yes, dry weather flow present

Standing Water

Trace, insufficient flow to sample

Submerged

No dry weather flow present

Inundated

N/A

Wet Weather Sampling

## FLOW MEASUREMENTS

Pipe Sampled: \_\_\_\_\_ Size (in) \_\_\_\_\_ Direction \_\_\_\_\_

Method:  Area \* Velocity

### General Data

### Travel Time Trials

Depth (in) \_\_\_\_\_ #1 (sec) \_\_\_\_\_

Dist Traveled (ft) \_\_\_\_\_ #2 (sec) \_\_\_\_\_

Bucket Vol (l) \_\_\_\_\_ #3 (sec) \_\_\_\_\_

Channel slope (%) \_\_\_\_\_ Avg (sec) \_\_\_\_\_

Channel material \_\_\_\_\_ Vel (fps) \_\_\_\_\_

Channel, n \_\_\_\_\_

Flow: \_\_\_\_\_

Intermittent  Not checked

Flow Check  Left sand bag in channel

Removed sand bag, intermittent DWF present  Yes  No

If possible, describe frequency, duration, time of day of flow slugs—put in comments section.

DISCHARGE OBSERVATIONS				
<b>Odor</b>	<b>Floatables</b>	<b>Deposits/Stains</b>	<b>Vegetation</b>	<b>Structural</b>
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

CHEMICAL ANALYSIS	
DATE OF ANALYSIS: _____	LAB SAMPLE COLLECTED ID: _____
NAME OF LAB: _____	
<b>FIELD ANALYSIS</b>	
Surfactants _____ mg/L (.5)	Temperature _____
Ammonia (as N) _____ mg/L (1)	pH (6-9) _____
Hardness _____ mg/L	Specific cond. _____
Fluoride _____ mg/L	
E. coli _____ Per 100ml (1000)	

RESULTS	
<input type="checkbox"/> Illicit discharge ruled out.	Date _____
<input type="checkbox"/> Illicit discharge (e.g. undocumented connection)	Date _____
<input type="checkbox"/> Pending	Date _____
<input type="checkbox"/> Notify MDEQ	Date _____
ACTION	
<input type="checkbox"/> None required, not an illicit discharge	
<input type="checkbox"/> Illicit discharge eliminated on _____	
<input type="checkbox"/> Dye test – Date completed _____	
<input type="checkbox"/> Televisive – Date completed _____	
<input type="checkbox"/> Investigate further – Date completed _____	
<input type="checkbox"/> Illicit discharge/connection – Notified responsible party on _____	

Comments: \_\_\_\_\_



# DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
<b>Discharge/Structure ID:</b> # 5			
Date: 9-3-19	Time: 2:15	Air Temp:	Last rain date/time: days
Screened By: Walt Kulasa		80	<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain Inches of Rain in 24hrs.

LOCATION	
Address/Description:	195 SNOW Rd. (GROUN STORAGE)
Latitude/State Plane:	
Longitude/State Plane:	
Cross-street:	
Receiving Waterbody:	

DRY WEATHER FLOW OR WET WEATHER SAMPLING	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	<input type="checkbox"/> Wet Weather Sampling

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in)	Direction	
Method:	<input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>
		Depth (in)	#1 (sec)
		Dist Traveled (ft)	#2 (sec)
		Bucket Vol (l)	#3 (sec)
		Channel slope (%)	Avg (sec)
		Channel material	Vel (fps)
		Channel, n	
Flow:			
Intermittent	<input type="checkbox"/> Not checked		
Flow Check	<input type="checkbox"/> Left sand bag in channel		
	<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

**DISCHARGE OBSERVATIONS**

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants _____ mg/L (.5)	Temperature _____
Ammonia (as N) _____ mg/L (1)	pH (6-9) _____
Hardness _____ mg/L	Specific cond. _____
Fluoride _____ mg/L	
E. coli _____ Per 100ml (1000)	

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisé – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

Comments: \_\_\_\_\_



## DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
Discharge/Structure ID: # <u>6</u>			
Date: <u>9-3-19</u>	Time: <u>2:06</u>	Air Temp:	Last rain date/time <u>days</u>
Screened By: <u>Walter Kuban</u>		<u>80</u>	<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain Inches of Rain in 24hrs. _____

LOCATION	
Address/Description:	<u>215 SNOW Rd (FIRE STA#3)</u>
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	_____

DRY WEATHER FLOW OR WET WEATHER SAMPLING	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	<input type="checkbox"/> Wet Weather Sampling

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method: <input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>	
	Depth (in) _____	#1 (sec)	_____
	Dist Traveled (ft) _____	#2 (sec)	_____
	Bucket Vol (l) _____	#3 (sec)	_____
	Channel slope (%) _____	Avg (sec)	_____
	Channel material _____	Vel (fps)	_____
	Channel, n _____		
Flow: _____			
Intermittent	<input type="checkbox"/> Not checked		
Flow Check	<input type="checkbox"/> Left sand bag in channel		
	<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

<b>DISCHARGE OBSERVATIONS</b>				
<b>Odor</b>	<b>Floatables</b>	<b>Deposits/Stains</b>	<b>Vegetation</b>	<b>Structural</b>
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_

<b>CHEMICAL ANALYSIS</b>	
DATE OF ANALYSIS: _____	LAB SAMPLE COLLECTED ID: _____
NAME OF LAB: _____	
<b>FIELD ANALYSIS</b>	
Surfactants _____ mg/L (.5)	Temperature _____
Ammonia (as N) _____ mg/L (1)	pH (6-9) _____
Hardness _____ mg/L	Specific cond. _____
Fluoride _____ mg/L	
E. coli _____ Per 100ml (1000)	

<b>RESULTS</b>	
<input type="checkbox"/> Illicit discharge ruled out.	Date _____
<input type="checkbox"/> Illicit discharge (e.g. undocumented connection)	Date _____
<input type="checkbox"/> Pending	Date _____
<input type="checkbox"/> Notify MDEQ	Date _____

<b>ACTION</b>	
<input type="checkbox"/> None required, not an illicit discharge	
<input type="checkbox"/> Illicit discharge eliminated on _____	
<input type="checkbox"/> Dye test – Date completed _____	
<input type="checkbox"/> Televisе – Date completed _____	
<input type="checkbox"/> Investigate further – Date completed _____	
<input type="checkbox"/> Illicit discharge/connection – Notified responsible party on _____	

Comments: \_\_\_\_\_



## DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
Discharge/Structure ID: <u>48</u>			
Date: <u>9-3-19</u>	Time: <u>2:30</u>	Air Temp: _____	Last rain date/time <u>days</u>
Screened By: <u>Walter Kuban</u>		<u>80°</u>	<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain Inches of Rain in 24hrs. _____

LOCATION	
Address/Description:	<u>209 Snow Rd (Water Tower)</u>
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	<u>OVER FLOW FROM TOWER</u>

DRY WEATHER FLOW OR WET WEATHER SAMPLING	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	<input type="checkbox"/> Wet Weather Sampling

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method:	<input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>
		Depth (in) _____	#1 (sec) _____
		Dist Traveled (ft) _____	#2 (sec) _____
		Bucket Vol (l) _____	#3 (sec) _____
		Channel slope (%) _____	Avg (sec) _____
		Channel material _____	Vel (fps) _____
		Channel, n _____	
Flow:	_____		
Intermittent	<input type="checkbox"/> Not checked		
Flow Check	<input type="checkbox"/> Left sand bag in channel		
	<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

<b>DISCHARGE OBSERVATIONS</b>				
<b>Odor</b>	<b>Floatables</b>	<b>Deposits/Stains</b>	<b>Vegetation</b>	<b>Structural</b>
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_

<b>CHEMICAL ANALYSIS</b>	
DATE OF ANALYSIS: _____	LAB SAMPLE COLLECTED ID: _____
NAME OF LAB: _____	
<b>FIELD ANALYSIS</b>	
Surfactants _____ mg/L (.5)	Temperature _____
Ammonia (as N) _____ mg/L (1)	pH (6-9) _____
Hardness _____ mg/L	Specific cond. _____
Fluoride _____ mg/L	
E. coli _____ Per 100ml (1000)	

<b>RESULTS</b>	
<input type="checkbox"/> Illicit discharge ruled out.	Date _____
<input type="checkbox"/> Illicit discharge (e.g. undocumented connection)	Date _____
<input type="checkbox"/> Pending	Date _____
<input type="checkbox"/> Notify MDEQ	Date _____

<b>ACTION</b>	
<input type="checkbox"/> None required, not an illicit discharge	
<input type="checkbox"/> Illicit discharge eliminated on _____	
<input type="checkbox"/> Dye test – Date completed _____	
<input type="checkbox"/> Televisе – Date completed _____	
<input type="checkbox"/> Investigate further – Date completed _____	
<input type="checkbox"/> Illicit discharge/connection – Notified responsible party on _____	

Comments: \_\_\_\_\_





# DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
Discharge/Structure ID: #10			
Date: 9-3-19	Time: 1:52	Air Temp:	Last rain date/time: days
Screened By: Walter Johnson		80	<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain Inches of Rain in 24hrs. _____

LOCATION	
Address/Description:	5200 MALL DR WEST (SPARR PARK POND)
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	OVERFLOW ON POND POND 8" + BELOW OVERFLOW

DRY WEATHER FLOW OR WET WEATHER SAMPLING	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	<input type="checkbox"/> Wet Weather Sampling

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method:	<input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>
		Depth (in) _____	#1 (sec) _____
		Dist Traveled (ft) _____	#2 (sec) _____
		Bucket Vol (l) _____	#3 (sec) _____
		Channel slope (%) _____	Avg (sec) _____
		Channel material _____	Vel (fps) _____
		Channel, n _____	
Flow:	_____		
Intermittent	<input type="checkbox"/> Not checked		
Flow Check	<input type="checkbox"/> Left sand bag in channel		
	<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

### DISCHARGE OBSERVATIONS

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### CHEMICAL ANALYSIS

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

### FIELD ANALYSIS

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

### RESULTS

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

### ACTION

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

Comments: \_\_\_\_\_



# DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
Discharge/Structure ID: <u>14</u>			
Date: <u>9-4-19</u>	Time: <u>1:00</u>	Air Temp:	Last rain date/time <u>days AGO</u>
Screened By: <u>Walter Kula</u>		<u>64</u>	<input type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input checked="" type="checkbox"/> Overcast <input type="checkbox"/> Rain Inches of Rain in 24hrs. _____

LOCATION	
Address/Description:	<u>7812 W. Willow (WATER OPERATIONS)</u>
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	_____

DRY WEATHER FLOW OR WET WEATHER SAMPLING	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	<input type="checkbox"/> Wet Weather Sampling

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction	_____
Method:	<input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>
		Depth (in) _____	#1 (sec) _____
		Dist Traveled (ft) _____	#2 (sec) _____
		Bucket Vol (l) _____	#3 (sec) _____
		Channel slope (%) _____	Avg (sec) _____
		Channel material _____	Vel (fps) _____
		Channel, n _____	
Flow:	_____		
Intermittent	<input type="checkbox"/> Not checked		
Flow Check	<input type="checkbox"/> Left sand bag in channel		
	<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

**DISCHARGE OBSERVATIONS**

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_

\_\_\_\_\_

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

Comments: \_\_\_\_\_



# DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)

Discharge/Structure ID: #15

Date: 9-4-19

Time: 1:10

Air Temp:

Last rain date/time: 4 days Ago

Screened By: Walter Kufosa

64°

Clear/Sunny  Partly Cloudy

Overcast  Rain

Inches of Rain in 24hrs. \_\_\_\_\_

## LOCATION

Address/Description: 7812 W. Willow (WATER OPERATIONS)

Latitude/State Plane: \_\_\_\_\_

Longitude/State Plane: \_\_\_\_\_

Cross-street: \_\_\_\_\_

Receiving Waterbody: \_\_\_\_\_

## DRY WEATHER FLOW OR WET WEATHER SAMPLING

Yes, dry weather flow present

Standing Water

Trace, insufficient flow to sample

Submerged

No dry weather flow present

Inundated

N/A

Wet Weather Sampling

## FLOW MEASUREMENTS

Pipe Sampled: \_\_\_\_\_

Size (in) \_\_\_\_\_

Direction \_\_\_\_\_

Method:  Area \* Velocity

**General Data**

**Travel Time Trials**

Depth (in) \_\_\_\_\_

#1 (sec) \_\_\_\_\_

Dist Traveled (ft) \_\_\_\_\_

#2 (sec) \_\_\_\_\_

Bucket Vol (l) \_\_\_\_\_

#3 (sec) \_\_\_\_\_

Channel slope (%) \_\_\_\_\_

Avg (sec) \_\_\_\_\_

Channel material \_\_\_\_\_

Vel (fps) \_\_\_\_\_

Channel, n \_\_\_\_\_

Flow: \_\_\_\_\_

Intermittent  Not checked

Flow Check  Left sand bag in channel

Removed sand bag, intermittent DWF present  Yes  No

If possible, describe frequency, duration, time of day of flow slugs—put in comments section.

### DISCHARGE OBSERVATIONS

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### CHEMICAL ANALYSIS

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

#### FIELD ANALYSIS

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

### RESULTS

<input type="checkbox"/> Illicit discharge ruled out.	Date _____
<input type="checkbox"/> Illicit discharge (e.g. undocumented connection)	Date _____
<input type="checkbox"/> Pending	Date _____
<input type="checkbox"/> Notify MDEQ	Date _____

### ACTION

<input type="checkbox"/> None required, not an illicit discharge
<input type="checkbox"/> Illicit discharge eliminated on _____
<input type="checkbox"/> Dye test – Date completed _____
<input type="checkbox"/> Televisе – Date completed _____
<input type="checkbox"/> Investigate further – Date completed _____
<input type="checkbox"/> Illicit discharge/connection – Notified responsible party on _____

Comments: \_\_\_\_\_



# DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
<b>Discharge/Structure ID:</b> #16			
Date: 9-4-14	Time: 1:15	Air Temp:	Last rain date/time: days Ago
Screened By: Walter Kubacki		64	<input type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input checked="" type="checkbox"/> Overcast <input type="checkbox"/> Rain Inches of Rain in 24hrs. _____

LOCATION	
Address/Description:	7812 W. Willow (WATER OPERATIONS)
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	DETENTION POND

DRY WEATHER FLOW OR WET WEATHER SAMPLING	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	<input type="checkbox"/> Wet Weather Sampling

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method:	<input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>
		Depth (in) _____	#1 (sec) _____
		Dist Traveled (ft) _____	#2 (sec) _____
		Bucket Vol (l) _____	#3 (sec) _____
		Channel slope (%) _____	Avg (sec) _____
		Channel material _____	Vel (fps) _____
		Channel, n _____	
Flow:	_____		
Intermittent	<input type="checkbox"/> Not checked		
Flow Check	<input type="checkbox"/> Left sand bag in channel		
	<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

**DISCHARGE OBSERVATIONS**

<b>Odor</b>	<b>Floatables</b>	<b>Deposits/Stains</b>	<b>Vegetation</b>	<b>Structural</b>
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_  
NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants	_____ mg/L (.5)	Temperature	_____
Ammonia (as N)	_____ mg/L (1)	pH (6-9)	_____
Hardness	_____ mg/L	Specific cond.	_____
Fluoride	_____ mg/L		
E. coli	_____ Per 100ml (1000)		

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisé – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

Comments: \_\_\_\_\_





# DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
<b>Discharge/Structure ID:</b> #17			
Date: 9-6-19	Time: 10:00	Air Temp:	Last rain date/time: Several Days
Screened By: <i>Walter Kulasa</i>		60	<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain Inches of Rain in 24hrs: _____

LOCATION	
Address/Description:	7550 W. Willow Community Center
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	_____

DRY WEATHER FLOW OR WET WEATHER SAMPLING	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	<input type="checkbox"/> Wet Weather Sampling

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method:	<input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>
		Depth (in) _____	#1 (sec) _____
		Dist Traveled (ft) _____	#2 (sec) _____
		Bucket Vol (l) _____	#3 (sec) _____
		Channel slope (%) _____	Avg (sec) _____
		Channel material _____	Vel (fps) _____
		Channel, n _____	
Flow:	_____		
Intermittent	<input type="checkbox"/> Not checked		
Flow Check	<input type="checkbox"/> Left sand bag in channel		
	<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

### DISCHARGE OBSERVATIONS

Odor	Floatables	Deposits/Stains	Vegetation	Structural
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_

### CHEMICAL ANALYSIS

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

#### FIELD ANALYSIS

Surfactants _____ mg/L (.5)	Temperature _____
Ammonia (as N) _____ mg/L (1)	pH (6-9) _____
Hardness _____ mg/L	Specific cond. _____
Fluoride _____ mg/L	
E. coli _____ Per 100ml (1000)	

### RESULTS

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

### ACTION

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisé – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

Comments: \_\_\_\_\_



# DRAINAGE SYSTEM SCREENING/WET WEATHER SAMPLING

<b>MS4 Permit No. MI0059725 (Permit Cycle 2017-2021)</b>			
<b>Discharge/Structure ID:</b> #18			
Date: 9-6-19	Time: 10:30	Air Temp:	Last rain date/time: Several Days
Screened By: <i>Walter Kukosa</i>		60°	<input checked="" type="checkbox"/> Clear/Sunny <input type="checkbox"/> Partly Cloudy <input type="checkbox"/> Overcast <input type="checkbox"/> Rain Inches of Rain in 24hrs. _____

LOCATION	
Address/Description:	5717 Millett Hwy Delta Recycling
Latitude/State Plane:	_____
Longitude/State Plane:	_____
Cross-street:	_____
Receiving Waterbody:	RETENTION POND

DRY WEATHER FLOW OR WET WEATHER SAMPLING	
<input type="checkbox"/> Yes, dry weather flow present	<input type="checkbox"/> Standing Water
<input type="checkbox"/> Trace, insufficient flow to sample	<input type="checkbox"/> Submerged
<input checked="" type="checkbox"/> No dry weather flow present	<input type="checkbox"/> Inundated
<input type="checkbox"/> N/A	<input type="checkbox"/> Wet Weather Sampling

FLOW MEASUREMENTS			
Pipe Sampled:	Size (in) _____	Direction _____	
Method: <input type="checkbox"/> Area * Velocity	<b>General Data</b>	<b>Travel Time Trials</b>	
	Depth (in) _____	#1 (sec)	_____
	Dist Traveled (ft) _____	#2 (sec)	_____
	Bucket Vol (l) _____	#3 (sec)	_____
	Channel slope (%) _____	Avg (sec)	_____
	Channel material _____	Vel (fps)	_____
	Channel, n _____		
Flow: _____			
Intermittent <input type="checkbox"/> Not checked			
Flow Check <input type="checkbox"/> Left sand bag in channel			
<input type="checkbox"/> Removed sand bag, intermittent DWF present	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
<i>If possible, describe frequency, duration, time of day of flow slugs—put in comments section.</i>			

**DISCHARGE OBSERVATIONS**

<b>Odor</b>	<b>Floatables</b>	<b>Deposits/Stains</b>	<b>Vegetation</b>	<b>Structural</b>
<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> None	<input type="checkbox"/> Normal
<input type="checkbox"/> Musty	<input type="checkbox"/> Trash	<input type="checkbox"/> Mineral	<input type="checkbox"/> Normal	<input type="checkbox"/> Cracking
<input type="checkbox"/> Sewage	<input type="checkbox"/> Sewage	<input type="checkbox"/> Sediment	<input type="checkbox"/> Excessive	<input type="checkbox"/> Spalling
<input type="checkbox"/> Rotten Egg	<input type="checkbox"/> Bacterial Sheen	<input type="checkbox"/> Oily	<input type="checkbox"/> Algae	<input type="checkbox"/> Corrosion
<input type="checkbox"/> Gas	<input type="checkbox"/> Oil Sheen	<input type="checkbox"/> Grease	<input type="checkbox"/> Slime	<input type="checkbox"/> Settlement
<input type="checkbox"/> Oil	<input type="checkbox"/> Suds	<input type="checkbox"/> Suds		<input type="checkbox"/> Staining
<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other	<input type="checkbox"/> Other

Description: \_\_\_\_\_

**CHEMICAL ANALYSIS**

DATE OF ANALYSIS: \_\_\_\_\_ LAB SAMPLE COLLECTED ID: \_\_\_\_\_

NAME OF LAB: \_\_\_\_\_

**FIELD ANALYSIS**

Surfactants _____ mg/L (.5)	Temperature _____
Ammonia (as N) _____ mg/L (1)	pH (6-9) _____
Hardness _____ mg/L	Specific cond. _____
Fluoride _____ mg/L	
E. coli _____ Per 100ml (1000)	

**RESULTS**

- Illicit discharge ruled out. Date \_\_\_\_\_
- Illicit discharge (e.g. undocumented connection) Date \_\_\_\_\_
- Pending Date \_\_\_\_\_
- Notify MDEQ Date \_\_\_\_\_

**ACTION**

- None required, not an illicit discharge
- Illicit discharge eliminated on \_\_\_\_\_
- Dye test – Date completed \_\_\_\_\_
- Televisе – Date completed \_\_\_\_\_
- Investigate further – Date completed \_\_\_\_\_
- Illicit discharge/connection – Notified responsible party on \_\_\_\_\_

Comments: \_\_\_\_\_