



GENESEE COUNTY DRAIN COMMISSIONER'S OFFICE

-DIVISION OF  
SURFACE WATER MANAGEMENT

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COMMISSIONER

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STORM WATER REVIEW SUBMITTAL FORM

Project Name: \_\_\_\_\_  
Parcel Number(s): \_\_\_\_\_  
Address: \_\_\_\_\_

Party Submitting: \_\_\_\_\_ E-mail: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
City, State Zip: \_\_\_\_\_

**Is Submission Required**

Does site drain to County Drain or Road Commission system?  Yes  No  
Is submission required by local Municipality?  Yes  No

Is this a Plat, Mobile Home Park?  Yes  No  
Is plan required to be submitted because of NPDES Permit?  Yes  No

If you answered yes to any continue below.

Acreage Disturbed (acres): \_\_\_\_\_ Is Disturbed Area > 1 acres?  Yes  No

Amount Impervious (acres): \_\_\_\_\_ If < 1 acre is Impervious > 0.5 acre?  Yes  No

Is site part of a large development:  Yes  No

If you answered yes to any of the above site plan approval is required.  Yes  No

**General Information Required:**

1. The location of the proposed development by means of a small location map.
2. The township, city, or village in which the parcel is situated.
3. The section and part of section in which the parcel is situated.
4. The number of acres to be developed.
5. Contours, at 2-foot intervals or less, shown in a U.S.G.S. datum that is marked on prints.
6. The proposed drainage system for the development.
7. The proposed street, alley and lot layouts and approximate dimensions.
8. The location and description of all on-site and adjacent off-site features that may be relevant in determining the overall requirements for the development. These features may include, but are not limited to, the following:
  - Adjoining roads, subdivisions, and other developments
  - Schools, parks, and cemeteries
  - Drains, sewers, water mains, septic fields and wells
  - High tension power lines, underground transmission lines, gas mains, pipelines, or other utilities
  - Railroads
  - Existing and proposed easements
  - Natural and artificial watercourses, wetlands and wetland boundaries, floodplains, lakes, bays, and lagoons
  - Designated natural areas
  - Soils description in accordance with the USDA NRCS standard soils criteria
  - Any proposed environmental mitigation features
9. Soil borings, may be required at various locations including the sites of proposed retention/detention facilities, and in areas where high ground water tables exist.

**Storm Water Management information required:**

## A. Stormwater Plan Preparation

The Stormwater Plan shall be prepared by a registered civil engineer. Other persons and professionals may assist in the preparation of the plan.

## B. Scale for Mapping

The Stormwater Plan shall be drawn at an appropriate scale to be legible

## C. Required Information

1. The Stormwater Plan must be sufficiently detailed to specify the type, location, and size of stormwater management facilities, using preliminary calculations. Detailed construction drawings are not required at the Stormwater Plan review stage.
2. The storm water management plan for the proposed development will indicate and where the drainage will outlet.
3. If it is proposed to develop a parcel in two or more phases, the Stormwater Plan shall be prepared and submitted for the total project.
4. The location by means of a small location map, drawn to a scale no less than 1" = 2000'.
5. Zoning classification of petitioner's parcel and all abutting parcels.
6. The location and description of all on-site features and all adjacent off-site features within 50 feet, and all other off-site features that may be impacted in determining the overall requirements for the development. This includes:

- (a) Existing site topography with contours at two-foot intervals or less based on the NAVD88 datum
- (b) Adjoining roads and developments
- (c) Railroads
- (d) High tension power lines or underground transmission lines
- (e) Cemeteries
- (f) Parks
- (g) Natural and artificial watercourses, wetlands and wetland boundaries, environmental feature boundaries,
- (h) floodplains, lakes, bays, existing stormwater storage facilities, conveyance swales (natural or artificial) with identification of permanent water elevations
- (i) Information supporting that the outlet is acceptable. An acceptable outlet is a natural watercourse under regulation of Act 451 part 301 Inland Lake and Stream, county drain, county road ditch, or a regulated wetland with an acceptable outlet. The development may discharge across a neighboring private property with the appropriate written approvals/easements.
- (j) Location of woodlands
- (k) Designated natural areas
- (l) Any proposed environmental mitigation features
- (m) Drains, sewers, and water mains
- (n) Existing and proposed easements
- (o) A map, at the U.S.G.S. scale, showing the drainage boundary of the proposed development and its relationship with existing drainage patterns
- (p) Boundaries of any off-site drainage area contributing flow to the development
- (q) Any watercourse passing through the development, along with the following:
  - (i) Area of upstream watershed and current zoning
  - (ii) Calculations of runoff from the upstream area for both the 100-year and two-year 24-hour design storms, for fully developed conditions according to the current land use plan for the area.
  - (iii) A description of how drainage, which originates outside of the development boundaries and flows onto or across the development, will be managed.
- (r) Soil borings may be required at various locations including the sites of proposed retention/detention and infiltration facilities, and as needed in areas where high groundwater tables or bedrock near the surface exist
- (s) Proposed site improvements including lot divisions and building footprints
- (t) Stormwater BMP information including:
  - (i) Location of all stormwater BMPs
  - (ii) Identification of stormwater quality and quantity treatment facilities and method of stormwater conveyance

- (iii) Sizing calculations for stormwater quality and quantity, including preliminary estimates of runoff volume captured by BMPs, (e.g., infiltration losses,) for treatment facilities
  - (iv) Tributary area map for all stormwater management facilities indicating total size and average runoff coefficient for each subarea
  - (v) Analysis of existing soil conditions and groundwater elevation and bedrock depth (including submission of soil boring logs) as required for proposed retention and infiltration facilities
- D. Landscaping plan for stormwater BMPs
  - E. Easements for stormwater management facilities
  - F. Required natural features setbacks
  - G. Drinking water wells, public wellheads, Wellhead Protection Areas (WHPAs), underground storage tanks, and brownfields

## Design Criteria

### Part A Sediment Treatment

Using statewide analysis by region for the 90-percent annual non-exceedance storms that is summarized in the March 24 2006 MDEQ memo. (Genesee County is considered to be part of the Detroit Metro Area for calculating runoff) A copy of this memo is available on the Drain Commissioner's website. [www.gcdcswm.com](http://www.gcdcswm.com)

Impervious Area(acres)\*: \_\_\_\_\_

Tributary Area(acres): \_\_\_\_\_

Percent Impervious(Imp): \_\_\_\_\_

$$R_v = 0.05 + 0.009(\text{Imp})$$

$$P = 0.9 \text{ inches for "Detroit Metro" area}$$

$$WQV = \frac{P * R_v * A(ft^2)}{12}$$

\*For redevelopment if pavement is milled and resurfaced sediment control is not required. If parking lots are redesigned sediment control will be required.

This volume of water needs to be treated for minimum of 80% TSS removal. Describe the methods that will be used to meet this goal.

### Part B Channel Protection

Channel Protection protects resource impairment from flow volume and rate increase during low flow events. This can be done using any of the following methods:

- Computing Flood Discharges for Small Ungaged Watersheds
- TR55
- Hec-Raz
- Hec-HMS
- SWIM

A sample spreadsheet has been provided on our website along with a chart of additional CR numbers that can be used.

This water is to be infiltrated or evaporated from the site. Please explain how this will be accomplished. If soil conditions will not allow for infiltration please provide documentation this volume of water will need to be held on site for a minimum of 48 hr and released and a discharge rate lower than the 2-year storm discharge from the site.

**Part C Flood Protection**

Genesee County requires that the 100-year storm event be handled by the detention system. Because of the soil types retention basin are not allowed. All volumes will be checked using the rational method. Engineers a required to find the time at which the basin will reach max volume.

Tributary Area (acres) = \_\_\_\_\_  
C<sub>w</sub> = \_\_\_\_\_  
Q<sub>a</sub>=A\*0.2= \_\_\_\_\_  
V<sub>required</sub> = \_\_\_\_\_

V<sub>pond</sub> = \_\_\_\_\_  
HWL = \_\_\_\_\_  
Freeboard = \_\_\_\_\_

Predevelopment	Redevelopment Post Development	Detention Pond Design
C <sub>w</sub> = _____	C <sub>w</sub> = _____	C <sub>w</sub> = _____
Q <sub>a</sub> = _____	Q <sub>a</sub> = _____	Q <sub>a</sub> = _____
V = _____	V = _____	V = _____

Please use the following equation for I at t.

**Part D Operation and Maintenance**

Please provide documentation on the plans or as a supplement on Yearly and Long term operation and maintenance on all BMPs used to comply with this approval.