Jackson County Drain Commissioner
Stormwater Permitting Requirements

1.0 APPLICABILITY

To prevent an increase in non-point source pollution, the Jackson County Stormwater Management Plan and the Upper Grand River Watershed Management Plan require the management of both the quantity and quality of stormwater generated from all sites where new construction activities are taking place. These Standards and Requirements shall apply to the following:

1) All new development or redevelopment projects, except the construction of a single-family residential structure more than 500 feet from "waters of the State," or a conduit discharging into a water of the State.

2) All new development or redevelopment project that would change alter or convert the use of land into a stormwater hotspot (i.e., *hotspot means a land use or activities that generate concentrations of pollutants in excess of those typically found in stormwater runoff, and/or present a higher potential risk for spills, leaks or illicit discharges, as determined by the city engineer. Hotspots may include, but are not limited to: vehicle salvage yards; vehicle fueling stations; vehicle service and maintenance facilities; vehicle and equipment cleaning facilities; fleet storage areas; industrial sites (based on SIC or NAICS codes); marinas with service and maintenance; outdoor liquid container storage; outdoor loading/unloading facilities; public works storage areas; facilities that generate or store hazardous materials; commercial container nurseries; recycling facilities (including, but not limited to, vehicle, glass, paper, and battery recycling facilities); and other land uses and activities as determined by the Jackson County Drain Commissioner's Office).*

3) All new developments or redevelopments that discharge stormwater into County Drainage systems or onto County properties.

2.0 Minimum Requirements

Following is a detailed description for each of the requirements (A-J):

Requirement A: A minimum treatment volume standard to minimize water quality impacts

The calculated site runoff is from the 90 percent annual non-exceedance storm for the region or locality, according to (a) or (b) below, respectively: To address water quality impacts of storm runoff, all stormwater management plans shall comply with the minimum treatment volume standard provided by this section.

(a) The minimum treatment volume standard shall be management and treatment of the "First Flush", resulting from one inch of precipitation over the entire site held for a period of 24 hours.

(b) Treatment methods shall be designed on a site-specific basis to achieve either of the following:

(1) A minimum of eighty (80) percent removal of total suspended solids (TSS), as compared with uncontrolled runoff; or
(2) Discharge concentrations of TSS not to exceed eighty (80) milligrams per liter (mg/l).

(c) A minimum treatment volume standard is not required where site conditions are such that TSS concentrations in stormwater discharges will not exceed eighty (80) mg/l.

Sites are in compliance with this permit requirement if the minimum treatment volume from the site is treated by properly designed BMPs that achieve either 80% removal of total suspended solids, or discharge 80 mg/l or less of total suspended solids according to accepted literature.

Compliance may be shown through calculation or through direct measurement. Calculations or measurements must show reductions to the calculated TSS concentration in uncontrolled runoff using the data provided here or another acceptable literature source. The *Low Impact Development (LID) Manual for Michigan*[1] summarizes the potential application and the quantity and quality function for most BMPs, when designed correctly, either individually or as a suite of BMPs.

Requirement B: Channel Protection Criteria
All stormwater management plans shall comply with the channel protection criteria provided by this section to address post-development site runoff volume and peak flow rates.

(a) A stormwater management plan shall require such stormwater management practices, methods, and facilities as necessary to maintain post-development site runoff volume and peak flow rates via an outlet from the stormwater management facility not to exceed a 4 inch diameter pipe, or as otherwise determined adequate by the County Drain Commissioner.

(b) The Jackson County Drain Commissioner may specify more restrictive criteria if determined necessary to meet the goals of reducing runoff volume and peak flows to less than existing levels on the property to be developed.

Requirement C: Be compatible/integrate with Jackson County's Flood Control Requirements
(1) If an adequate stormwater outlet exists on the property (i.e., a county drain, river, stream, lake etc. [not a natural swale or roadside ditch flowing over and across adjacent and downstream properties]) to serve a development site, a detention facility capable of managing a 50-year frequency storm having a 1-hour duration and generating a 2.5 inch/hour rainfall intensity, having a four-inch diameter outlet, is acceptable. If a basin is constructed, provide one foot of freeboard.

(2) If an adequate outlet is not available, a retention facility, having no outlet, capable of managing a 100-year storm frequency having a 3-hour duration generating a 1.5 inch/hour intensity is acceptable. If a basin is constructed, provide one foot of freeboard.

(3) To provide for a frost-free condition, both the retention and detention basins shall be constructed after the sod has become established, such that: there is installed (could be with a post hole digger) at the lowest point of the basin, a 4-foot deep, 12-inch diameter pipe filled with washed pea stone (approximately 1-inch to 2-inch diameter), and; the "lip" of the pipe extends approximately 3-inches above the bottom of the basin (to prevent silt from entering the pipe).

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[1] Southeast Michigan Council of Governments (SEMCOG). 2008. Low Impact Development Manual for Michigan: A Design Guide for Implementors and Reviewers.

(4) The on-site stormwater collection system shall be designed/constructed such that downstream-most 4-foot diameter catch basin is located such that it can be maintained by a sewer-vac, and has installed within it a down-turned "gooseneck" in the outlet pipe discharging into the basin.

Requirement D: Provide and implement site plans incorporating all Jackson County requirements
This includes:

Soil Erosion Control:

(a) All development and other land disturbance activities shall be designed, constructed, and completed in such a manner that the exposed area of any disturbed land is limited to the shortest practical period of time.

(b) Proposed erosion control measures shall be submitted to the Jackson County Health Department for determination that such measures comply with the County's soil erosion and sedimentation control requirements. The project developer must obtain a Part 91, SESC permit from the Jackson County Health Department-Environmental Division prior to any earthmoving.

(c) Approved soil erosion control measures shall be installed and maintained between the disturbed area and any down-gradient watercourses (including rivers, streams, creeks, lakes, ponds, and other watercourses), wetlands, roadways, and property lines.

(d) Sediment resulting from accelerated soil erosion shall be removed from runoff water before it leaves the site of the development.

(e) Temporary and permanent soil measures designed and constructed for the conveyance of water around, through, or away from the development or land disturbance activity area shall be designed to limit the water flow to a non-erosive velocity.

(f) Temporary soil measures shall be removed after permanent soil measures have been implemented and stabilized. All developments and land disturbance activity areas shall be stabilized with permanent soil measures.

(g) If inland lakes, ponds, rivers, creeks, streams, or other watercourses and wetlands are located on or near the site, measures that trap sediment shall be provided. The use of temporary sediment basins, sediment traps, filter fabric, and rock filters shall be employed as required by the Health Department. Other measures may be required if reasonably determined to be necessary by the Drain Commissioner to protect a watercourse or wetland.

(h) If it is not possible to permanently stabilize a disturbed area after an earth change has been completed or where significant land disturbance activity ceases, temporary soil erosion control measures shall be implemented within two (2) calendar days.

(i) Permanent soil measures for all slopes, channels, ditches, or any disturbed land area shall be completed within fifteen (15) calendar days after final grading or the final land disturbance activity has been completed. All temporary soil measures shall be maintained until permanent soil measures are implemented and stabilized.

(j) Vegetated filter strips, twenty-five (25) feet in width, vegetated with native plant species, shall be created or retained along the edges of all lakes, creeks, streams, wetlands, and other watercourses. The width of a particular filter strip may be reduced to the extent it is demonstrated to the Drain Commissioner's satisfaction that a portion of the width will serve no useful function, e.g., to the extent the grade is such that water flow will be away from the watercourse and the filter strip does not serve to protect wildlife habitat or other useful function.

Discharge of Stormwater to Wetlands:

(a) Wetlands shall be protected from damaging modification and adverse changes in runoff quality and quantity associated with land disturbance activities. Before approval of a final plat or site plan, all necessary wetland permits from EGLE and the County Health Department must first be obtained.

(b) Wetlands shall be protected during development by appropriate soil erosion and sedimentation control measures that are continuously maintained throughout the construction phase.

Requirement E: Easements for stormwater management system:

The applicant shall provide all stormwater management easements as determined necessary by the Jackson County Drain Commissioner to implement the approved final stormwater management plan and to otherwise comply with these Rules.

(a) Stormwater management easements may be required for any of the following purposes:
  (1) To provide access for stormwater management facility inspections and maintenance.
  (2) To preserve stormwater runoff conveyance, infiltration, and detention areas and facilities, including flood routes for storm events.
  (3) To preserve primary and secondary drainage ways that are needed to serve stormwater management needs of other properties.
  (4) To accomplish purposes such as those listed above for all areas used for off-site stormwater control, including undeveloped or undisturbed lands, as applicable.
  (5) To serve as a permanent buffer strip (required along all open County Drains)
  (5) To serve other purposes and objectives as necessary to achieve the purposes of this article as determined by the Jackson County Drain Commissioner.

(b) All stormwater management easements shall meet the following requirements:
  (1) The purpose of each easement shall be specified in writing.
  (2) The easements shall be acceptable to the Drain Commissioner in form and substance and shall be recorded with the Jackson County Register of Deeds.

Requirement F: Implementation Plans

The applicant shall provide an implementation plan for construction and inspection during and after construction of all stormwater management system components required by the final stormwater management plan, including a schedule of the estimated dates of completing construction of the stormwater management system shown on the plan; identification of the proposed inspection procedures to ensure that the stormwater management system components are constructed and operating in accordance with the final stormwater management plan; and recordkeeping requirements.

The implementation plan will include arrangements acceptable to the Jackson County Drain Commissioner for notification before the commencement of construction of the stormwater management system (and before construction of critical components of the system) and for final verification of construction by a registered professional engineer.

Requirement G: Enforcement mechanisms with record keeping procedures
Enforcement of the requirements will be achieved via the site plan review/approval/permitting process that supports the Jackson County stormwater management program, violation of which shall cause the permit(s) to be revoked. Further, maintenance agreements shall implement and track maintenance activities to ensure long-term O&M plans for the water quality treatment controls. The BMP owner-operator must track and record, and if required by the County Drain Commissioner, report all field inspection findings to ensure proper O&M occurs for the life of the BMP. As per the Stormwater Management Plan, the BMP/owner operator must maintain inspection and maintenance information for the life of the BMP and make this information available to County Drain Commissioner during inspections.

Requirement H: Other information and material.
The stormwater management plan shall include any other information, documents, items, and materials determined necessary by the Jackson County Drain Commissioner to verify that the stormwater management plan complies with the County's design and performance standards for drains and stormwater management systems, and that the plan otherwise complies with the requirements of other applicable laws and regulations.

Requirement I: Operation and Maintenance Requirements
All structural and vegetative BMPs installed as a requirement of the permit shall include a plan for maintaining maximum design performance through long-term operation and maintenance (O&M). The maintenance plan shall be subject to approval by the Jackson County Drain Commissioner and enforceable.

(a) The O&M plan and agreement shall be provided by the applicant in such form and substance as required by the Drain Commissioner.

(b) The O&M plan and agreement shall contain provisions to ensure that the maximum design performance of stormwater BMPs is maintained on a long-term basis and that the County's standards for stormwater quality and quantity are met.

(c) At a minimum, the O&M plans and agreements shall include all of the following information and contents:

(1) The names and addresses of the property owners, and, the owners of all components of the stormwater system.
(2) The names and addresses of the persons responsible for operation and maintenance.
(3) The names and addresses of the persons responsible for financing operation and maintenance and emergency repairs.
(4) The signatures of the owners and any other persons to be bound by the agreement.
(5) A detailed annual estimated budget for the expected life of the BMPs; and a demonstrated means of financing operation and maintenance and emergency repairs.
(6) A map showing the location of the stormwater systems and facilities, including catch basins, manholes/access lids, main, and stormwater devices.
(7) A schedule for routine, non-routine, emergency, and long-term inspection and maintenance of all structural and vegetative stormwater BMPs, with detailed tasks to be performed, and detailed inspection and maintenance checklists.
(8) Operating instructions for stormwater outlet components.

(9) Vegetation maintenance schedule.
(10) Recordkeeping, tracking, inspection, and notice checklists and requirements.
(11) A statement recognizing the county's right to enter the property for the purpose of inspections.
(12) Provisions regarding the county's right to perform, or cause to be performed, any required operation and maintenance if the responsible persons fail or refuse to do so, and the obligation of property owner to fully reimburse the county for the costs and expenses incurred by the county in connection with such activity.

The O&M plan and agreement shall be binding on all current and subsequent owners of land served by the stormwater BMPs and shall be recorded in the county register of deeds as directed by the county attorney. Any person responsible for the operation and maintenance of a stormwater management facility shall provide records of all maintenance and repairs to the Drain Commissioner upon request. An example of a stormwater maintenance agreement can be found in the LID Manual for Michigan.

Requirement J: Other
All stormwater management plans involving properties handling petroleum, oil or chemical products that are capable of discharging into a water of the State shall design and construct as a part of its stormwater management/treatment system, an oil & grease separator.

Prior to accessing the site from a county road right of way (or doing any work within the right of way), a permit must be obtained from the Jackson Department of Transportation.

Prior to approval from the Jackson County Drain Commissioner and the local municipality, a signed/sealed certification of a professional engineer or surveyor must be submitted stating that the: project was constructed according to the approved site plans and this Office's requirements, and; that all permanent Soil Erosion control measures were constructed/installed.

FW: Jackson County - Solar Farm Stormwater Design Criteria

Commonly Used Runoff Coefficients

Type of Surface	Runoff Coefficient		
Water Surfaces	1.00		
Roofs	0.95		
Asphalt or concrete pavements	0.95		
Gravel, brick or macadam surfaces	0.85		
Semi-pervious: lawns, parks, playgrounds	Slope <4%	Slope 4-8%	Slope >8%
Hydrologic Soil Group A	0.15	0.20	0.25
Hydrologic Soil Group B	0.25	0.30	0.35
Hydrologic Soil Group C	0.30	0.35	0.40
Hydrologic Soil Group D	0.45	0.50	0.55