INTRODUCTION

The Livingston County Drain Commissioner Procedures and Design Criteria for Stormwater Management Systems apply only to stormwater management systems within new development projects (1.0 acre or larger), and redevelopment projects (1.0 acre or larger). The following discussion applies to all aspects of managing land and stormwater.

A. The Role of the Livingston County Drain Commissioner

The Office of the Livingston County Drain Commissioner (Drain Commissioner) exercises authority over the design and construction of structural facilities (when directly connected to a county drain) that convey and treat stormwater runoff that will be generated from a site as a result of its development. The Drain Commissioner's Rules regulate the design of such management facilities with the following objectives:

- Incorporate design standards that address both water quantity and quality.
- Encourage innovative stormwater management practices that meet the criteria contained within these rules.
- Place an emphasis on the facility maintenance.
- Make the facility safety a priority.
- Incentivize the protection of natural features.
- Encourage effective soil erosion and sedimentation control measures.

Regardless of Drain Commissioner or Local Unit review, the developer is responsible for both on-site and off-site impacts associated with earth disturbance activities. The developer should take all precautions necessary to prevent downstream damage due to concentration of flow.

i. Local Unit Review

Typically, the Local Unit of Government (Local Unit), such as a Township, City, or Village retains an engineer to perform plan review of the proposed development. The purpose of such a review is to ensure conformance with engineering and design standards as codified in local ordinances applicable to the proposed development. In many cases, this review by the Local Unit does include an analysis of the drainage system.

The following conditions are provided as a precursor to the Drain Commissioner's acceptance of a drainage review from a Local Unit:

- The drainage system for the development is not proposed to be dedicated to the Drain Commissioner under the applicable provisions of the Drain Code.
- The drainage system for the development does not directly outlet to a county drain.

- The road system in the development is intended to be private.
- The Local Unit must have a stormwater management ordinance and said ordinance must require all developments within the Local Unit be designed to the standards outlined herein.
- The engineering review letter prepared on behalf of the Local Unit and submitted to this office must state that a professional engineer reviewed the plans for conformance with these standards, and that the proposed design meets all standards herein.
- Exceptions to the above requirements may be granted for parcel divisions, if the median parcel size in the overall parcel split exceeds 2 acres, and the developers engineer certifies that:

    a. The proposed parcel division will not result in a concentration of flow sufficient to require detention, and

    b. The outlet for the proposed parcel division is adequate to accept design flows without detriment to other properties in the watershed.

    c. The Drain Commissioner may require a demonstration that the above 2 conditions are met as a condition of accepting the certification required above.

B. Authority of the Drain Commissioner

The Livingston County Drain Commissioner draws authority from the Land Division Act, the Michigan Drain Code, the Mobile Home Commission Act, and Part 91 of the Soil Erosion and Sedimentation Control of Natural Resources and Environmental Protection Act. This authority includes:

i. All plats recorded with the Register of Deeds must conform to Act 288 of the Public Acts of 1967, as amended. Under this Act, the Drain Commissioner is responsible for ensuring that the drainage or stormwater management system of a subdivision is adequate to address stormwater management needs within the proposed subdivision and for protecting downstream landowners. The procedures, standards, and recommendations set forth in these rules are designed for these purposes.

ii. In accordance with the provisions of Act 288, the Drain Commissioner has the authority, through the subdivision review process, to require that county drains, both inside and outside of a plat, be improved to the standards established by the Drain Commissioner when necessary for the proper drainage of a proposed subdivision.

iii. As specified in Act 288, the Drain Commissioner may acquire jurisdiction over the drainage systems within subdivisions as deemed necessary for adequate operation and maintenance. (See Appendix A.)

iv. The general standards set forth herein will be applied by the Drain Commissioner in review of site condominium plans prepared under Act 59, P.A. 1978, as amended.

v. The general standards set forth herein will be applied by the Drain Commissioner in review for plans for mobile home parks prepared under Act 96, P.A. 1987.

vi. All developments within an established drainage district, as established under Act 40 of P.A. of 1956, as amended, shall conform to all requirements herein.

vii. These rules provide minimum standards to be complied with by Owners and in no way limit the authority of the Local Unit in which the development is situated to adopt or publish and enforce higher standards as a condition of approval of the final plat or site plan.

viii. The Drain Commissioner reserves the right to determine site-specific requirements other than those herein, based upon his/her review of the plans.

ix. Approval of final lot grading is not under the jurisdiction of the Drain Commissioner. Some local municipalities have ordinances relating to final lot grades. The Drain Commissioner's office is not responsible for inspection of, or enforcing corrections to, final lot grading or landscaping.

C. Framework for the Design of Stormwater Management Systems

Thoughtful site planning can reduce the negative drainage impacts associated with development. Toward this end, communities, regulatory agencies, and designers must evaluate the impact of each individual development project over the long term and on a watershed scale. Such an approach requires the consideration of Best Management Practices (BMPs) that function together as a system to ensure that the volume, rate, and pollutant load of runoff remains similar to that which occurred under natural conditions. This can be achieved through a coordinated network of structural and nonstructural methods, designed to provide both source and site control. In such a system, each BMP by itself may not provide major benefits, but when combined with others becomes very effective.

i. Source Controls

Source controls reduce the volume of runoff generated on-site and reduce initial opportunities for pollutants to enter the drainage system. Source controls are the best option for mitigating stormwater impacts and include the following key practices:

- Preservation of existing natural features that perform stormwater management functions, such as depressions, wetlands and vegetation along stream banks.
- Direction of stormwater discharges to open, grassed areas such as swales rather than allowing stormwater to run off from impervious areas directly into the stormwater conveyance system. Careful design and installation of erosion control mechanisms and rigorous maintenance throughout the construction period.

ii. Site Controls

Site controls are the subject of this document. After the implementation of source controls, site controls are then required to convey, pre-treat, and treat (e.g., detain, retain, or infiltrate) the stormwater runoff generated by development. The range of engineering and design techniques

available to achieve these objectives is to some degree dictated by site configuration, soil type, and the receiving waterway. For example, flat or extremely steep topography may preclude the use of grassed swales, which are otherwise preferable to curb and gutter systems, depending on the density of development. Likewise, sites upstream of cold-water fisheries may not be suitable for permanent wet basins that discharge heated surface waters. But while each site will be unique, some universal guidelines for improving discharge quality and minimizing maximum flows can be stated. Preferred Hierarchy of Structural Site Controls

a. In general, the most effective stormwater quality controls are properly maintained infiltration practices, which reduce both the runoff peak and volume.

b. The next most effective stormwater site controls reduce the runoff peak and involve storage facilities such as retention and detention basins. In the selection of an appropriate stormwater basin design, wet basins are generally preferable to dry detention basins since they hold stormwater much longer, allowing more particulate to settle out. In addition, the aquatic plants and algae within wet basins take up soluble pollutants (nutrients) from the water column. These nutrients are then transformed into plant materials that settle to the basin floor, decay, and are consumed by bacteria. Since this biological process is dependent upon the presence of water, it does not occur in dry basins. It should be noted that the encouraged use of wet basins as defined in this manual is not intended to mandate the creation of regulated wetlands as defined by state law.

c. Where site conditions make the use of a wet basin infeasible, basins should be designed to provide extended detention of stormwater, again to promote as much settling of particulate as possible.

d. Once all possible methods of reducing and treating stormwater on-site have been implemented, excess runoff must be discharged into conveyance systems and carried off-site in a suitable outlet.