

APPENDIX P – VILLAGE OF LIBERTYVILLE STORMWATER MANAGEMENT REGULATIONS

PURPOSE AND GOAL

The purpose of all new development/redevelopment and teardown Stormwater Management Regulations is to provide storage volume to offset the increase in stormwater runoff volume that may result from a redeveloped property.

The goal of these Stormwater Management Regulations are to demonstrate the detail and depth of information required by the Department of Public Works/Engineering Division to determine that all goals of the Site Grading and Drainage Ordinance are understood and met by those desiring to make alterations. There are numerous ways to reduce site grading and drainage impacts including Floor Area Ratio (FAR), Lot Coverage and Impervious Area.

The Village of Libertyville does not desire to prescribe how an owner/developer should design their modifications to meet Village Ordinances. Examples of Best Management Practices (BMPs) utilized to reduce run-off volume and rate include storm vaults, cisterns, oversized piping for detention, rain gardens and natural landscaping, bio-retention, infiltration trenches, rain barrels, porous pavement and underground storage system and rainwater harvesting systems.

ISSUE

The Village of Libertyville has utilized the Lake County Watershed Development Ordinance (WDO) since October 18, 1992 for their plan review and enforcement guidance. On July 10, 2012, the WDO was amended to defined New Impervious Surface Area; however, the WDO definition was not clear on addressing new developments or new impervious surface area prior to October 18, 1992, within the Special Drainage Areas.

FINDING

- “All new development/redevelopment and teardown projects disturbing greater than 5,000 square feet must comply with the complete 2013 WDO requirements, as amended by the Village Board of Trustees. Projects which result in a net increase in impervious surface of 200 square feet or more up to 5,000 square feet of land disturbance must meet the **Appendix P** Stormwater Management Regulations, whereby the threshold for flow control in the 2013 WDO shall be reduced from 0.5 acre to 200 square feet of net new impervious surface as a threshold for the stormwater storage requirements within the designated area as depicted on **Exhibit 1** (see attached map). New or increased impervious is defined by comparison to the existing conditions as of the effective date of these regulations. The flow control requirement can be waived if the project discharges directly to an approved detention basin or if findings from downstream analysis indicate that the entire downstream system is comprised of pipes/roadside ditches and the proposed project discharges will not exceed the conveyance capacity of downstream system.”
- “Develop” shall mean the erection or construction of any building, structure, concrete, asphalt, decking that is not open, gravel, crushed rock, natural stone, other pavers or brick patios made with sand or concrete or other impervious surface that result in an increase in storm water runoff. “Develop” shall also mean the erection or construction of any addition to existing buildings and on sites where an existing building is replaced with a new building. Swimming pools (open water) is exempt from the requirements if the water surface elevation is no less than 6 inches lower than the top of the pool elevation.
- “Development” shall mean, where a proposed improvement, new development/redevelopment or teardown creates 200 square feet or greater of net new impervious area, the developer shall provide storm water storage on-site to mitigate the impact of development, provide an approved Best Management Practice (BMP).
- Vacant Residential Platted Lot: Calculate the required stormwater runoff volume based on the method mentioned below. The Village of Libertyville will allow a “credit” of 50% of the calculated storage volume requirement if demonstrated by the design engineer that the credited 50% would not adversely impact downstream properties. (Example: A vacant lot of 0.2684 acres is developed to maximum allowable lot

coverage of 45%. The calculated storage volume requirement would be 1,115 cubic feet. Allowing the 50% volume credit, the required storage volume would be 558 cubic feet.)

- The stormwater Flow Control/Detention Design Requirement shall meet the Appendix P Stormwater Management Regulations.
- The most-widely used method of calculating stormwater runoff volume is the National Resources Conservation Service (NRCS) Runoff Curve Number (CN) method. The NRCS formula uses curve numbers based on land usage to determine additional runoff from 100-Year Rain Event (6.50"). It is required that this formula be applied, at a minimum, to the proposed impervious lot coverage to determine the storage requirement, and it is recommended that this formula be applied to the maximum allowable impervious percentage lot coverage. Applying this formula to the maximum allowable impervious lot coverage will provide stormwater management for future construction, including a factor of safety and compensate for uncertainties such as (unknown sump pump discharge volume).
- Open grid decking over pervious areas, wheel strip driveways, porous concrete, porous asphalt concrete, permeable pavers and modular grid pavement are semi-pervious surfaces and are counted toward each zone's maximum impervious surface limit; however, these counted at only 40% of the total area installed.
- The following are several examples of stormwater management systems that will provide approximately 400 cubic feet of stormwater volume: a permeable paver driveway or patio with dimensions of 20 feet x 20 feet with 3 feet of stone underneath, a dry well (stone) with the dimensions of 12 feet x 12 feet x 8 feet deep, a dry well (stone) with the dimensions of 12 feet x 8.5 feet x 5 feet deep with a manufactured chamber inside, a detention area or rain garden that is 20 feet x 40 feet x an average of 6 inches deep, a concrete underground vault that is 10 feet x 10 feet x 4 feet. Also, as a reference, a 55 gallon rain barrel holds approximately 7.5 cubic feet.

Net New Impervious Surface Area (Amount over 200 square feet*)	Storage Volume for the Net New Impervious Surface Area (cubic-feet)	Storage Volume Required (Gallons)
50 ft ²	11	82
100 ft ²	21	157
150 ft ²	32	239
200 ft ²	43	315
More than 200 ft ²	To be calculated and designed according to Appendix P provisions	

* 200 square feet is a single life-time credit for each property and applies to proposals submitted for permit on or after July 28, 2015.

General Requirements

This guidance document applies only to projects that existed prior to the October 18, 1992 Watershed Development Ordinance (WDO) as depicted on **Exhibit 1** attached or common developments disturbing less than 5,000 square feet of land when flow control is required. The applicable design is stated in the WDO as amended.

Guidance and Approved Storm Water Management Techniques

Certain storm water management techniques benefit the quality of our waterways by reducing the pollutant load as well decreasing the volume rate of runoff. The Village of Libertyville acknowledges this by offering adjustment for those techniques that address quantity and/or quality. A brief description of approved techniques follows below:

- Bio-retention: sump pump and downspouts shall be connected to a designed bio-retention.
- Infiltration Trenches: paved areas may be directed toward the designed infiltration trenches.

- Rain Barrels or Cisterns: roof gutters and downspouts may be connected to the designed rain barrel or cisterns.
- Porous Pavement: driveways, patios and service walk ways may be constructed with porous pavement materials.
- Storm sewer conveyance system that may need to be extended and recapture for the cost can be requested to the Village Board.
- Underground storage system or rainwater harvesting system, combination thereof, or other design as approved by the Village Engineer or the Watershed Enforcement Officer.
- Prevent any fill materials within the critical area and prevent any storm water volume capacity lost.
- All roof runoff and sump pump discharge shall be splashed on grade and directed to the stormwater management system via grading; where possible.
- The location of the stormwater management system shall be determined by the design engineer.
- The proposed improvements shall not cause any adverse impact to the adjacent properties.
- Provide storm sewer conveyance system if needed.
- Storm sewer conveyance system may need to be extended beyond the property limits.
- Overflow route shall be designed according to the standards.
- Retaining wall drainage diversion.
- Provide soil erosion and sediment control measures according to the WDO standards.
- Restoration shall be complete on timely matter according to the WDO standards.
- As-built drawings, signed and sealed by an Illinois licensed Professional Engineer, are required for all developments as determined by the Enforcement Officer (such developments that effect stormwater runoff rates or volume).
- Homeowner acknowledgement letter should be submitted to the Enforcement Officer for the ownership and maintenance of the stormwater management practices.
- The stormwater management system must be designed by an Illinois Licensed Civil Engineer and must be shown on the signed and sealed site grading plan that is submitted at the time of the building permit application.

Additional Guidance and Approval within the Special Drainage Areas (see Exhibit 2 attached):

In development/redevelopment or teardown projects within the Special Drainage Areas, the following shall be considered:

- The maximum allowable impervious lot coverage shall not exceed the Village of Libertyville Zoning Code;
 - Building top of foundation shall be one (1) foot minimum above the studied high water elevation;
 - The lowest adjacent grades shall be six inches (6 inches) minimum above the studied high water elevation;
 - Minimize the new impervious surface area to the above standards;
 - Minimize the fill area; and
 - Provide compensatory storage for any volume lost below the high water elevation.
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