

**AN ORDINANCE
AMENDING CERTAIN SECTIONS OF CHAPTER 1357 OF
THE CODIFIED ORDINANCES RELATING TO
COMPREHENSIVE STORM WATER MANAGEMENT;
REPEALING CERTAIN SECTIONS OF CHAPTER 1357; AND
DECLARING AN EMERGENCY.**

WHEREAS, flooding is a significant threat to property and public health and safety, and storm water management lessens flood damage by reducing and holding runoff and releasing it slowly; and

WHEREAS, streambank erosion is a significant threat to property and public health, and safety and storm water management slows runoff and reduces its erosive force; and

WHEREAS, insufficient control of storm water can result in significant damage to receiving water resources, impairing the capacity of these areas to sustain aquatic systems and their associated aquatic life use designations; and

WHEREAS, land development projects and associated increases in impervious cover alter the hydrologic response of local watersheds and increase storm water runoff rates and volumes, flooding, stream channel erosion, and sediment transport and deposition; and

WHEREAS, storm water runoff contributes to increased quantities of pollutants to water resources; and

WHEREAS, storm water runoff, stream channel erosion, and nonpoint source pollution can be controlled and minimized through the regulation of runoff from land development projects; and

WHEREAS, there are watershed-wide efforts to reduce flooding, erosion, and water quality problems in the Chagrin River and to protect and enhance the water resources of the Chagrin River; and

WHEREAS, the Village of Chagrin Falls finds that the lands and waters within its borders are finite natural resources and that their quality is of primary importance in promoting and maintaining public health and safety within its borders; and

WHEREAS, the Village of Chagrin Falls desires to establish standards, principles, and procedures for the regulation of soil disturbing activities that may increase flooding and erosion and may cause adverse impacts to water resources, resulting from storm water runoff; and

WHEREAS, the Village of Chagrin Falls is a member of the Chagrin River Watershed Partners and recognizes its obligation as a part of this organization to manage storm water within its borders; and

WHEREAS, 40 C.F.R. Parts 9, 122, 123, and 124, and Ohio Administrative Code 3745-39

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require designated communities, including the Village of Chagrin Falls, to develop a Storm Water Management Program that, among other components, requires the Village of Chagrin Falls to implement standards, principles, and procedures to regulate the quality of storm water runoff during and after soil disturbing activities; and

WHEREAS, Article XVIII, Section 3, of the Ohio Constitution grants municipalities the legal authority to exercise all powers of local self-government and to adopt and enforce within their limits such local police, sanitary, and other similar regulations, as are not in conflict with general laws.

NOW, THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE VILLAGE OF CHAGRIN FALLS, CUYAHOGA COUNTY, STATE OF OHIO:

SECTION 1. That existing Section 1357.02, Definitions, of the Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby amended by enacting new Section 1357.02, DEFINITIONS, which Section shall read as set forth in the attached Exhibit "A," which is incorporated herein for all purposes.

SECTION 2. That existing subsection (d)(10), Inspection and Maintenance Agreement, of Section 1357.08, Comprehensive Storm Water Management Plans, of the Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby amended by enacting new subsection (d)(10), Inspection and Maintenance Agreement, of Section 1357.08, COMPREHENSIVE STORM WATER MANAGEMENT PLANS, which subsection shall read as set forth in the attached Exhibit "B," which is incorporated herein for all purposes.

SECTION 3. That existing subsection (a)(3), Storm Water Management for All Lots, of Section 1357.09, Performance Standards, of the Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby amended by enacting new subsection (a)(3), Storm Water Management for All Lots, of Section 1357.09, PERFORMANCE STANDARDS, which subsection shall read as set forth in the attached Exhibit "C," which is incorporated herein for all purposes.

SECTION 4. That existing Section 1357.09, Performance Standards, of the Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby by amended by enacting new subsection (a)(10), Preservation of Wetland Hydrology, of Section 1357.09, PERFORMANCE STANDARDS, which subsection shall read as set forth in the attached Exhibit "D," which is incorporated herein for all purposes.

SECTION 5. That existing subsection (c)(1), Storm Water Quality Control, Direct Runoff to a BMP, of Section 1357.09, Performance Standards, of the Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby amended by enacting new subsection (c)(1), Storm Water Quality Control, Direct Runoff to a BMP, of Section 1357.09, PERFORMANCE STANDARDS, which subsection shall read as set forth in the attached Exhibit "E," which is incorporated herein for all purposes.

SECTION 6. That existing subsection (c)(2), Storm Water Quality Control, Criteria applying to all storm water management practices, of Section 1357.09, Performance Standards, of the

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Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby amended by enacting new subsection (c)(2), Storm Water Quality Control, Criteria applying to all storm water management practices, of Section 1357.09, PERFORMANCE STANDARDS, which subsection shall read as set forth in the attached Exhibit "F," which is incorporated herein for all purposes.

SECTION 7. That existing subsection (c)(3), Storm Water Quality Control, Additional criteria for extended detention facilities, of Section 1357.09, Performance Standards, of the Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby amended by enacting new subsection (c)(3), Storm Water Quality Control, Additional criteria for extended detention facilities, of Section 1357.09, PERFORMANCE STANDARDS, which subsection shall read as set forth in the attached Exhibit "G," which is incorporated herein for all purposes.

SECTION 8. That existing subsection (c)(4), Storm Water Quality Control, Additional criteria applying to extended conveyance facilities, of Section 1357.09, Performance Standards, of the Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby amended by enacting new subsection (c)(4), Storm Water Quality Control, Additional criteria for extended conveyance facilities, of Section 1357.09, PERFORMANCE STANDARDS, which subsection shall read as set forth in the attached Exhibit "H," which is incorporated herein for all purposes.

SECTION 9. That existing subsection (c)(5), Storm Water Quality Control, Additional criteria applying to infiltration facilities, of Section 1357.09, Performance Standards, of the Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby amended by enacting new subsection (c)(5), Storm Water Quality Control, Additional criteria applying to infiltration facilities, of Section 1357.09, PERFORMANCE STANDARDS, which subsection shall read as set forth in the attached Exhibit "I," which is incorporated herein for all purposes.

SECTION 10. That existing subsection (c)(6), Storm Water Quality Control, Alternative post-construction BMPs, of Section 1357.09, Performance Standards, of the Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby amended by enacting new subsection (c)(6), Storm Water Quality Control, Alternative post-construction BMPs, of Section 1357.09, PERFORMANCE STANDARDS, which subsection shall read as set forth in the attached Exhibit "J," which is incorporated herein for all purposes.

SECTION 11. That existing subsection (e), Storm Water Management on Redevelopment Projects, of Section 1357.09, Performance Standards, of the Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby amended by enacting new subsection (e), Storm Water Management on Redevelopment Projects, of Section 1357.09, PERFORMANCE STANDARDS, which subsection shall read as set forth in the attached Exhibit "K," which is incorporated herein for all purposes.

SECTION 12. That existing subsection (a) of Section 1357.10, Alternative Actions, of the Codified Ordinances of the Village of Chagrin Falls, be and the same is hereby amended by enacting

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new subsection (a) of Section 1357.10, ALTERNATIVE ACTIONS, which subsection shall read as set forth in the attached Exhibit "L," which is incorporated herein for all purposes.

SECTION 13. That existing Section 1357.02, Definitions; existing subsection (d)(10), Inspection and Maintenance Agreement, of Section 1357.08, Comprehensive Storm Water Management Plans; existing subsection (a)(3), Storm Water Management for All Lots, of Section 1357.09; existing subsection (c)(1), Storm Water Quality Control, Direct Runoff to a BMP, of Section 1357.09; existing subsection (c)(2), Storm Water Quality Control, Criteria applying to all storm water management practices, of Section 1357.09; existing subsection (c)(3), Storm Water Quality Control, Additional criteria for extended detention facilities, of Section 1357.09; existing subsection (c)(4), Storm Water Quality Control, Additional criteria for extended conveyance facilities, of Section 1357.09; existing subsection (c)(5), Storm Water Quality Control, Additional criteria applying to infiltration facilities; existing subsection (c)(6), Storm Water Quality Control, Alternative post-construction BMPs, of Section 1357.09; existing subsection (e), Storm Water Management on Redevelopment Projects, of Section 1357.09; and, existing subsection (a) of Section 1357.10, Alternative Actions, of the Codified Ordinances of the Village of Chagrin Falls, and any other ordinance in conflict herewith, be and the same are hereby repealed.

SECTION 14. That actions of this Council concerning and relating to the passage of this legislation were adopted in lawful meetings of this Council and that all deliberations of this Council and of any of its committees that resulted in such formal action were in compliance with all legal requirements, including Chapter 114 of the Codified Ordinances of the Village of Chagrin Falls.

SECTION 15. That in accordance with Section 113.01 of the Codified Ordinances of the Village of Chagrin Falls, public notice of this Ordinance shall be given by posting a copy thereof for not less than fifteen (15) days in the Village Hall.

SECTION 16. That this Ordinance is declared to be an emergency measure necessary for the immediate preservation of the public peace, property, health and safety of this Village and for the further reason that this Ordinance must be immediately effective in order to provide for the timely adoption of amendments to the Village's comprehensive storm water management regulations as required by state law; wherefore, provided it receives the requisite number of affirmative votes of all members elected to Council, this Ordinance shall be in full force and effect from and immediately upon its passage by this Council and approval by the Mayor; otherwise, it shall take effect and be in force after the earliest period allowed by law.

PASSED: June 27, 2011



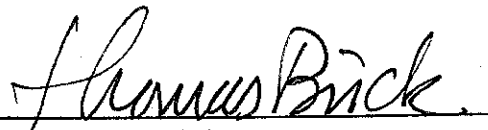
Council President

Submitted to the Mayor for
his approval on this
28 day of June, 2011

Approved by the Mayor

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June 28, 2011



Mayor

I hereby certify that Ordinance No. 2011- 39 was duly enacted on the 27 day of June, 2011, by the Council of the Village of Chagrin Falls and posted in accordance with Section 113.01 of the Codified Ordinances of the Village of Chagrin Falls.



Clerk of Council

Exhibit "A"

CHAPTER 1357
COMPREHENSIVE STORM WATER MANAGEMENT
SECTION 1357.02

"1357.02 DEFINITIONS

For the purpose of this regulation, the following terms shall have the meaning herein indicated:

- (a) ACRE: A measurement of area equaling 43,560 square feet.
- (b) AS-BUILT SURVEY: A survey shown on a plan or drawing prepared by a Registered Surveyor indicating the actual dimensions, elevations, and locations of any structures, underground utilities, swales, detention facilities, and sewage treatment facilities after construction has been completed.
- (c) BEST MANAGEMENT PRACTICES (BMPs): Schedule of activities, prohibitions of practices, operation and maintenance procedures, treatment requirements, and other practices to reduce the pollution of water resources and to control storm water volume and rate.
- (d) CLEAN WATER ACT: Pub. L. 92-500, as amended Pub. L. 95-217, Pub. L. 95- 576, Pub. L. 96-483, Pub. L. 97-117, and Pub. L. 100-4, 33 U.S.C. 1251 et. seq. Referred to as the Federal Water Pollution Control Act or the Federal Water Pollution Control Act Amendments of 1972.
- (e) COMMUNITY: The Village of Chagrin Falls, its designated representatives, boards, or commissions.
- (f) COMPREHENSIVE STORM WATER MANAGEMENT PLAN: The written document and plans meeting the requirements of this regulation that sets forth the plans and practices to minimize storm water runoff from a development area, to safely convey or temporarily store and release post-development runoff at an allowable rate to minimize flooding and stream bank erosion, and to protect or improve storm water quality and stream channels.
- (g) CRITICAL STORM: A storm that is calculated by means of the percentage increase in volume of runoff by a proposed development area. The critical storm is used to calculate the maximum allowable storm water discharge rate from a developed site.
- (h) DETENTION FACILITY: A basin, pond, oversized pipe, or other structure that reduces the peak flow rate of storm water leaving the facility by temporarily storing a portion of the storm water entering the facility.
- (i) DEVELOPMENT AREA: A parcel or contiguous parcels owned by one person or persons, or operated as one development unit, and used or being developed for commercial, industrial, residential, institutional, or other construction or alteration that changes runoff characteristics.
- (j) DEVELOPMENT DRAINAGE AREA: A combination of each hydraulically unique watershed with individual outlet points on the development area.
- (k) DISTURBED AREA: An area of land subject to erosion due to the removal of vegetative cover and/or soil disturbing activities.
- (l) DRAINAGE: The removal of excess surface water or groundwater from land by surface or subsurface drains.
- (m) EROSION: The process by which the land surface is worn away by the action of wind, water, ice, gravity, or any combination of those forces.
- (n) EXTENDED CONVEYANCE: A storm water management practice that replaces and/or enhances traditional open or closed storm drainage conduits by retarding flow, promoting percolation of runoff into the soil, and filtering pollutants during the storm water quality event.

- (o) **EXTENDED DETENTION:** A storm water management practice that replaces and/or enhances traditional detention facilities by releasing the runoff collected during the storm water quality event over at least 24 to 48 hours, retarding flow and allowing pollutants to settle within the facility.
- (p) **FINAL STABILIZATION:** All soil disturbing activities at the site have been completed and a uniform perennial vegetative cover with a density of at least 80% coverage for the area has been established or equivalent stabilization practices, such as the use of mulches or geotextiles, have been employed.
- (q) **GRADING:** The process in which the topography of the land is altered to a new slope.
- (r) **HYDROLOGIC UNIT CODE:** A cataloging system developed by the United States Geological Survey and the Natural Resource Conservation Service to identify watersheds in the United States.
- (s) **IMPERVIOUS COVER:** Any surface that cannot effectively absorb or infiltrate water. This may include roads, streets, parking lots, rooftops, sidewalks, and other areas not covered by vegetation.
- (t) **INFILTRATION:** A storm water management practice that does not discharge to a water resource during the storm water quality event, requiring collected runoff to either infiltrate into the groundwater and/or be consumed by evapotranspiration, thereby retaining storm water pollutants in the facility.
- (u) **LARGER COMMON PLAN OF DEVELOPMENT:** A contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan.
- (v) **MAXIMUM EXTENT PRACTICABLE:** The level of pollutant reduction that operators of small municipal separate storm sewer systems regulated under 40 C.F.R. Parts 9, 122, 123, and 124, referred to as NPDES Storm Water Phase II, must meet.
- (w) **NPDES:** National Pollutant Discharge Elimination System. A regulatory program in the Federal Clean Water Act that prohibits the discharge of pollutants into surface waters of the United States without a permit.
- (x) **NONSTRUCTURAL STORM WATER MANAGEMENT PRACTICE:** Storm water runoff control and treatment techniques that use natural practices to control runoff and/or reduce pollution levels.
- (y) **POST-DEVELOPMENT:** The conditions that exist following the completion of soil disturbing activity in terms of topography, vegetation, land use, and the rate, volume, quality, or direction of storm water runoff.
- (z) **PRE-CONSTRUCTION MEETING:** Meeting prior to construction between all parties associated with the construction of the project including government agencies, contractors and owners to review agency requirements and plans as approved and submitted.
- (aa) **PRE-DEVELOPMENT:** The conditions that exist prior to the initiation of soil disturbing activity in terms of topography, vegetation, land use, and the rate, volume, quality, or direction of storm water runoff.
- (bb) **PROFESSIONAL ENGINEER:** A Professional Engineer registered in the State of Ohio with specific education and experience in water resources engineering, acting in conformance with the Code of Ethics of the Ohio State Board of Registration for Engineers and Surveyors.
- (cc) **REDEVELOPMENT:** A change to previously existing, improved real estate, including but not limited to the demolition or building of structures, fillings, grading, paving, or excavating.
- (dd) **RIPARIAN AREA:** Naturally vegetated land adjacent to any brook, creek, river, or stream having a defined bed and bank that, if appropriately sized, helps to stabilize streambanks, limit erosion, reduce flood size flows, and/or filter and settle out runoff pollutants, or performs other functions consistent with the purposes of this regulation.
- (ee) **RIPARIAN AND WETLAND SETBACK:** A designated transition area around water resources left in a natural, usually vegetated, state so as to protect the water resources from runoff pollution.
- (ff) **RUNOFF:** The portion of rainfall, melted snow, or irrigation water that flows across the ground surface and is eventually returned to water resources.
- (gg) **SEDIMENT:** The soils or other surface materials that can be transported or deposited by the action of wind, water, ice, or gravity as a product of erosion.
- (hh) **SEDIMENTATION:** The deposition of sediment in water resources.
- (ii) **SITE OWNER OPERATOR:** Any individual, corporation, firm, trust, commission, board, public or private partnership, joint venture, agency, unincorporated association, municipal corporation, county or state agency, the federal government, other legal entity, or an agent thereof that is responsible for the overall construction site.
- (jj) **SOIL DISTURBING ACTIVITY:** Clearing, grading, excavating, filling, or other alteration of the earth's surface where natural or human made ground cover is destroyed and that may result in, or contribute to, increased storm water quantity and/or decreased storm water quality.
- (kk) **STABILIZATION:** The use of Best Management Practices that reduce or prevent soil erosion by storm water runoff, trench dewatering, wind, ice, gravity, or a combination thereof.
- (ll) **STRUCTURAL STORM WATER MANAGEMENT PRACTICE:** Any constructed facility, structure, or device that provides storage, conveyance, and/or treatment of storm water runoff.

(mm) **SURFACE WATERS OF THE STATE:** All streams, lakes, reservoirs, marshes, wetlands, or other waterways situated wholly or partly within the boundaries of the state, except those private waters which do not combine or affect a junction with surface water. Waters defined as sewerage systems, treatment works or disposal systems in Section 6111.01 of the Ohio Revised Code are not included.

(nn) **TOTAL MAXIMUM DAILY LOAD ("TMDL"):** The sum of the existing and/or projected point source, nonpoint source, and background loads for a pollutant to a specified watershed, water body, or water body segment. A TMDL sets and allocates the maximum amount of a pollutant that may be introduced into the water and still ensures attainment and maintenance of water quality standards.

(oo) **WATER QUALITY VOLUME.** The volume of runoff from a contributing watershed that must be captured and treated, equivalent to the maximized capture volume as defined in the American Society of Civil Engineers (ASCE) Manual and Report on Engineering Practice No. 87 and Water Environment Federation Manual of Practice No. 23 titled Urban Runoff Quality Management.

(pp) **WATER RESOURCE:** Any public or private body of water; including wetlands; the area within the ordinary high water level of lakes and ponds; as well as the area within the ordinary high water level of any brook, creek, river, or stream having a defined bed and bank (either natural or artificial) which confines and conducts continuous or intermittent flow.

(qq) **WATER RESOURCE CROSSING:** Any bridge, box, arch, culvert, truss, or other type of structure intended to convey people, animals, vehicles, or materials from one side of a watercourse to another. This does not include private, non-commercial footbridges or pole mounted aerial electric or telecommunication lines, nor does it include below grade utility lines.

(rr) **WATERSHED:** The total drainage area contributing storm water runoff to a single point.

(ss) **WETLAND:** Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas (40 CFR 232, as amended)."

Exhibit "B"

CHAPTER 1357
COMPREHENSIVE STORM WATER MANAGEMENT
SUBSECTION (d)(10) OF SECTION 1357.08

"1357.08 COMPREHENSIVE STORM WATER MANAGEMENT PLANS.

(d) Contents of Comprehensive Storm Water Management Plan. The Comprehensive Storm Water Management Plan shall contain an application, narrative report, construction site plan sheets, a long-term Inspection and Maintenance Agreement, and a site description with the following information provided:

(10) An inspection and maintenance agreement binding on the owner and all subsequent owners of lands served by the system of storm water management practices designed for the site. Such agreements shall include all post-construction BMPs, shall be recorded with the deed of the property(s) within the site, and shall provide and stipulate the following:

- A. The location of each storm water management practice, including those practices permitted to be located in, or within 50 feet of, water resources.
- B. The method of funding long-term maintenance and inspections of all storm water management practices.
- C. Features of the design that facilitate maintenance of the practice.
- D. The on-going procedures needed to assure the continued performance of storm water management practices.
- E. Additional standards, as required by the Village Engineer, to ensure continual performance of storm water management practices permitted to be located in, or within 50 feet of, water resources.
- F. The party responsible for long-term maintenance, including repairs. This party shall also hold the easements required under Section 1357.11.
- G. A prohibition on alteration of the practice without prior written approval from the Village Engineer.
- H. An easement that allows the Village of Chagrin Falls access to the storm water management practice at reasonable times for inspections to document the condition of the practice and to ensure it is functioning as originally designed and approved.
- I. Permission for the Village of Chagrin Falls to enter upon the property and take whatever action is deemed necessary by the Village Engineer to maintain facilities that do not perform as specified in the Inspection and Maintenance Agreement, and to be reimbursed by the property owner(s) served by the facility for all expenses incurred within 10 days of receipt of invoice from the Village of Chagrin Falls.
- J. A release of the Village of Chagrin Falls from all damages, accidents, casualties, occurrences, or claims that might arise or be asserted against said parties from the construction, presence, existence, or maintenance of the storm water management practices.
Alteration or termination of these stipulations is prohibited. The applicant must provide a draft of this Inspection and Maintenance Agreement as part of the Comprehensive Storm Water Management Plan submittal, once a draft is approved, a recorded copy of the Agreement must be submitted to the Village of Chagrin Falls to receive final inspection approval of the site.
- K. The Village of Chagrin Falls has the authority to enter upon the property to conduct inspections as necessary to verify that the storm water management practices are being maintained and operated in accordance with this regulation.
- L. If the Village of Chagrin Falls notifies the landowner(s), organization, or municipality responsible for maintenance of the maintenance problems that require correction, the specific corrective actions shall be taken within a reasonable time frame as determined by the Village of Chagrin Falls.
- M. The Village of Chagrin Falls shall maintain public records of the results of site inspections, shall inform the landowner(s), organization, or municipality responsible for maintenance of the inspection results, and shall specifically indicate any corrective actions required to bring the storm water practices into proper working condition.

Exhibit "C"

CHAPTER 1357
COMPREHENSIVE STORM WATER MANAGEMENT
SUBSECTION (a)(3) OF SECTION 1357.09

"1357.09 PERFORMANCE STANDARDS.

(a) General. All components of the storm water system, including storm water management practices for storage, treatment and control, and conveyance facilities, shall be designed to prevent structure flooding during the 100-year, 24-hour storm event; to maintain predevelopment runoff patterns, flows, and volumes; and to meet the following criteria:

(3) Storm water management for all lots. Areas developed for a subdivision, as defined in Chapter 1161 Subdivision Regulations, shall provide storm water management and water quality controls for the development of all subdivided lots. This shall include provisions for lot grading and drainage that prevent structure flooding during the 100-year, 24-hour storm; and maintain, to the extent practicable, the pre-development runoff patterns, volumes, and peaks from the lot.

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Exhibit "D"

CHAPTER 1357
COMPREHENSIVE STORM WATER MANAGEMENT
NEW SUBSECTION (a)(10) OF SECTION 1357.09

1357.09 PERFORMANCE STANDARDS.

(a) General. All components of the storm water system, including storm water management practices for storage, treatment and control, and conveyance facilities, shall be designed to prevent structure flooding during the 100-year, 24-hour storm event; to maintain predevelopment runoff patterns, flows, and volumes; and to meet the following criteria:

(10) Preservation of Wetland Hydrology: Concentrated storm water runoff from BMPs to wetlands shall be converted to diffuse flow before the runoff enters a wetland in order to protect the natural hydrology, hydroperiod, and wetland flora. The flow shall be released such that no erosion occurs down slope. Practices such as level spreaders, vegetative buffers, infiltration basins, conservation of forest covers, and the preservation of intermittent streams, depressions, and drainage corridors may be used to maintain the wetland hydrology.

If the applicant proposes to discharge to natural wetlands, a hydrological analysis shall be preformed to demonstrate that the proposed discharge matches the pre-development hydroperiods and hydrodynamics.

Exhibit "E"

CHAPTER 1357
COMPREHENSIVE STORM WATER MANAGEMENT
SUBSECTION (c)(1) OF SECTION 1357.09

"1357.09 PERFORMANCE STANDARDS.

(c) Storm Water Quality Control.

(1) Direct runoff to a BMP: The site shall be designed to direct runoff from areas disturbed during construction to one or more of the following storm water management practices. These practices are listed in Table 2 of this regulation:

A. Extended conveyance facilities that slow the rate of storm water runoff; filter and biodegrade pollutants in storm water; promote infiltration and evapotranspiration of storm water; and discharge the controlled runoff to a water resource.

B. Extended detention facilities that detain storm water; settle or filter particulate pollutants; and release the controlled storm water to a water resource.

C. Infiltration facilities that retain storm water; promote settling, filtering, and biodegradation of pollutants; and infiltrate all captured storm water into the ground based on the findings of the soil engineering report prepared for the site.

D. For sites less than five (5) acres, but greater than one (1) acre and not part of a common plan of development, where (1) or more acres are disturbed, the Village Engineer may approve other BMPs if the applicant demonstrates to the Village Engineer's satisfaction that these BMPs meet the objectives of this regulation as stated in Section 1357.09(c)(6).

E. For sites greater than five (5) acres, or less than five (5) acres but part of a larger common plan of development or sale which will disturb five (5) or more acres, the Village Engineer may approve other BMPs if the applicant demonstrates to the Village Engineer's satisfaction that these BMPs meet the objectives of this regulation as stated in Section 1357.09(c)(6), and has prior written approval from the Ohio EPA.

F. For the construction of new roads and roadway improvement projects by public entities (i.e. the state, counties, townships, cities, or villages), the Village Engineer may approve BMPs not included in Table 2 of this regulation, but must show compliance with the current version of the Ohio Departments of Transportations "*Location and Design Manual, Volume Two Drainage Design*".

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Exhibit "F"

CHAPTER 1357
 COMPREHENSIVE STORM WATER MANAGEMENT
 SUBSECTION (c)(2) OF SECTION 1357.09

"1357.09 PERFORMANCE STANDARDS:

(c) Storm Water Quality Control.

(2) Criteria applying to all storm water management practices. Practices chosen must be sized to treat the water quality volume (WQv) and to ensure compliance with Ohio Water Quality Standards (OAC Chapter 3745-1).

A. The WQv shall be equal to the volume of runoff from a 0.75 inch rainfall event and shall be determined according to one of the following methods:

1. Through a site hydrologic study approved by the Village Engineer that uses continuous hydrologic simulation; site-specific hydrologic parameters, including impervious area, soil infiltration characteristics, slope, and surface routing characteristics; proposed best management practices controlling the amount and/or timing of runoff from the site; and local long-term hourly records, or

2. Using the following equation:

$$WQv = C \cdot P \cdot A / 12$$

where terms have the following meanings:

- WQv = water quality volume in acre-feet
- C = runoff coefficient appropriate for storms less than 1 in.
- P = 0.75 inch precipitation depth
- A = area draining into the storm water practice, in acres.

Runoff coefficients required by the Ohio Environmental Protection Agency (Ohio EPA) for use in determining the water quality volume are listed in Table 1. Alternatively, the Village Engineer may consider use of the following equation to calculate the runoff coefficient if the applicant can demonstrate that appropriate controls are in place to limit the proposed impervious area of the development:

$$C = 0.858i^3 - 0.78i^2 + 0.774i + 0.04, \text{ where:}$$

i = fraction of the drainage area that is impervious

Table 1: Runoff Coefficients Based on the Type of Land Use

LAND USE	RUNOFF COEFFICIENT
Industrial & Commercial	0.8
High Density Residential (>8 dwellings/acre)	0.5
Medium Density Residential (4 to 8 dwellings/acre)	0.4
Low Density Residential (<4 dwellings/acre)	0.3
Open Space and recreational Areas	0.2
Where land use will be mixed, the runoff coefficient should be calculated using a weighted average. For example, if 60% of the contributing drainage area to the storm water treatment structure is Low Density Residential, 30 % is High Density Residential, and 10% is open Space, the runoff coefficient is calculated as follows $(0.6)(0.3) + (0.3)(0.5) + (0.1)(0.2) = (0.35)$.	

B. An additional volume equal to 20% of the WQv shall be incorporated into the storm water practice for sediment storage. This volume shall be incorporated into the sections of storm water practices where pollutants will accumulate.

C. Storm water quality management practices shall be designed such that the drain time is long enough to provide treatment and protect against downstream bank erosion, but short enough to provide storage available for successive rainfall events as defined in Table 2.

Table 2: Draw Down Times for Storm Water Management Practices

Best Management Practice	Drain Time of WQv
Infiltration Facilities*	24 - 48 hours
Extended Conveyance Facilities (Vegetated Swales, Filter Strips) <ul style="list-style-type: none"> ▪ Vegetated Filter Strip with Berm ▪ Enhanced Water Quality Swale ▪ Flow Through Design 	24 hours 24 hours **
Extended Detention Facilities <ul style="list-style-type: none"> ▪ Extended Dry Detention Basins*** ▪ Wet Detention Basins + ▪ Pocket Wetland^ ▪ Constructed Wetlands (above permanent pool) ▪ Bioretention* ▪ Sand and other Media Filtration 	48 hours 24 hours 24 hours 24 hours 40 hours 40 hours
<p>* The WQv shall completely infiltrate within 48 hours so there is no standing or residual water pool.</p> <p>** Sized to pass a hydrograph with a volume equal to the WQv, a duration of 2 hours, peak rainfall intensity of 1 inch/hour at a depth of no more than 3 inches and have a minimum hydraulic residence time of 5 minutes. The use of this criterion is limited to sites where the total area disturbed is 5 acres or less. Prior approval from the Village Engineer is necessary to use this practice. For sites greater than five (5) acres or less than five (5) acres but part of a larger common plan of development or sale which will disturb five (5) or more acres, prior written approval is required from the Ohio EPA.</p> <p>*** The use of a forebay and micropool is required on all extended dry detention basins. Each is to be sized at a minimum 10% of the WQv.</p> <p>+Provide both a permanent pool and an extended detention volume above the permanent pool, each sized with at least 0.75*WQv.</p> <p>^Pocket wetland must have a wet pool equal to the WQv, with 25% of the WQv in a pool and 75% in marshes. The EDV above the permanent pool must be equal to the WQv.</p>	

D. Each practice shall be designed to facilitate sediment removal, vegetation management, debris control, and other maintenance activities defined in the Inspection and Maintenance Agreement for the site.

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Exhibit "G"

CHAPTER 1357
COMPREHENSIVE STORM WATER MANAGEMENT
SUBSECTION (c)(3) OF SECTION 1357.09

"1357.09 PERFORMANCE STANDARDS.

(c) Storm Water Quality Control.

(3) Additional criteria for extended detention facilities.

A. The outlet shall be designed to not release more than the first half of the water quality volume in less than 1/3rd of the drain time. A valve shall be provided to drain any permanent pool volume for removal of accumulated sediments. The outlet shall be designed to minimize clogging, vandalism, maintenance, and promote the capture of floatable pollutants.

B. The basin design shall incorporate the following features to maximize multiple uses, aesthetics, safety, and maintainability:

1. Basin side slopes above the permanent pool shall have a run to rise ratio of 4:1 or flatter.

2. The perimeter of all permanent pool areas deeper than 4 feet shall be surrounded by an aquatic bench that extends at least 8 feet and no more than 15 feet outward from the normal water edge. The 8 feet wide portion of the aquatic bench closest to the shoreline shall have an average depth of 6 inches below the permanent pool to promote the growth of aquatic vegetation. The remainder of the aquatic bench shall be no more than 15 inches below the permanent pool to minimize drowning risk to individuals who accidentally or intentionally enter the basin, and to limit growth of dense vegetation in a manner that allows waves and mosquito predators to pass through the vegetation. The maximum slope of the aquatic bench shall be 10(H) to 1(V). The aquatic bench shall be planted with hearty plants comparable to wetland vegetation that are able to withstand prolonged inundation.

3. A forebay designed to allow larger sediment particles to settle shall be placed at basin inlets. The forebay and micropool volume shall be equal to at least 10% of the water quality volume (WQv).

4. When post-construction detention/water quality basin are to be used as temporary sediment trapping BMPs, a skimmer discharge device consistent with the Ohio Rainwater Manual shall be utilized during construction phase and until the site is deemed permanently stabilized by the Village Engineer.

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Exhibit "H"

CHAPTER 1357
COMPREHENSIVE STORM WATER MANAGEMENT
SUBSECTION (c)(4) OF SECTION 1357.09

"1357.09 PERFORMANCE STANDARDS.

(c) Storm Water Quality Control.

(4) Additional criteria applying to extended conveyance facilities.

A. Swales and filter strips shall be lined with fine, turf-forming, water-resistant grasses to slow and filter flows. Maximum depth of flow shall be no greater than three inches.

B. Concentrated runoff shall be converted to sheet flow, or a diffuse flow using a plunge pool, flow diffuser or level spreader, before entering an extended conveyance facility designed according to the flow through drain time.

C. Facilities designed according to the extended conveyance detention design drain time shall:

1. Not be located in areas where the depth to bedrock and/or seasonal high water table is less than 3 feet below the final grade elevation.

2. Only be allowed where the underlying soil consists of hydrologic soil group (HSG) A or B, unless the underlying soil is replaced by at least a 2.5 foot deep layer of soil amendment with a permeability equivalent to a HSG A or B soil and an underdrain system is provided.

D. Facilities designed according to the flow through design drain time shall:

1. Only be allowed on sites where:

a. The total area disturbed is 5 acres or less;

b. The discharge rate from the BMP will have negligible hydrologic impacts to received waters as described in Chapter 1357.09.C.6.b.;

c. Prior written approval is given by the Village Engineer; and

d. For sites greater than five (5) acres or less than five (5) acres but part of a larger common plan of development or sale which will disturb five (5) or more acres, prior written approval has been given by the Ohio EPA.

2. Be designed to slow and filter runoff flowing through the turf grasses with a maximum depth of flow no greater than 3 inches.

3. Be designed to have a minimum hydraulic residence time of 5 minutes.

Exhibit "I"

CHAPTER 1357
COMPREHENSIVE STORM WATER MANAGEMENT
SUBSECTION (c)(5) OF SECTION 1357.09

"1357.09 PERFORMANCE STANDARDS.

(c) Storm Water Quality Control.

(5) Additional criteria applying to infiltration facilities.

A. Infiltration facilities shall only be allowed if the soils of the facility fall within hydrologic soil groups A or B, and if the seasonal high water table is at least three (3) feet below the final grade elevation, and any underlying bedrock are at least six feet below the final grade elevation.

B. All runoff directed into an infiltration basin must first flow through a pretreatment practice such as a grass channel or filter strip to remove coarser sediments that could cause a loss of infiltration capacity.

C. During construction, all runoff from disturbed areas of the site shall be diverted away from the proposed infiltration basin site. No construction equipment shall be allowed within the infiltration basin site to avoid soil compaction.

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Exhibit "J"

CHAPTER 1357
COMPREHENSIVE STORM WATER MANAGEMENT
SUBSECTION (c)(6) OF SECTION 1357.09

"1357.09 PERFORMANCE STANDARDS.

(c) Storm Water Quality Control.

(6) Criteria for the Acceptance of Alternative post-construction BMPs. The applicant may request approval from the Village Engineer for the use of alternative structural post-construction BMPs if the applicant shows to the satisfaction of the Village Engineer that these BMPs are equivalent in pollutant removal and runoff flow/volume reduction effectiveness to those listed in Table 2. If the site is greater than five (5) acres, or less than five (5) acres but part of a larger common plan of development or sale which will disturb five (5) or more acres, prior approval from the Ohio EPA is necessary. To demonstrate the equivalency, the applicant must show:

A. The alternative BMP has a minimum total suspended solid (TSS) removal efficiency of 80 percent, using the Level II Technology Acceptance Reciprocity Partnership (TARP) testing protocol.

B. The water quality volume discharge rate from the selected BMP is reduced to prevent stream bed erosion, unless there will be negligible hydrologic impact to the receiving surface water of the State. The discharge rate from the BMP will have negligible impacts if the applicant can demonstrate one of the following conditions:

1. The entire water quality volume is recharged to groundwater.
2. The development will create less than one acre of impervious surface.
3. The development project is a redevelopment project with an ultra-urban setting, such as a downtown area, or on a site where 100 percent of the project area is already impervious surface and the storm water discharge is directed into an existing storm sewer system.
4. The storm water drainage system of the development discharges directly into the Chagrin River, and where the development area is less than 5 percent of the water area upstream of the development site, unless a Total Maximum Daily Load (TMDL) has identified water quality problems in the receiving surface water of the State.

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Exhibit "K"

CHAPTER 1357
COMPREHENSIVE STORM WATER MANAGEMENT
SUBSECTION (e) OF SECTION 1357.09

"1357.09 PERFORMANCE STANDARDS.

(e) Storm Water Management on Redevelopment Projects. Comprehensive Storm Water Management Plans for redevelopment projects shall reduce existing site impervious areas by at least 20 percent. A one-for-one credit towards the 20 percent net reduction of impervious area can be obtained through the use of pervious pavement and/or green roofs.

(1) Where site conditions prevent the reduction of impervious area, storm water management practices shall be implemented to provide storm water quality control facilities for at least 20 percent of the site's impervious area.

(2) When a combination of impervious area reduction and storm water quality control facilities are used, the combined area shall equal or exceed 20 percent of the site.

(3) Where projects are a combination of new development and redevelopment, the total water quality volume that must be treated shall be calculated by a weighted average based on acreage, with the new development at 100 percent water quality volume and redevelopment at 20 percent.

(4) Where conditions prevent impervious area reduction or on-site storm water management for redevelopment projects, practical alternatives as detailed in Section 1357.10 may be approved by the Village Engineer."

Exhibit "L"

CHAPTER 1357
COMPREHENSIVE STORM WATER MANAGEMENT
SUBSECTION (a) OF SECTION 1357.10

"1367.10 ALTERNATIVE ACTIONS.

(a) When the Village of Chagrin Falls determines that site constraints compromise the intent of this regulation, off-site alternatives may be used that result in an improvement of water quality and a reduction of storm water quantity. Such alternatives shall meet the following standards:

(1) Shall achieve the same level of storm water quantity and quality control that would be achieved by the on-site controls required under this regulation.

(2) Implemented in the same Hydrologic Unit Code (HUC) 14 watershed unit as the proposed development project.

(3) The mitigation ratio of the water quality volume is 1.5 to 1 or the water quality volume at the point of retrofit, whichever is greater.

(4) An inspection and maintenance agreement as described in Chapter 1357.08(d)(10) is established to ensure operations and treatment in perpetuity.

(6) Obtain prior written approval from Ohio EPA.

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