NPDES – PHASE II

LORAIN COUNTY
COMPREHENSIVE STORM WATER MANAGEMENT REGULATIONS

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REFERENCES

The standards and specifications for Best Management Practices are contained within the

Rainwater and Land Development Manual, Ohio's
Standards, Current Edition
For
Storm Water Management, Land Development and Urban Stream Protection

Published in cooperation with:

Ohio Department of Natural Resources Division of Soil and Water Conservation
U.S.D.A. Natural Resource Conservation Service
Ohio Environmental Protection Agency

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Comprehensive Storm Water Management

CHAPTER 1
COMPREHENSIVE STORM WATER MANAGEMENT

1.0 PURPOSE AND SCOPE

A. The purpose of this regulation is to establish technically feasible and economically reasonable storm water management standards to achieve a level of storm water quality and quantity control that will minimize damage to property and degradation of water resources and will promote and maintain the health, safety, and welfare of the citizens of the Lorain County:

B. This regulation requires that a Comprehensive Storm Water Management Plan be developed and implemented before any non-agricultural soil disturbing activities for all development for which soil disturbing activities disturbing one (1) acre or more of total land, or less than one acre if part of a larger common plan of development or sale disturbing one (1) or more acres of total land. The administrator may require a comprehensive stormwater management plan on any site with soil disturbing activities disturbing less than one (1) acre.

C. This regulation requires owners who develop or re-develop their property within Lorain County to:

1. Control storm water runoff from their property and ensure that all storm water management practices are properly designed, constructed, and maintained.

2. Reduce water quality impacts to receiving water resources that may be caused by new development or redevelopment activities.

3. Control the volume, rate, and quality of storm water runoff originating from their property so that surface water and ground water are protected and flooding and erosion potential are not increased.

4. Minimize the need to construct, repair, and replace subsurface storm drain systems.

5. Preserve natural infiltration and ground water recharge, and maintain subsurface flow that replenishes water resources, except in slippage prone soils**.**

6. Incorporate storm water quality and quantity controls into site planning and design at the earliest possible stage in the development process.

7. Reduce the expense of remedial projects needed to address problems caused by inadequate storm water management.

8. Maximize use of storm water management practices that serve multiple purposes including, but not limited to, flood control, erosion control, fire protection, water quality protection, recreation, and habitat preservation.

9. Design sites to minimize the number of stream crossings and the width of associated disturbance in order to minimize Lorain County's future expenses related to the maintenance and repair of stream crossings.

10. Maintain, promote, and re-establish conditions necessary for naturally occurring stream processes that assimilate pollutants, attenuate flood flows, and provide a healthy water resource.

D. This regulation shall apply to all parcels used or being developed, either wholly or partially, for new or relocated projects involving highways and roads; subdivisions or larger common plans of development; industrial, commercial, institutional, or residential projects; building activities on farms; redevelopment activities; grading; and all other uses that are not specifically exempted.

E. Public entities, including the State of Ohio, Lorain County, and the County shall comply with this regulation for roadway projects initiated after March 10, 2006 and, to the maximum extent practicable, for projects initiated before that time.

F. This regulation does not apply to activities regulated by, and in compliance with, the Ohio Agricultural Sediment Pollution Abatement Rules.

G. This regulation does not require a Comprehensive Storm Water Management Plan for linear construction projects, such as culverts, maintenance projects, ditch cleaning projects, pipeline or utility line installation, that do not result in the installation of impervious surface as determined by the Lorain County Engineer. Such projects shall be designed to minimize the number of stream crossings and the width of disturbance. Linear construction projects shall comply with the requirements of Erosion and Sediment Control Rules.

H. It is not the role of Lorain County to point out each and every part of these rules and how to implement them on the individual job sites. It is the project owner's responsibility to be proactive in meeting the intent, purpose and requirements of these rules.

2.0 DEFINITIONS

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

A. ACRE: A measurement of land area equal to 43,560 square feet.

B. ADMINISTRATOR: Lorain County Engineer is named the administrator for these Regulations and is the entity having the responsibility and duty of administrating and ensuring compliance with these Rules.

C. 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.

D. BEST MANAGEMENT PRACTICES (BMPs): Structural or nonstructural facilities or activities that control soil erosion and/or storm water runoff at a development site. 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.

E. BUFFER AREA: A designated transitional area around a stream or wetland left in a natural, usually vegetated, state to protect a stream or wetland from runoff pollution. Construction activates in this area shall be restricted or prohibited based on the sensitivity of the stream or wetland and the recommendation of the Administrator.

F. CHANNEL: A natural or manmade bed or ditch, existing or excavated for the conveyance of water.

G. CLEAN WATER ACT: The Federal Water Pollution Control Act enacted in 1972 by Public Law 92-500 and amended by the Water Quality Act of 1987. The Clean Water Act prohibits the discharge of pollutants to Waters of the United States unless said discharges is in accordance with an NPDES permit. The 1987 amendments include guidelines for regulating municipal, industrial, and construction storm water discharges under the NPDES permit.

H. COMMON PLAN OF DEVELOPMENT: A term used to define the entire scope of a development project, both on-site and off-site, regardless of ownership, including phases (future and existing), sublots and parcels of development, associated easements, road and utility right of ways, and other land development or soil disturbances in support of the development project.

I. COMPREHENSIVE STORM WATER MANAGEMENT PLAN: The written document including plans and drawings that meet the requirements of this regulation and set forth the techniques, programs, strategies 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.

J. CONSERVATION: The development of land using alternative layout and building arrangements in order to better conserve open space and retain natural resources.

K. COUNTY: Throughout these rules Lorain County shall mean the Lorain County Board of Commissioners, State of Ohio, and its designated agents and representatives. County shall mean unincorporated areas in Lorain County.

L. 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.

M. CUT: An excavation that reduces an existing elevation, as in road or foundation constructions.

N. 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.

O. 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 non-farm commercial, industrial, residential, institutional, or other construction or alteration that changes runoff characteristics of a parcel of land.

P. DEVELOPMENT DRAINAGE AREA: A combination of each hydraulically unique watershed with individual outlet points on the development area.

Q. DITCH: An open channel, either dug or natural, for the purpose of drainage or irrigation with intermittent flow.

R. DISTURBED AREA: An area of land subject to erosion due to the removal of vegetative cover and/or soil disturbing activities.

S. DRAINAGE: The removal of excess surface water or groundwater from land by surface or subsurface drains.

T. EARTH DISTURBING ACTIVITY: Any grading, excavations, filling, or other alteration of the earth's surface where natural or man-made ground cover is destroyed.

U. 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.

V. EXISTING: In existence at the time of the passage of this ordinance and these regulations.

W. 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.

X. 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.

Y. FARM: Land or water devoted to agricultural uses as defined in O.R.C. 519.01 including farming, ranching, aquaculture; horticulture; viticulture; animals; poultry husbandry and the production poultry products; dairy production; the productions of field crops, tobacco, fruits, vegetables, nursery stock, ornamental shrubs, ornamental trees, flowers, sod, or mushrooms; timber; pasturage, any combination of the foregoing; the processing, drying, storage, and marketing of agricultural products when those activities are conducted in conjunction with, but

are secondary to, such husbandry or production.

Z. FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA): The agency with overall responsibility for administering the National Flood Insurance Program.

AA. FINAL STABILIZATION: All soil-disturbing activities at the site have been completed and a uniform perennial vegetative cover with a density of at least 70% coverage for the area has been established or equivalent stabilization practices, such as the use of mulches or geotextiles, have been employed.

BB. FLOOD PLAIN: Any Special Flood Hazard Area (SFHA) identified by the Federal Emergency Management Agency (FEMA), including other areas that are susceptible to flooding as determined by the Lorain County Engineer.

CC. GRADING: The process in which the topography of the land is altered to a new slope or any combined thereof, includes the land in its excavated or filled condition.

DD. GRUBBING: Removing, clearing or scalping material such as roots, stumps or sod.

EE. 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.

FF. 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.

GG. 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.

HH. LARGER COMMON PLAN OF DEVELOPMENT OR SALE: A contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under one plan.

II. LANDSLIDE*:* A rapid mass movement of soil or rock moving downhill under the influence of gravity.

JJ. MS4: municipal separate storm water system which means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) that is:

1. Owned or operated by the federal government, state municipality, township,county, district or other public body (created by or pursuant to state or federal law) including special district under state law such as a sewer district, flood control district or drainage districts, or similar entity, or a designated and approved management

agency under sections 208 of the Act (33 U.S.C., section 1288, effective February 4, 1987) that discharges into surface waters of the state;

2. Designated or used for collecting or conveying solely storm water;

3. Not combined sewer, and;

4. Not a part of a publicly owned treatment works.

KK. MS4 – SMALL: all municipal separate storm water systems that are neither a large MS4 nor a medium MS4.

LL. MS4 – MEDIUM: all municipal separate storm water systems that is located in an incorporated place with a population of one hundred thousand (100,000) or more, but less than two hundred fifty thousand (250,000) or more as determined by the 1990 censes by the United Stated Bureau of Censes. The 1990 census is available at public libraries and on the United Stated Bureau of the Censes web site: www.census.gov

MM. MS4 – LARGE: all municipal separate storm water systems that are located in an incorporated place with a population of two hundred fifty thousand (250,000) or more as determined by the 1990 censes by the United Stated Bureau of Censes. The 1990 census is available at public libraries and on the United Stated Bureau of the Censes web site: www.census.gov

NN. MAXIMUM EXTENT PRACTICABLE: The level of pollutant reduction that operators of small municipal separate storm sewer systems regulated under Section 40 C.F.R. Parts 9, 122, 123, and 124, referred to as NPDES Storm Water Phase II, shall meet.

OO. NPDES PERMIT: 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.

PP. NATURAL RESOUCES CONSERVATION SERVICE (NRCS): An agency of the United States Department of Agriculture, formerly known as the Soil Conservation Service (SCS).

QQ. NONSTRUCTURAL STORM WATER MANAGEMENT PRACTICE: Storm water runoff control and treatment techniques that use natural practices, as defined by the Rainwater and Land Development Manual, to control runoff and/or reducepollution levels.

RR. OHIO EPA: The Ohio Environmental Protection Agency.

SS. OUTFALL: An area where water flows from a structure such as a conduit, storm sewer, improved channel or drain, and the area immediately beyond the structure which is impacted by the velocity of flow in the structure.

TT. PARCEL: Means a tract of land occupied or intended to be occupied by a use, building or group of buildings and their accessory uses and buildings as a unit, together with such open

spaces and driveways as are provided and required. A parcel may contain more than one contiguous lot individually identified by a 'Permanent Parcel Number' assigned by the Lorain County Auditor's Office.

UU. PERSON: An individual, corporation, firm, trust, commission, board, public or private partnership, joint venture, agency, unincorporated association, municipal corporation, county or state agency, federal government or any combination thereof.

UU. 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.

VV. 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.

WW. 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.

XX. 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.

YY. RAINWATER AND LAND DEVELOPMENT MANUAL: Ohio's standards for storm water management, land development, and urban stream protection. Developed by the Ohio Department of Natural Resources, the U.S. Department of Agriculture Natural Resource Conservation Service, and the Ohio Environmental Protection Agency. The most current edition of these standards shall be used with these regulations.

ZZ. REDEVELOPMENT: A construction project on land where impervious cover has previously been developed and where the new land use will not increase the runoff coefficient. If the new land use will increase the runoff coefficient, then the project is considered a new development project rather than redevelopment project.

AAA. RIPARIAN AREA: Land adjacent to any watercourse such as a brook, creek, river, or stream having a defined bed and bank that, if appropriately sized, helps to stabilize streambanks, limit erosion, reduces flood size flows, and/or filters and settles out runoff pollutants, or performs other functions consistent with the purposes of this regulation.

BBB. RIPARIAN AND WETLAND SETBACK: The real property adjacent to a water resource on which soil disturbing activities are limited, all as defined by reference to Lorain County Erosion and Sediment Rules or locally adopted Riparian and Wetland Setbacks.

CCC. RUNOFF: The portion of rainfall, melted snow, or irrigation water that flows across the ground surface and is eventually returned to water resources.

DDD. 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.

EEE. SEDIMENTATION: The deposition of sediment in water resources.

FFF. SEDIMENT BASIN: A temporary barrier or other suitable retention structure built across an area of water flow to intercept runoff and allow transported sediment to settle and be retained prior to discharge into waters of the State.

GGG. SEDIMENT CONTROL: The limiting of sediment being transported by controlling erosion or detaining sediment-laden water, allowing the sediment to settle out.

HHH. SEDIMENT POLLUTION: The degradation of water of the State by sediment as a result of failure to apply management or conservation practices to abate wind or water soil erosion, specifically in conjunction with soil-disturbing activities on land used or being developed for commercial, industrial, residential or other non-farm purposes.

III. SENSITVE AREA: An area or water resource that requires special management because of its susceptibility to sediment pollution or because of its importance to the well-being of the surrounding communities, region, or the state and includes, but is not limited to, the following:

1. Ponds, wetlands or small lakes with less than five (5) acres of surface area;

2. Small streams with gradients less than ten (10) feet per mile with averageannual flows of less than 3.5 feet per second containing sand or gravel bottoms;

3. Drainage areas of locally designated or an Ohio designated Scenic River;

4. Riparian and wetland areas.

JJJ. SETTLING POND: A runoff detention structure, such as a Sediment Basin or Sediment Trap, which detains sediment-laden runoff, allowing sediment to settle out.

KKK. SHEET FLOW: Water runoff in a thin uniform layer or rills and which is of small enough quantity to be treated by sediment barriers.

LLL. 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.

MMM. SLIP: A landslide as defined under "Landslides."

NNN. SOIL CONSERVATION: The use of the soil within the limits of its physical characteristics and protecting it from unalterable limitations of climate and topography.

OOO. 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.

PPP. SOIL: Unconsolidated erodible earth material consisting of minerals and/or graphics.

QQQ. SOIL AND WATER CONSERVATION DISTRICT: An entity organized under Chapter 1515 of the Ohio Revised Code referring either to the Lorain Soil and Water Conservation District Board or its designated employee(s), hereinafter referred to as the Lorain County Soil & Water Conservation District.

RRR. SOIL LOSS: the soil moved from a given site by the forces of erosion, measured using " T ".

SSS. SOIL SURVEY: The official soil survey produced by the Natural Resources Conservation Service, USDA in cooperation with the Division of Soil and Water Conservation, ODNR and the local Board of County Commissioners; www.websoilsurvey.nrcs.usda.gov./app/

TTT. STRUCTURAL STORM WATER MANAGEMENT PRACTICE OR STORMWATER CONTROL MEASURE (SCM): Any constructed facility, structure, or device that prevents or reduces the discharge of pollutants to water resources and/or controls stormwater volume and flow rate.

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UUU. STORM DRAIN: A conduit, pipe or human-made structure, which serves to transport storm water runoff.

VVV. STORM WATER POLLUTION PREVENTING PLAN (SWP3): The written document that sets forth the plans and practices to be used to meet the requirements of the NPDES permit.

WWW. STORM WATER RUNOFF: The direct response of a watershed to precipitation, which includes the surface and subsurface runoff that enters a stream, ditch, storm sewer or other concentrated flow during and following precipitation.

XXX. 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.

YYY. STREAM: Shall have the same meaning as "water of the state" contained in O.R.C. 6111.01 and shall include all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs irrigation systems, drainage systems, and other bodies or accumulations of water, surface and underground, natural or artificial, regardless of the depth of the strata in which underground water is located, that are situated wholly or partly within, or border upon, this state, or are within its jurisdiction, except those private waters that do not combine or effect a junction with natural surface or underground waters.

ZZZ. STRUCTURAL STORM WATER MANAGEMENT PRACTICE: Any constructed facility, structure, or device that provides storage, conveyance, and/or treatment of storm water runoff.

AAAA. SUBSOIL: That portion of the soil below the topsoil or plow layer, beginning 6 – 12" below surface down to bedrock parent material.

BBBB. 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.

CCCC. TOTAL MAXIMUM DAILY LOAD: 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.

DDDD. UNSTABLE SOILS: A portion of land surface or area which is prone to slipping, sloughing, landslides or is identified by Natural Resource Conservation Service, USDA methodology as having low soil strength.

EEEE. WATER QUALITY VOLUME: The volume of runoff from a contributing watershed that shall 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*.

FFFF. 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.

GGGG. 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.

HHHH. WATERCOURSE: Any natural, perennial, or intermittent channel, stream, river or brook.

IIII. WATERSHED: The total drainage area contributing storm water runoff to a single point.

JJJJ. 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).

KKKK. WETLAND SETBACK: Those lands within the County that fall within the area defined by the criteria set forth in these regulations.

3.0 DISCLAIMER OF LIABILITY

A. Compliance with the provisions of this regulation shall not relieve any person from responsibility for damage to any person otherwise imposed by law. The provisions of this regulation are promulgated to promote the health, safety, and welfare of the public and are not designed for the benefit of any individual or any particular parcel of property.

B. By approving a Post Construction Comprehensive Storm Water Management Plan under this regulation, the County does not accept responsibility for the design, installation, and operation and maintenance of storm water management practices.

4.0 CONFLICTS, SEVERABILITY, NUISANCES & RESPONSIBILITY

A. Where this regulation is in conflict with other provisions of law or ordinance, the most restrictive provisions, as determined by the Administrator shall prevail.

B. If any clause, section, or provision of this regulation is declared invalid or unconstitutional by a court of competent jurisdiction, the validity of the remainder shall not be affected thereby.

C. These Rules shall not be construed as authorizing any person to maintain a nuisance on their property, and compliance with the provisions of this regulation shall not be a defense in any action to abate such a nuisance.

D. Failure of the County to observe or recognize hazardous or unsightly conditions or to recommend corrective measures shall not relieve the site owner from the responsibility for the condition or damage resulting therefrom, and shall not result in the County, its officers, employees, or agents being responsible for any condition or damage resulting therefrom.

5.0 DEVELOPMENT OF COMPREHENSIVE STORM WATER MANAGEMENT PLANS

A. This regulation requires that a "Post-Construction" Storm Water Management Plan be developed and implemented to meet these Rules and be coordinated and combined with any Riparian and Wetland Setback Plan and the Lorain County Erosion and Sediment Control Rules. Combination of these documents may constitute the Comprehensive Storm Water Management Plan. **The Plan shall be implemented for any soil disturbing activities disturbing one (1) acre or more of total land**, **or less than one (1) acre if part of a larger common plan of development or sale disturbing one (1) or more acres of total land, and on which any regulated activity** of Lorain County Erosion and Sediment Control Rules – Section 1.3 and 3.1 is proposed. The Comprehensive Storm Water Management Plan so developed may serve as the Stormwater Pollution Prevention Plan required by Ohio EPA as part of the NPDES Storm Water Permit for General Construction.

B. The County shall administer this regulation, shall be responsible for determination of compliance with this regulation, and shall issue notices and orders as may be necessary. The landowners / developers may consult with the Lorain County Soil & Water Conservation

District, Lorain County Engineer's Office, private engineers, storm water districts, or other technical experts in reviewing the Comprehensive Storm Water Management Plan.

6.0 APPLICATION PROCEDURES

http://www.loarainswcd.com/forms/post-Constr-Plan-Application.pdf

A. Pre-Application Meeting: The applicant shall attend a Pre-Application Meeting with the Administrator and County Engineer to discuss the proposed project, review the requirements of this regulation, identify unique aspects of the project that shall be addressed during the review process, and establish a preliminary review and approval schedule.

B. Preliminary Comprehensive Storm Water Management Plan: The applicant shall submit two (2) sets of a Preliminary Comprehensive Storm Water Management Plan (Preliminary Plan) and the applicable fees to the Administrator. The Preliminary Plan shall show the proposed property boundaries, setbacks, topography extending at least 25 feet beyond site extents, dedicated open space, public roads, water resources, storm water control facilities, and easements in sufficient detail and engineering analysis to allow the Administrator to determine whether the site will meet the intent of this regulation and if the proposed storm water management practices will be capable of controlling runoff from the site in compliance with this regulation. The applicant shall submit two (2) sets of the Preliminary Plan and applicable fees as follows:

1. For subdivisions: In conjunction with the submission of the preliminary subdivision plan.

2. For other construction projects: In conjunction with the application for a zoning permit.

3. For general clearing projects: In conjunction with the application for a zoning permit.

1. Final Comprehensive Storm Water Management Plan: The applicant shall submit two (2) sets of a Final Comprehensive Storm Water Management Plan (Final Plan) and the applicable fees to the Administrator prior to any of the following: (1) Submittal of the final plat (for subdivisions) with applicable fees paid to Lorain County Commissioners; (2) Submittal of improvement plans with applicable fees to Lorain County Engineer's Office; (3) Submittal of an application for a building with applicable fees to a certified Building Department; (4) Submittal of a zoning permit for the site with applicable fees to that township. The Final Plan shall meet the requirements of Section 8 of these rules and shall be approved prior to approval of the final plat and/or before issuance by the township's zoning inspector or building permit by the Building Inspector.

C. Review and Comment: Lorain County Soil & Water Conservation District and Lorain County Engineer shall review the Preliminary and Final Plans submitted, and shall approve or return for revisions with comments and recommendations for revisions. A Preliminary or Final Plan rejected because of deficiencies shall be returned with a narrative report stating specific inadequacies and the procedures for filing a revised Preliminary or Final Plan. The Administrator shall review the plan and approve, or return for revision with comments and

recommendations for revisions, within thirty (30) days working days after receipt of said plan. At the time of receipt of a revised plan, another thirty (30) working days review period shall be commenced.

D. Approval Necessary: Land clearing and soil-disturbing activities shall not begin and zoning and/or building permits shall not be issued without an approved Comprehensive Storm Water Management Plan.

E. Valid for Two Years: Approvals issued in accordance with this regulation shall remain valid for two (2) years from the date of approval.

F. One (1) Year Maintenance Bond: Shall be required for all improvements including "post-construction" measures. Lorain County Engineer may waive the requirement of the maintenance bond for small residential water quality SCMs within a larger common plan of sale that disturbs less than five (5) acres of land.

7.0 COMPLIANCE WITH STATE AND FEDERAL REGULATIONS

Approvals issued in accordance with this regulation do not relieve the applicant of responsibility for obtaining all other necessary permits and/or approvals from other federal, state, and/or county agencies. If requirements vary, the most restrictive shall prevail. These permits may include, but are not limited to, those listed below. Applicants are required to show proof of compliance with these regulations before the County will issue a storm water approval.

A. Ohio EPA NPDES Permits authorizing storm water discharges associated with construction activity. Proof of compliance with these requirements shall be the applicant's Notice of Intent (NOI) number from Ohio EPA, a copy of the Ohio EPA Director's Authorization Letter for the NPDES Permit, or a letter from the site owner certifying and explaining why the NPDES Permit is not applicable.

B. Section 401 of the Clean Water Act: Proof of compliance shall be a copy of the Ohio EPA Water Quality Certification application tracking number, public notice, project approval, or a letter from the site owner certifying that a qualified professional has surveyed the site and determined that Section 401 of the Clean Water Act is not applicable. Wetlands, and other waters of the United States, shall be delineated by protocols accepted by the U.S. Army Corps of Engineers at the time of application of this regulation.

C. Ohio EPA Isolated Wetland Permit: Proof of compliance shall be a copy of Ohio EPA's Isolated Wetland Permit application tracking number, public notice, project approval, or a letter from the site owner certifying that a qualified professional has surveyed the site and determined that Ohio EPA's Isolated Wetlands Permit is not applicable. Isolated wetlands shall be delineated by protocols accepted by the U.S. Army Corps of Engineers at the time of application of this regulation.

D. Section 404 of the Clean Water Act: Proof of compliance shall be a copy of the U.S. Army Corps of Engineers Individual Permit application, public notice, or project approval, if an Individual Permit is required for the development project. If an Individual Permit is not

required, the site owner shall submit proof of compliance with the U.S. Army Corps of Engineer's Nationwide Permit Program. This shall include one of the following:

1. A letter from the site owner certifying that a qualified professional has surveyed the site and determined that Section 404 of the Clean Water Act is not applicable.

2. A site plan showing that any proposed fill of waters of the United States conforms to the general and special conditions specified in the applicable Nationwide Permit. Wetlands, and other waters of the United States, shall be delineated by protocols accepted by the U.S. Army Corps of Engineers at the time of application of this regulation.

E. Ohio Dam Safety Law: Proof of compliance shall be a copy of the ODNR Division of Water permit application tracking number, a copy of the project approval letter from the ODNR Division of Water, or a letter from the site owner certifying and explaining why the Ohio Dam Safety Law is not applicable.

F. Flood Plain Permit(s): Proof of compliance shall be a copy of the U.S. Army Corps of Engineer's Conditional Letter of Map Revisions and/or a local flood plain permit. If no work is proposed in the flood plain, the applicant shall submit proof in the form of a letter from the site owner certifying that a qualified professional has surveyed the site and determined that no fill will be placed in the flood plain.

8.0 COMPREHENSIVE STORM WATER MANAGEMENT PLAN

A. Comprehensive Storm Water Management Plan Required: The applicant shall develop aPost Construction Storm Water Management Plan describing how the quantity and quality of storm water will be managed after construction is complete for every discharge from the site. The Plan will illustrate the type, location, and dimensions ofevery structural and non-structural storm water management practice incorporated into the site design, and the rationale for their selection. The rationale shall address how these storm water management practices will address flooding within the site as well as flooding that may becaused by the development upstream and downstream of the site. The rationale will also describe how the storm water management practices minimize impacts to the physical, chemical, and biological characteristics of on-site and downstream water resources and, ifnecessary, correct current degradation of water resources that is occurring or take measures to prevent predictable degradation of water resources.

B. Preparation by Professional Engineer: The Comprehensive Storm Water Management Plan shall be prepared by a registered professional engineer and include supporting calculations, plan sheets, and design details. To the extent necessary, as determined by the Lorain County Engineer's office, a site survey shall be performed by a Registered Professional Surveyor to establish boundary lines, measurements, or land surfaces.

C. Community Procedures: The Lorain County Engineer's office shall prepare and maintain procedures providing specific criteria and guidance to be followed when developing the Comprehensive Storm Water Management Plan. These procedures may be updated from time to

time, at the discretion of the Lorain County Engineer's office based on improvements in engineering, science, monitoring, and local maintenance experience. The Lorain County Engineer's office will make the final determination of whether the practices proposed in the Comprehensive Storm Water Management Plan meet the requirements of this regulation. The Lorain County Engineer's office may also maintain a list of acceptable Best Management Practices to be used in Lorain County, that meet the criteria of this regulation.

D. Contents of the 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:

1. Site description:

   a. A description of the nature and type of the construction activity (e.g. residential, shopping mall, highway, etc.).

   b. Total area of the site and the area of the site that is expected to be disturbed (i.e. grubbing, clearing, excavation, filling or grading, including off-site borrow areas).

   c. A description of prior land uses at the site.

   d. An estimate of the impervious area and percent of imperviousness created by the soil-disturbing activity at the beginning and at the conclusion of the project.

   e. Existing data describing the soils throughout the site, including the soil series and association, hydrologic soil group, porosity, infiltration characteristics, depth to groundwater, depth to bedrock, and any impermeable layers.

   f. If available, the quality of any known pollutant discharge from the site such as that which may result from previous contamination caused by prior land uses.

   g. The location and name of the immediate water resource(s) and the first subsequent water resource(s).

   h. The plan (aerial view) extent and description of water resources at or near the site that will be disturbed or will receive discharges from the project.

   i. Describe the current condition of water resources including the vertical stability of stream channels and indications of channel incision that may be responsible for current or future sources of high sediment loading or loss of channel stability.

2. Site map showing:

   a. Limits of soil-disturbing activity on the site.

b. Soils types for the entire site, including locations of unstable or highly erodible soils.

c. Existing and proposed one-foot elevation (1') contours. This shall include a delineation of drainage watersheds expected before, during, and after major grading activities as well as the size of each drainage watershed in acres.

d. Water resource locations including springs, wetlands, streams, lakes, water wells, and associated setbacks on or within two-hundred (200) feet of the site, including the boundaries of wetlands or streams and first subsequent named receiving water(s) the applicant intends to fill or relocate for which the applicant is seeking approval from the Army Corps of Engineers and/or Ohio EPA.

e. Existing and planned locations of buildings, roads, parking facilities, and utilities.

f. The location of any in-stream activities including stream crossings.

3. Contact information: Company name and contact information as well as contact name, addresses, email address(es), and phone numbers for the following:

   a. The Professional Engineer who prepared the Comprehensive Storm Water Management Plan.

   b. The Owner(s) of the Development Area.

   c. The Applicant.

   d. The Developer.

4. Phase, if applicable, of the overall development plan.

5. List of sub-lot numbers if project is a subdivision.

6. Ohio EPA NPDES Permit Number and other applicable state and federal permit numbers, if available or status of various permitting requirements if final approvals have not been received.

7. Location, including complete site address and sub-lot number if applicable.

8. Location of any easements or other restrictions placed on the use of the property.

9. A site plan sheet showing:

a. The location of each proposed post construction storm water management practice and its point of discharge from the site. The size of the total drainage area contributing to the practice shall be indicated with either:
a. the percent imperviousness; or *b.* post-Construction land use breakdown in acres shown.

b. The geographic coordinates of the site AND each proposed practice in North American Datum Ohio State Plan North longitude and latitude.

It is preferred that the entire site be shown on one plan sheet to allow a complete view of the site during plan review. If a smaller scale is used to accomplish this, separatesheets providing an enlarged view of areas on individual sheets should also be provided.

10. An Inspection and Maintenance Agreement. The Inspection and Maintenance Agreement required for storm water management practices under this regulation shall be a separate agreement between Lorain County and the owner, and shall contain the following information and provisions (The standard Inspection and Maintenance Agreement is provided in Appendix A):

a. The location of each storm water control measure (SCM), including those practices permitted to be located in, or within fifty (50) feet of, water resources, and identification of the drainage area served by each storm water management practice.

b. A schedule for regular maintenance for each aspect of the storm water management system and description of routine and non-routine maintenance tasks to ensure continued performance of the system as is detailed in the approved Post-Construction Storm Water Management Plan. This schedule may include additional standards, as required by the Lorain County Engineer, to ensure continued performance of storm water management practices permittedto be located in, or within fifty (50) feet of, water resources.

c. The location and documentation of all access and maintenance easements to serve the property.

d. Identification of the current and proposed landowner(s), organization, or municipality responsible for long-term maintenance, including repairs, of the storm water management practices.

e. The landowner(s), organization, or municipality who shall maintain storm water management practices in accordance with this regulation.

f. Lorain County 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.

g. Lorain County shall maintain public records of the results of its site inspections,shall inform the landowner(s), organization, or municipality responsible formaintenance

of the inspection results, and shall specifically indicate any corrective actions required to bring the storm water practices into proper working condition.

h. If Lorain County 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 Lorain County.

i. Lorain County is authorized to enter upon the property and to perform the corrective actions identified in the inspection report if the landowner(s), organization, or municipality responsible for maintenance does not make the required corrections in the specified time period. Lorain County shall be reimbursed by the landowner(s), organization, or municipality responsible for maintenance for all expenses incurred within 10 days of receipt of invoice from Lorain County.

j. The proposed method of funding long-term maintenance and inspections of all storm water management practices.

k. A release of Lorain County from all damages, accidents, casualties, occurrences, or claims that might arise or be asserted against Lorain County from the construction, presence, existence, or maintenance of the storm water management practices.

Alteration or termination of these stipulations is prohibited. The applicant shall provide a draft of this Inspection and Maintenance Agreement as part of the Comprehensive Storm Water Management Plan submittal. A recorded copy of the final Agreement shall be submitted to Lorain County to receive final inspection approval of the site.

11. Calculations required: The applicant shall submit calculations for projected storm water runoff flows, volumes, and timing into and through all SCMs for flood control, channel protection, water quality, and the condition of the habitat, stability, and condition of each water resource and its flood plain, as required in Section 9 of this regulation. These submittals shall be completed for both pre- and post-development land use conditions and shall include the underlying assumptions and hydrologic and hydraulic methods and parameters used for these calculations. The applicant shall also include critical storm determination, and demonstrate that the runoff from offsite and upper watershed areas have been considered in the calculations.

12. List of all contractors and subcontractors before construction: Prior to construction and before the pre-construction meeting, provide the list of all contractors and subcontractors names, addresses, and phones involved with the implementation of the Post Construction Storm Water Management Plan including a written document containing signatures of all parties as proof of acknowledgment that they have reviewed and understand the requirements and responsibilities of the Post Construction StormWater Management Plan.

13. Existing and proposed drainage patterns: The location and description of existing and proposed drainage patterns and storm water management practices, including any related storm water management practices beyond the development area including the larger common development area.

14. For each storm water management practice to be employed, include the following:

a. Location and size, including detail drawings, maintenance requirements during and after construction, and design calculations, all where applicable.

b. Final site conditions including storm water inlets and permanent nonstructural and structural storm water management practices. Details of storm water management practices shall be drawn to scale and shall show volumes and sizes of contributing drainage areas.

c. Any other structural and/or non-structural storm water management practices necessary to meet the design criteria in this regulation and any supplemental information requested by the Lorain County Engineer.

d. 25' wide clear access to SCMs with minimum 12 feet wide gravel, asphalt or concrete driveway as determined by the Lorain County Engineer.

9.0 PERFORMANCE STANDARDS

A. General: 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 NRCS one-hundred (100)-year, twenty-four (24)-hour storm event; to maintain predevelopment runoff patterns and flows, and to meet the following criteria:

1. Integrated practices that address degradation of water resources. The storm water management practices shall function as an integrated system that controls flooding and minimizes the degradation of the physical, biological, and chemical integrity of the water resources receiving storm water discharges from the site. Acceptable practices shall:

a. Not disturb riparian areas, unless the disturbance is intended to support a watercourse restoration project and complies with Lorain County Erosion and Sediment Control Rules – Section 4.4-F-2 and or the locally adopted Riparian and Wetland Setbacks.

b. Minimize impacts to predevelopment hydrology and groundwater recharge on as much ofthe site as practicable.

c. Only install new impervious surfaces and compact soils where necessary to support the future land use.

d. Compensate for increased runoff volumes caused by new impervious surfaces and soil compaction by reducing storm water peak flows to be equal or less than predevelopment levels and flows.

e. Storm water management practices that meet these criteria in this regulation, and additional criteria required by the Lorain County Engineer, shall comply with this regulation.

2. Practices designed for final use: Storm water management practices shall be designed to achieve the storm water management objectives of this regulation, to be compatible with the proposed development and post-construction use of the development area, to protect the public health, safety, welfare, and to function safely with minimal maintenance.

3. Adequate Outfall: Convey runoff from the development area to an adequate outfall, as recommended by the applicant's Professional Engineer, and approved by the Lorain County Engineer. Submit an engineering report at the preliminary plan stage that addresses the adequate outfall issue. Convey runoff to any adequate outfall that lies beyond the development area in accordance with these Comprehensive Storm Water Management Regulations. In this case, the applicant shall obtain easements for construction and maintenance and shall provide off-site improvements as recommended by his or her Professional Engineer, and approved by the Lorain County Engineer.

4. Storm water management for all lots: Areas developed for a subdivision, as defined in Section 501 of the Subdivision Regulations of Lorain County, 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, and peak flows from the development area.

5. Storm water facilities in water resources: Storm water management practices and related activities shall not be constructed in water resources unless the applicant shows proof of compliance with all appropriate permits from the Ohio EPA, the U.S. Army Corps, and other applicable federal, state, and local agencies as required in Section 7 of this regulation, and the activity is in compliance with Chapter 3 – Regulated Activities of the Lorain County Erosion and Sediment Control Rules and /or the locally adopted Riparian and Wetland Setbacks all as determined by the Lorain County Engineer.

6. Storm water ponds and surface conveyance channels: All storm water pond and surface conveyance designs shall provide a minimum of one (1) foot freeboard above the peak stage within the facility during the one-hundred (100)-year, 24-hour storm. At the peak stage, safely convey the 100-year design flow rate to an adequate outlet with emergency overflow structures. Design overflow structures for the condition when all other outlets are obstructed and the facility has reached 100-year design storage capacity. When designing storm water ponds and conveyance channels, the applicant shall consider public safety as a design factor and alternative designs shall be implemented where site limitations would preclude a safe design.

7. Exemption: The site where soil-disturbing activities are conducted shall be exempt from the requirements of Section 9 of this regulation if it can be shown to the satisfaction of the Lorain County Engineer that the site is part of a larger common plan of development where the storm water management requirements for the site are

provided by an existing storm water management practice, or if the storm water management requirements for the site are provided by practices defined in a regional or local storm water management plan approved by the Lorain County Engineer.

8. Maintenance: All storm water management practices shall be maintained in accordance with Inspection and Maintenance Agreements approved by the Lorain County Engineer.

9. Ownership: Unless otherwise required by the Lorain County, storm water management practices serving multiple lots in subdivisions shall be located on a separate lot or block of land held and maintained by an entity of common ownership or, if compensated by the property owners, by Lorain County. Storm water conveyance systems serving multiple lots in a subdivision may be located in the rear of the lots accessed and restricted within easements, and maintained by an entity of common ownership or, if compensated by the property owners, by Lorain County. Storm water management practices serving single lots shall be placed on these lots, or blocks protected within easements, and maintained by the property owner.

10. Preservation of Existing Natural Drainage. Practices that preserve and/or improve the existing natural drainage shall be used to the maximum extent practicable. Such practices may include minimizing site grading and compaction; protecting and/or restoring water resources, riparian areas, and existing vegetation; and maintaining un-concentrated storm water runoff to and through these areas.

11. 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, hydro-period, 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 may be required to demonstrate that the proposed discharge matches the pre-development hydro-periods and hydrodynamics.

B. Storm Water Conveyance Design Criteria: All storm water management practices shall be designed to convey storm water safely, and to allow for the maximum removal of pollutants and reduction in flow velocities. This shall include but not be limited to:

1. Stream relocation or enclosure: The Lorain County Engineer may allow the enclosure or relocation of water resources only if the applicant shows proof of compliance with all appropriate permits from the Ohio EPA, the U.S. Army Corps, and other applicable federal, state, and local agencies as required in Section 7 of this regulation, and the activity is in compliance with Section 3 – Regulated Activities of the Lorain County Erosion and Sediment Control Rules and / or locally adopted Riparian and Wetland Setbacks all as determined by the Lorain County Engineer. At a minimum, stream relocation designs shall show how the project will minimize changes to the vertical

stability, flood plain form, channel form, and habitat of upstream and downstream channels on and off the property.

2. Off-site storm water discharges: Off-site storm water runoff that discharges to or across the applicant's development site shall be conveyed through the storm water conveyance system at its pre-development peak flow rates during each design storm. Off-site flows shall be diverted around storm water quality control facilities or, if this is not possible, the storm water quality control facility shall be sized to treat the off-site flow. Comprehensive Storm Water Management Plans will not be approved until it is demonstrated to the satisfaction of the Lorain County Engineer that off-site runoff will be safely conveyed through the development site to an adequate outfall in a manner that does not exacerbate upstream or downstream flooding and erosion.

3. Sheet flow. The site shall be graded in a manner that maintains sheet flow over as large an area as possible. The maximum area of sheet flow shall be determined based on the slope, the uniformity of site grading, and the use of easements or other legally-binding mechanisms that prohibit re-grading and/or the placement of structures within sheet flow areas. In no case shall the sheet flow length be longer than 100 feet, nor shall a sheet flow area exceed one acre. Flow shall be directed into an open channel, storm sewer, or other storm water management practice from areas too long and/or too large to maintain sheet flow, all as determined by the Lorain County Engineer.

4. Open channels: Unless otherwise approved by the Lorain County Engineer, drainage tributary to SCMs may be provided by an open channel with vegetated banks, designed to carry the ten (10)-year, storm water runoff.

5. Open drainage systems: Open drainage systems are preferred on all new development sites to convey storm water where feasible. Storm sewer systems shall be allowed only when the site cannot be developed at densities allowed under township's zoning or where the use of an open drainage system affects public health or safety, all as determined by the Lorain County Engineer. The following criteria shall be used to design storm sewer and open channel systems:

   a. Design storm sewers and open channels by the Rational Method ($Q=CiA$) for tributary areas less than two hundred acres. Calculate flow capacity in accordance with Manning's Formula ($V=1.486/n\ R^{2/3}\ S^{1/2}$). Use $n=0.015$ for pipes less than thirty inches in diameter.

      Storm sewers and open channels that drain tributary areas in excess of two hundred acres may be designed using flows calculated by Soil Service Technical Release No. 20 (TR-20).

      Design storm sewers and open channels with minimum mean velocity when flowing full of two feet per second, and with maximum mean velocity of ten feet per second in sewers, or five feet per second in open channels.

      Design Culverts in accordance with ODOT 1100.

Design residential, commercial and industrial storm sewers and open channels as non-pressure conduits (to flow "just full") for the ten-year storm, with their twenty-five-year hydraulic grade line below the gutter line of the overlying roadway, or below the top of drainage structures outside the roadway. Also design open channels with a minimum of one foot freeboard to the top of their banks. The system shall be designed to meet these requirements when conveying the flows from the contributing areas within the proposed development and existing flows from offsite areas that are upstream from the development.

b. Design public open channels with minimum slope of 0.3%, minimum bottom width of two feet, and minimum side slopes of 3:1. Specify vegetative cover and appropriate turf reinforcement.

c. The minimum inside diameter of pipe permitted to be used in public storm sewer systems shall be twelve (12) inches (with minimum slope of 0.2%). Smaller pipe sizes may be used in private systems, subject to the approval of the Lorain County Engineer. Match crown elevations.

d. All storm sewer and open channel systems shall be designed taking into consideration the tailwater of the receiving facility or water resource. The tailwater elevation used shall be based on the design storm frequency. The hydraulic grade line for the stormsewer system shall be computed with consideration for the energy losses associated with entrance into and exit from the system, friction through the system, and turbulence in the individual manholes, catch basins, and junctionswithin the system.

e. The inverts of all curb inlets, manholes, yard inlets, and other structures shall be formed and channelized to minimize the incidence of quiescent standing water where mosquitoes may breed.

f. Headwalls shall be required at all storm sewer inlets or outlets.

6. Water Resource Crossings. The following criteria shall be used to design structures that cross a water resource in the Lorain County:

a. Water resource crossings other than bridges shall be designed to convey the stream's flow for the minimum twenty-five (25)-year, twenty-four (24)-hour storm.

b. Bridges, open bottom arch or spans (3-sided culverts) are the preferred crossing technique and shall be considered in the planning phase of the development.

Bridges and open spans should be considered for all State Scenic Rivers, coldwater habitat, exceptional warm water habitat, seasonal salmonid habitat streams, and Class III headwater streams. The footers or piers for these bridges and open spans shall not be constructed within the ordinary high water mark.

c. If a culvert or other closed bottom crossing is used, twenty-five (25) percent of the cross-sectional area or a minimum of one (1) foot of box culverts and pipe arches shall be embedded below the channel bed.

d. The minimum inside diameter of pipes to be used for crossings shall be twelve (12) inches.

e. The maximum slope allowable shall be a slope that produces a maximum ten (10)-feet per second velocity within the culvert barrel under design flow conditions. Erosion protection and/or energy dissipaters shall be required to properly control entrance and outlet velocities.

f. All culvert installations shall be designed with consideration for the tailwater of the receiving facility or water resource. The tailwater elevation used shall be based on the design storm frequency.

g. Streams with a drainage area of 5 square miles or larger shall incorporate flood plain culverts at the bank-full elevation to restrict head loss differences across the crossing so as to cause no rise in the 100-year storm event.

h. Bridges shall be designed such that the hydraulic profile through a bridge shall be below the bottom chord of the bridge for either the 100-year, twenty-four (24)-hour storm, or the 100-year flood elevation as determined by FEMA, whichever is more restrictive.

7. Overland flooding: Overland flood routing paths shall be used to convey storm water runoff flow rate from the 100-year, twenty-four (24)-hour storm event to an adequate receiving water resource or storm water management practice such that the runoff is contained within the drainage easement for the flood routing path and does not cause flooding of buildings or related structures. The peak 100-year water surface elevation along flood routing paths shall be at least one foot below the finished grade elevation at all structures. When designing the flood routing paths, the conveyance capacity of the site's storm sewers shall be taken into consideration.

8. Compensatory flood storage mitigation: The Lorain County Engineer recommends that no fill be proposed in any flood plain. In order to preserve flood plain storage volumes and thereby avoid increases in water surface elevations, any filling within flood plains approved by the Lorain County Engineer shall be compensated by removing an equivalent volume of material therein. First consideration for the location(s) of compensatory flood plain volumes should be given to areas where the stream channel will have immediate access to the new flood plain within the limits of the development site. Consideration will also be given to enlarging existing or proposed retention basins tocompensate for flood plain fill if justified by a hydraulic analysis of the contributing watershed. Unless otherwise permitted by the Lorain County Engineer ***reductions*** involume due to flood plain fills shall be mitigated within the

legal boundaries of thedevelopment. Embankment slopes used in compensatory storage areas shall reasonably conform to the natural slopes adjacent to the disturbed area. The use of vertical retaining structures is specifically prohibited.

9. Velocity dissipation: Velocity dissipation devices shall be placed at discharge locations and along the length of outfalls to provide non-erosive flow velocity from the structure to a water resource, so that the natural physical and biological characteristics and functions of the water resource are maintained and protected.

C. **Storm Water Quality Control:**

http://www.lorainswcd.com/forms/ESC-Rules.pdf

1. Direct runoff to a BMP: The site shall be designed to direct all runoff to one or more of the following SCMs. These practices are listed in Table 2 of this regulation and shall be designed to meet the following general performance standards:

   a. For sites less than five (5) acres, but greater than one (1) acre and not part of a common plan of development where five (5) or more acres disturbed, the Administrator may approve other BMP's if the applicant demonstrates to the Lorain County Engineer's satisfaction that these BMP's meet the objectives of the regulation as stated in Section 9.C.6.

   b. 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 Administrator and/or the Lorain County Engineer may approve other BMP's if the applicant demonstrates to the Administrator and/or the Lorain CountyEngineer's satisfaction that these BMP's meet the objectives of this regulationas stated in Section 9.C.6, and has prior written approval from the Ohio EPA.

   c. For the construction of new roads, roadways and improvement projects by public entities (i.e. the state, counties, townships, cities, or villages), the Lorain County Engineer may approve alternative SCMs in accordance, with the current version of the Ohio Departments of Transportations "*Location and Design Manual, Volume Two Drainage Design*".

2. Criteria applying to all storm water management practices. Practices chosen shall be sized to treat the water quality volume (WQv) and to ensure compliance with OhioWater 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) Using the following equation:

$$WQV = C*P*A/12$$

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 can be determined using the list in Table 1 or using 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:

$C=0.858i^3-0.78i^2 + 0.774i+0.04$, 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	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. SCMs 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 rainfallevents as defined in Table 2.

Stormwater Control Measure (SCM)	Drain Time of WQv
Infiltration Basin or Trench[1]	48 hours
Permeable Pavement – Infiltration[1]	48 hours
Permeable Pavement – Extended Detention	24 hours
Extended Detention Facilities	
▪ Dry Extended Detention Basin[2]	48 hours
▪ Wet Extended Detention Basin [3]	24 hours
▪ Constructed Wetlands (above permanent pool) [4]	24 hours
▪ Bioretention Area/Cell[5,6]	24 hours
▪ Sand and other Media Filtration[5]	24 hours
▪ Pocket Wetland[7]	24 hours

[1] Practices designed to fully infiltrate the WQ_v shall empty within 48 hours to provide storage for subsequent storm events.
[2] The use of a forebay and micropool is required on all dry extended detention basins. Each is to be sized at a minimum 10% of the WQ_v. [3]Provide both a permanent pool and an extended detention volume above the permanent pool, each sized with at least $0.75*WQ_V$.
[4]Extended detention shall be provided for the WQv above the permanent water pool.
[5] The surface ponding area shall completely empty within 24 hours so that there is no standing water. Shorter drawdown times are acceptable as long as design criteria in Rainwater and Land Development have been met.
[6] This includes grassed linear bioretention, which was previously titled enhanced water quality swale.
[7]Pocket wetlands shall have a wet pool equal to the WQ_v, with 25% of the WQ_v in a pool and 75% in marshes. The ED_v above the permanent pool shall be equal to the WQ_v.

Table 2: Draw Down Times for Storm Water Management Practices

3. 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, if the seasonal high water table is at least three (3) feet below the final grade elevation, and any underlying bedrock is at least six feet below the final grade elevation.

   b. All runoff directed into an infiltration basin shall 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.

4. 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 one-third (1/3) of the drain time. A valve or sump 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 to 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 four (4) feet shall be surrounded by an aquatic bench that extends at least eight (8) feet and no more than fifteen (15) feet outward from the normal water edge. The six (6) feet wide portion of the aquatic bench closest to the shoreline shall have an average depth of six (6) inches below the permanent pool to promote the growth of aquatic vegetation. The remainder of the aquatic bench shall be no more than fifteen (15) inches below the permanent pool to minimize risk to persons 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 ten (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 each equal at least ten (10)% of the water quality volume (WQv).

c. Water quality ponds may not be appropriate for ultra-urban areas where adequate space is not available or for heavy industrial areas that require extensive pollution treatment.

d. Water quality ponds may cause stream warming and may need additional design consideration as determined by the Lorain County Engineer.

e. Applicant shall assure compliance with Ohio Dam Safety Regulations. Ponds with dams are regulated under the Ohio Revised Code 1501: 21 Dam Safety Administrative Rules. A dam is exempt from the state's authority (ORC Section 1521.062) if it is 6 feet or less in height regardless of total storage; less than 10 feet in height with not more than fifty (50) acre-feet of storage, or not more than fifteen (15) acre-feet of total storage regardless of height. Check with the Ohio Dept. of Natural Resources, Division of Water, for the most current requirements.

f. ***Reducing Thermal Impacts Through Shading*** – Warm water released from a permanent pool may adversely impact the thermal regime of receiving streams, particularly if the receiving water is a cold-water fishery. The pool acts as a heat sink between storm events during the summer months. Water released downstream from the pond can be as much as 10ºF warmer than naturally occurring base flow. Large impervious surfaces also warm surface runoff significantly which can be critical to stream systems where fish and other aquatic life are threatened by high summertime water temperatures.

Add Shading – Shading a pond can significantly reduce thermal impacts. Trees planted around the pond, particularly on the south and west sides offer the most protection from the summer sun. Trees planted on islands or peninsulas should also be considered. Because tree roots can damage dams, trees shall not be planted on the embankment itself. Wetland vegetation also contributes to shading and reduces thermal impacts.

Leaf litter introduces nutrients to the pond and adds to the accumulations of sediment. While nutrients and sediment are pollutants, nutrients in plant material or detritus are more readily utilized by aquatic insects and incorporated into the food chain. Fallen leaves are a vital part of aquatic environments, whereas soluble nutrients and nutrients attached to fine sediments easily wash through a pond system or promote algal growth. The designer shall provide a landscape plan showing SCMs that shade the permanent pool, subject to approval by the Lorain County Engineer's Office.

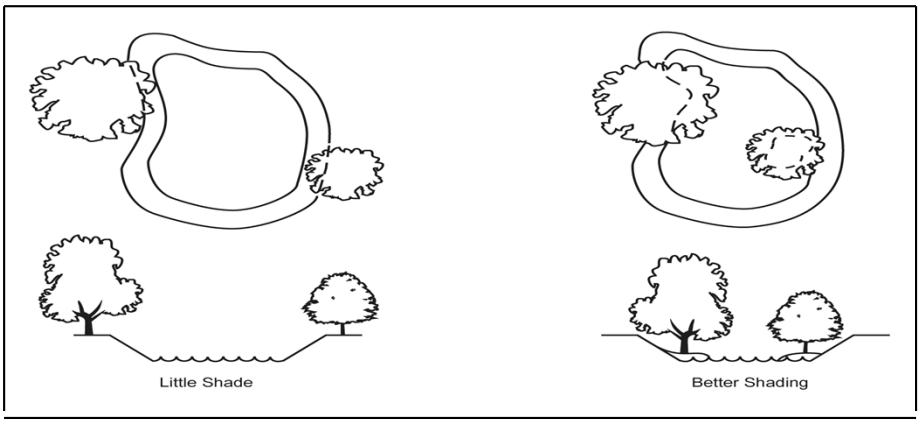


Figure: 2.6.7 Tree Placement to Shade Pond and Reduce Thermal Impacts

g. Additional upland practices may be needed to reduce nutrient loads that cause problems common to reduce nutrient loads that cause problems common to eutrophic ponds (excess algae, low oxygen levels, and odor).

Suitable soils shall be available for constructing the embankment and insuring sufficient impermeability to prevent seepage losses. A trained professional shall

conduct an on-site evaluation of the proposed pond site and borrow areas prior to final design to characterize the adequacy of the site and the excavated soils for use as core trench or embankment fill. The evaluation should include a test pit at each abutment, along the centerline of the proposed embankment, the emergency spillway, the borrow area and the pool area. As a rule, one test pit should be placed for every 10,000 square feet of area examined. All explorations shall be logged using the Unified Soil Classification System.

h. ***Advantages of Wetland Features*** – Wetland extended detention ponds may include wetland environments that greatly enhance water quality treatment by establishing a shallow aquatic bench around the main pool. These areas also improve safety by creating a vegetative barrier to discourage children from venturing into deeper water and reducing the hazard of steep grades at the pond edge.

When used as one water quality design feature within a wet extended detention pond, wetland vegetation should occupy at least twenty (20)% of the wet pool's water surface. It is also recommended that benches be at least six (6) feet wide and have depths of six (6) to twelve (12) inches on average and not exceed eighteen (18) inches. See the design criteria for wetland extended detention ponds for guidance on establishing wetland plants.

i. For wet ponds, soils and site conditions shall be appropriate to maintain a permanent pool during dry weather. Permanent pools may be difficult to maintain if the contributing watershed area is less than twenty (20) acres and if the ratio of drainage area to water surface area is less than 6:1.

j. Wetland vegetation promotes settling and stabilizes deposited sediment. Wetlands can further treat stormwater in ways most other treatment practices cannot, by plant uptake, adsorption, physical filtration, microbial decomposition and shading. Wetland plants readily absorb heavy metals, and other toxic wastes. Microorganisms that thrive in wetland plant root systems consume and decompose pollutants, these microorganisms that live among the plans are very good at breaking down poisonous organic compounds such as benzene, toluene and PCBs into harmless elements that the microorganisms and plants can digest.

k. ***Mosquito Concerns*** – Water quality ponds have extended detention times less than the time needed for common vector mosquitoes to hatch (generally 72 hours). But it is still important to design and maintain stormwater ponds in order to prevent conditions most favorable to mosquitoes. When designing and maintaining stormwater ponds apply the following considerations:

1. Avoid stagnant water by assuring there is sufficient flow to support a wet or wetland ponds.

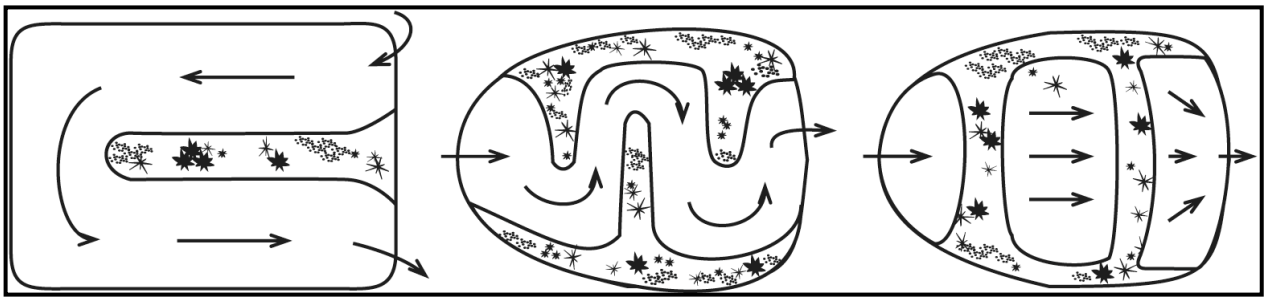
2. Maintain the outlets so that detention does not occur beyond the extended detention period.

3. Design wet ponds with wetland benches and wetlands with varying depths (mix of deeper water and wetland areas) in order to have improved habitats for natural mosquito predators like small fish, birds, dragonflies and aquatic insects.

4. For areas that will have standing water without wave action or deeper water, consider aeration to prevent stagnation.

l. ***Pond Configuration*** – Configure the pond so that water quality treatment is optimized through pond shape and flow length. Improved settling of pollutants occurs as the flow length is maximized. Optimally, designs will avoid the problems of dead storage or incoming water short- circuiting through the pond and the re-suspension of deposited sediments.

1. ***Length to Width Ratio*** **-** Wedge shaped or ponds that are longer that wide will prevent flow from short-circuiting the main body of water. The ratio of flowlength to pond width should be at least 3:1. To increase a pond's flow length, the contours of the pond may be configured to from baffles or an extended flow path. Construction submerged aquatic benches to form cells will enhance flow routing.



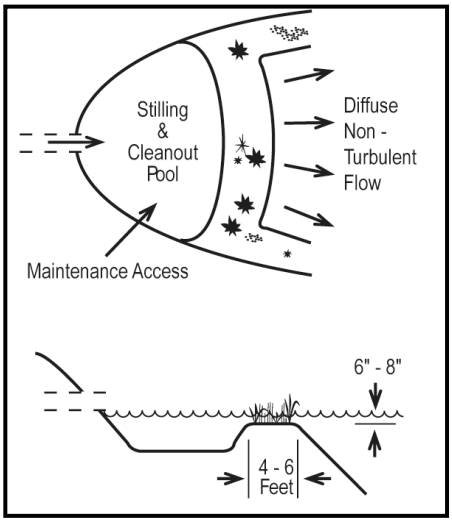
Flow Routing to Enhance Water Quality Treatment

2. ***Slide Slopes*** **–** Varying the slope to create benches above and below waterlines increases safety and stability and can create water quality features such as wetland benches in permanent pools. Slopes should not be steeper than 4:1 or gentler than 12:1.

3. ***Forebay (s)*** **–** A forebay is a settling pool located at the inlet to a pond. It is separated from the rest of the pond by a level dike often planted with emergent wetland vegetation. Forebays are primarily used to improve the settling efficiency of a pond but they also reduce maintenance by promoting settling in a confined, easily accessible location.

Forebays promote settling by: segmenting or dividing the pond into cells which reduce mixing and promote plug flow; by converting the high velocity concentrated inflow from a pipe to a wide uniform slow flow to

the normal pool area, and by dissipating flows through emergent vegetation.



Forebay

4. ***Forebay Size –*** Forebay for single inlet should occupy from 8-25% of the normal pool area. Forebays should be large enough to avoid scour and re- suspension of trapped sediment and sized for ease of construction and cleanout. Forebays should have a water depth of at least three (3) feet.

5. ***Forebay Outlet*** – Provide an outlet to the main pond, consisting of a level spreader or submerged level dike. A submerged dike separating the Forebay from the rest of a wet pool or wetland should be 6-12 inches below the normal water surface elevation and provide a non-erosive overflow. It should also be planted with hardy emergent wetland vegetation. See the wetland extended detention pond section below for more information on planting.

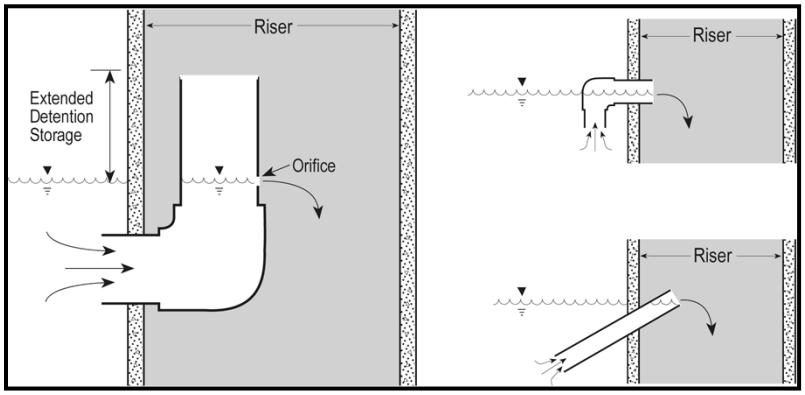
6. ***Forebay Maintenance Access*** – To accommodate relatively frequent sediment cleanout, provide easy equipment access to the forebay. Include gradual slopes without obstructions and an access easement. Additionally, install a drain under the dike so that the Forebay can be drained during maintenance operations.

m. ***Micro-pool*** – For wetland and predominantly dry extended detention Stormwater ponds, a micro-pool is recommended in front of the outlet. The micro-pool allows a reverse slope pipe or other non-clogging outlet to be used. The micro-pool should be 4-6 feet deep and equal to ten (10)% of the water quality volume**.**

n. ***Non-clogging Outlet*** – Extended detention outlets require small orifices or controls and shall be designed to be non-clogging. The orifice controlling the discharge of the WQv shall be a minimum of two (2) inches in diameter. If a design to meet these regulations cannot be achieved with the minimum orifice

size, another post construction BMP shall be utilized to meet the water quality requirements. A reverse flow pipe is one way to configure an outlet to better trap floating pollutants and to be less clogging (see figure 2.6.3). Reverse flow pipes draw water from below the water surface to trap floating debris that would otherwise clog the outlet.

A reverse flow pipe is designed to draw water below the pond's surface and above the midpoint of the normal permanent pool elevation. They may be construction with a pipe on a negative slope or with a turned pipe elbow. Reverse flow outlets may be construction with a straight pipe set on a negative slope. A pipe with a ninety (90)-degree elbow also may be used either inside the riser and facing upward or outside the riser facing down.



Reverse Flow Structures Reduce Clogging and Trap Floating Pollutants

o. ***Pond Drain*** – Install a drain such that the entire pond can be drained for maintenance or repair purposes.

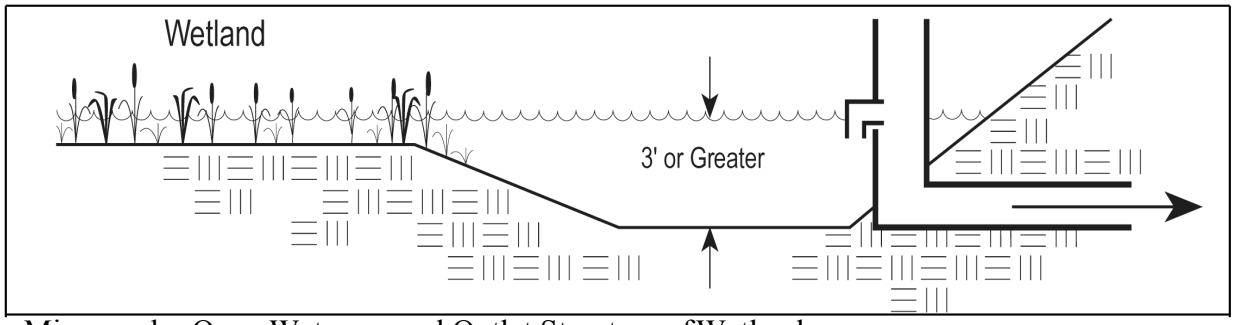
p. ***Emergency Spillway*** – Design emergency spillways based on Section 9.A.5.

q. ***Additional Specifications for Pond Construction*** – Embankment ponds shall be well constructed and built according to NRCS Conservation Practice Standards 378 (Pond) addressing issues such as:

1. Ponds shall incorporate emergency spillways designed to safely convey flows exceeding design storm flows.
2. Outlet structures should be built to withstand flotation and incorporate anti-vortex and debris or trash rack devices.
3. Embankments and principal spillway shall utilize adequate soils and compactions, core trenches and anti-seep collars.

r. ***Wetland Depth*** – for Constructed Wetland – Wetland pool depths should generally range between six (6) to eighteen (18) inches. The average depth should be between six (6) and twelve (12) inches. This depth may vary but shall accommodate: 1) the depth appropriate for the type of wetland vegetation planted,

and 2) adequate volume of runoff stored within the wetlands. Wetland diversity and stability will be improved if a variety of depths are created with complex subsurface contours and irregular shapes to provide more edge effect.



Micropool: Open Water around Outlet Structure of Wetland

A micropool, that is a deep area, greater than three (3) feet, should be created at the outlet structure so that vegetation and sediment buildup do not interfere with outflow from the basin. Incorporating a deep pool at the inlet to the pond may be used to promote initial settling and dissipate concentrated inflow.

Establishing Wetland Vegetation – Six (6) to eight (8) species of wetland plants should be planted. Species that have worked well in constructed urban wetlands include: common three square, arrowhead, soft stem bulrush, wild rice, pickerelweed, sweetflag, smartweeds, spike rush, soft rush, and a number ofother sedges.

Vegetation may be established one or a combination of the following methods: planting nursery stock (plants or rhizomes), mulching with soils from an existing wetland or allowing volunteer establishment. Using only volunteer establishment is discouraged since it often leads to mono-typical stands ofinvasive or undesirable species.

Planting Layout – Initial planting should cover at least 30% of the wetland area, concentrated in several portions of the pond and have densities of four (4) to five
(5) plants/square yard. Planting clusters of single species will improve the quality and diversity plantings. Plants should be planned for their appropriatedepth within the permanent wetland pool.

Flood and Drain Prior to Planting – If nursery stock will be used, it is recommended that the wetland area be flooded for a period of time (6-9 months, USEPA) prior to draining and planting.

Treatment of Plant Material – For successful establishment of wetland vegetation the nursery stock shall be correctly handled prior to planting. Forgrowing plants, this consists of keeping the roots moist at all times, and in keeping the plants out of direct sunlight as much as possible.

Vegetation should be planted as soon as possible to avoid damage during on-site storage. Dormant plant material should be stored under conditions similar to those under which the material was stored at the nursery. When planting container plants, dig holes about one third bigger to allow rootsystems an un-compacted area in which to develop.

Mulching with Wetland Soils – If an area is mulched with soil from an existing wetland, plants should be allowed to germinate and grow for a period prior tofully inundating the wetland pool. Care should be taken not to allow the newly germinated plants to dry out.

u. ***Transition from Temporary Sediment Control Basin to permanent Stormwater Quality Pond –*** Often permanent Stormwater management ponds are used for sediment control during construction. In most cases, these facilities will need dewatering and sediment removal in order to insure that the pond has the appropriate volume for permanent Stormwater design. This includes removalof temporary risers used for sediment control, opening orifices and windows on the outlet structure that were temporarily plugged to comply with the sediment basin outlet detail in the Erosion and Sediment Control Plan, and reseeding bare soil or establishing wetland vegetation in designated areas within the pond.

v. ***Permanent Pool Depth –*** For Wet Extended Detention Basins – The mean depth of the permanent pool should be between three (3) and six (6) feet in order to optimize settling of suspended particles. This is calculated by dividing the permanent pool's storage volume by the pool's surface area. A pool that varies in depth will allow diverse conditions for wetland vegetation and portions which are deep enough for fish. If fish are to be maintained in the pool, approximately 25% of the pool should be at least six (6) to eight (8) feet deep.

w. For additional criteria in bio-retention, sand and other media filtration see the latest edition of the ODNR Rainwater and Land Development Manual.

5. Criteria for the Acceptance of Alternative post-construction BMPs: The applicant may request approval from the Lorain County Engineer for the use of alternative structural post-construction BMPs if the applicant shows to the satisfaction of the Lorain County 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 shall 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 or other similar protocol acceptable to the Lorain County Engineer.

b. The water quality volume discharge rate from the selected BMP is reduced to prevent streambed 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 (1) acre of impervious surface.

(3) The development project is a redevelopment project in 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 a large river of fourth order or greater or to a lake, and where the development area is less than five (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.

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

a. Where site conditions prevent the reduction of impervious area, then Stormwater management practices shall be implemented to provide storm water quality control facilities for at least twenty (20) percent of the WQv.

b. When a combination of impervious area reduction and stormwater quality control facilities are used, ensure a 20 percent net reduction of the site impervious area, provide for treatment of at least 20 percent of the WQv, or a combination of the two.

c. Where projects are a combination of new development and redevelopment, the total water quality volume that shall 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 twenty (20) percent.

d. Where conditions prevent area reduction or on-site Stormwater management for redevelopment projects, practical alternatives may be approved by the Lorain County Engineer.

D. **Storm Water Rate Control**

The Comprehensive Storm Water Management Plan shall describe how the proposed storm water management practices are designed to satisfy the following requirements for storm water rate or quantity control for each watershed in the development. Furthermore, critical storm criteria detention volumes or quantities shall be satisfied in addition to water quality volume. That is, provide storage of one to one-hundred-year storm volumes entirely above the top elevation of the water quality volume stage (if handled within an individual SCM, pond or basin):

1. The peak discharge rate of runoff from the Critical Storm and from all more frequent storms that occur under post-development conditions shall not exceed the peak discharge rate of runoff from a 1-year, 24-hour storm occurring on the same development drainage area under pre-development conditions.

2. Pre-development runoff calculations shall reflect historic vegetative cover as meadow or woods (not agriculture). Post-development runoff calculations shall reflect adjusted Hydrologic Soil Group (HSG) classifications according to the OEPA Rainwater and Land Development Manual Appendix 9.

3. Storms of less frequent occurrence (longer return periods) than the Critical Storm, up to the 100-year, 24-hour storm shall have peak runoff discharge rates no greater than the peak runoff rates from equivalent size storms under pre-development conditions.The 1, 2, 5, 10, 25, 50, and 100-year storms shall be considered in designing a facility to meet this requirement.

4. The Critical Storm for each specific development drainage area shall be determined as follows:

a. Determine, using a curve number-based hydrologic method that generated hydrologic method that generates hydrographs, or other hydrologic method approved by the Lorain County Engineer**,** the total volume (acre-feet) of runoff from a 1-year, 24-hour storm occurring on the development drainage area before and after development. These calculations shall meet the following standards:

1. Calculation shall include the lot coverage assumptions used for full build out as proposed.

2. Calculations shall be based on the entire contributing watershed to the development area.

3. To account for future post-construction improvements to the site, calculations shall assume an impervious surface such as asphalt or concrete for all parking areas and driveways, regardless of the surfaceproposed in the site description.

b. From the volume determined the percent increase in volume of runoff due to development. Using the percentage, select the 24-hour Critical Storm at Table 3 on page 41.

Table 3: 24-Hour Critical Storm

If the Percentage of Increase in Volume of Runoff is:		**The Critical Storm will be:**
Equal to or Greater Than:	and Less Than:	
----	10	1 year
10	20	2 year
20	50	5 year
50	100	10 year
100	250	25 year
250	500	50 year
500	---	100 year

For example, if the percent increase between the pre- and post-development runoff volume for a 1-year storm is 35%, the Critical Storm will be a 5-year storm. The peak discharge rate of runoff for all storms up to this frequency shall be controlled so as not to exceed the peak discharge rate from the 1-year frequency storm under pre-development conditions in the development drainage area. The post-development runoff from all less frequent storms need only be controlled to meet pre-development peak discharge rates for each of those same storms.

10.0 ALTERNATIVE ACTIONS

A. When Lorain County 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 8.0 – D.10 is established to ensure operations and treatment in perpetuity.

5. Obtain prior written approval from Ohio EPA.

B. Alternative actions may include, but are not limited to the following. All alternative actions shall be approved by the Lorain County Engineer:

1. Fees, in an amount specified by Lorain County Soil & Water Conservation District to be applied to community-wide storm water management practices.

2. Implementation of off-site storm water management practices and/or the retrofit of an existing practice to increase quality and quantity control.

3. Stream, flood plain, or wetland restoration.

4. Acquisition or conservation easements on protected open space significantly contributing to storm water control such as wetland complexes.

11.0 EASEMENTS

Access to storm water management practices as required by Lorain County Engineer for inspections and maintenance shall be secured by easements in favor of the Lorain County Commissioners. The following conditions shall apply to all easements:

A. Easements shall be included in the Inspection and Maintenance Agreement submitted with the Comprehensive Storm Water Management Plan.

B. Easements shall be approved by Lorain County Engineer prior to approval of a final plat and shall be recorded with the Lorain Auditor and on all property deeds.

C. Unless otherwise required by Lorain County Engineer access easements between a public right-of-way and all storm water management practices shall be no less than twenty-five (25-feet) wide. The easement shall also incorporate the entire practice plus an additional twenty-five (25-foot) wide band around the perimeter of the storm water management practice.

D. The easement shall be graded and/or stabilized as necessary to allow maintenance equipment to access and manipulate around and within each facility, as defined in the Inspection and Maintenance Agreement for the site.

E. Easements to structural storm water management practices shall be restricted against the construction therein of buildings, fences, walls, and other structures that may obstruct the free flow of storm water and the passage of inspectors and maintenance equipment; and against the changing of final grade from that described by the final grading plan approved by the Administrator. Any re-grading and/or obstruction placed within a maintenance easement may be removed by Lorain County at the property owners' expense.

12.0 MAINTENANCE AND FINAL INSPECTION APPROVAL

To receive final inspection and acceptance of any project, or portion thereof, the following shall be completed and submitted to Lorain County Engineer:

A. Final stabilization shall be achieved and all permanent storm water management practices shall be installed and made functional, as determined by Lorain County Engineer and per the approved Comprehensive Storm Water Management Plan.

B. An As-Built Certification, including a Survey and Inspection, shall be sealed, signed and dated by a Professional Engineer and a Professional Surveyor with a statement certifying that the storm water management practices, as designed and installed, meet the requirements of the Comprehensive Storm Water Management Plan approved by Lorain County Engineer. In evaluating this certification, Lorain County Engineer may require the submission of a new set of storm water practice calculations if he/she determines that the design was altered significantly from the approved Comprehensive Storm Water Management Plan. The As-Built Survey shall indicate the location, dimensions, elevations, and volumes of such practices. Include the entity responsible for long-term maintenance as detailed in the Inspection and Maintenance Agreement.

C. Include in the certification, the as-built volumes and key invert and overflow elevations of SCMs.

D. Provide to the Lorain County Engineer, the complete and recorded Inspection and Maintenance Agreement as specified inSection 8.0 .

13.0 ON-GOING INSPECTIONS

The Lorain County Soil & Water Conservation District and or Lorain County Engineer may inspect storm water management practices after acceptance. Upon finding a malfunction or other need for maintenance, the Lorain County Engineer shall provide written notification to the responsible party, as detailed in the Inspection and Maintenance Agreement, of the need for maintenance. Upon notification, the responsible party shall within ***five (5) working days***, or other mutually agreed upon time, make repairs or submit a plan with detailed action items and established timelines. Should repairs not be made within this time, or a plan approved by the Lorain County Engineer for these repairs not be in place, the Lorain County Engineer may undertake the necessary repairs and assess the responsible entity.

14.0 FEES

The Comprehensive Storm Water Management Plan review, filing, and inspection fees are part of a complete submittal and shall be submitted to the Administrator before the review process begins. The Lorain County Engineer shall establish a fee schedule based upon the actual estimated cost for providing these services. All fees are payable to the Lorain County Commissioners. For Fee Schedule see page 48.

15.0 BOND

A. If a Comprehensive Storm Water Management Plan is required by this regulation, soil-disturbing activities shall not be permitted until a maintenance bond ***of 100% of the total project cost of the storm water facilities***, has been deposited with the Lorain County Engineer. This bond shall be posted for the Lorain County Soil & Water Conservation District to perform the obligations otherwise to be performed by the owner of the development area as stated in this regulation and to allow all work to be performed as needed in the event that the applicant fails to comply with the provisions of this regulation. The maintenance bond will be returned, less administrative fees established by Lorain County, when the following three criteria are met:

1. 100% of the total project has been permanently stabilized.

2. An As-Built Inspection of all SCMs is conducted by the Lorain County Engineer.

3. An Inspection and Maintenance Agreement signed by the developer, the contractor, the Lorain County Engineer, and the private owner or homeowners association who will take long-term responsibility for these SCMs, is accepted by the Lorain County Storm Water District.

B. Once these criteria are met, the applicant shall be reimbursed all bond monies that were not used for any part of the project. If all of these criteria are not met after three years of permanent stabilization of the site, Lorain County may use the bond monies to remedy any outstanding issues with all storm water management structures on the site and the remainder of the bond shall be given to the private lot owner/ homeowners association for the purpose of long term maintenance of the project.

16.0 INSTALLATION OF STORM WATER CONTROL MEASURES (SCMs)

The operator may not direct runoff through any water quality SCMs and structures or portions thereof that could be degraded by construction site sediment until the entire area tributary to the structure has reachedfinal stabilization as determined by Lorain County Soil & Water Conservation District. Final stabilization requires the completion of the final grading at the site, all of the utilities installed, and the site subsequently stabilized with vegetation or other appropriate methods. The operator shall provide documentation acceptable to Lorain County Soil & Water Conservation District to demonstrate that the site is completely stabilized. Upon this proof of compliance, the water quality SCMs and structure(s) may be installed and placed into service. Schedule and sequence construction operations accordingly to protect water quality SCMs from sediment clogging. Upon completion of installation of these practices, all disturbed areas and/or exposed soils caused by the installation of these practices shall be stabilized within seven (7) days.

17.0 MONITORING FOR COMPLIANCE: ENFORCEMENT

A. Following the initial inspection of control devices by the project engineer, regular inspections will be performed by the Administrator for compliance with these Rules. If it appears that a violation of any of these Rules has occurred, the owner and developer will be notified of deficiencies or noncompliance in writing by certified mail, return receipt requested.

B. The rules shall be enforced in accordance with O.R.C. 307.79 and at a minimum shall permit: The Board of County Commissioners or any duly authorized representative of the Board may, upon identification to the owner or person in charge, enter any land upon obtaining agreement with the owner, tenant, or manager of the land in order to determine whether there is compliance with the rules adopted under this section. If the Board or its duly authorized representative is unable to obtain such an agreement, the Board or representative may apply for, and a judge of the Lorain County Common Pleas Court inspection warrant as necessary to achieve the purposes of this chapter.

1. If the Board of County Commissioners or its duly authorized representative determines that a violation of the rules adopted under this section exists, the Board or representative may issue an immediate stop work order if the violator failed to obtain any federal, state or local permit necessary for sediment and erosion control, earth movement, clearing, or cut and fill activity. In addition, if the Board or representative determines such a rule violation exists, regardless of whether or not the violator has obtained the proper permits, the Board or representative may authorize the issuance of a notice of violation. If, after a period of not less than thirty – (30) days has elapsed following the issuance of the notice of violation, the violation continues, the Board or its duly authorized representative shall issue a second notice of violation. Except as provided in division Subsection (3) of this section, if after a period of not less than fifteen (15) days has elapsed following the issuance of the second notice of violation, the violation continues, the Board or its duly authorized representative may issue a stop work order after first obtaining the written approval of the prosecuting attorney of the county if, in the opinion of the prosecuting attorney, the violation is egregious.

   Once a stop work order is issued, the Board or duly authorized representative shall request, in

writing, the prosecuting attorney of the county to seek an injunction or other appropriate relief in the court of common pleas to abate excessive sedimentation and secure compliance with the rules adopted under this section. If the prosecuting attorney seeks an injunction or otherappropriate relief, then, in granting relief, the Court of Common Pleas may order the construction of sediment control improvements or implementation of other control measure and may assess a civil fine of not less than one hundred or more than five hundred dollars. Each day of violation of a rule or stop work order issued under this section shall be considered aseparate violation subject to a civil fine.

2. The person to who a stop work order is issued under this section may appeal the order to Lorain County Common Pleas Court issued, seeking any equitable or other appropriate relief from that order.

3. No stop work order shall be issued under this section against any public highway transportation, or drainage improvement or maintenance project undertaken by a governmentagency or political subdivision in accordance with a statement of its standard sediment control policies that is approved by the Board or the Chief of the Division of Soil and Water Conservation, Ohio Department of Natural Resources.

The Administrator shall have the authority to require immediate on-site adjustments to the Comprehensive Storm Water Management Regulations in order to achieve compliance with these Rules.

A final inspection will be made to determine if the criteria of these Rules have been satisfied and a report will be presented to the Board of Lorain County Commissioners on the site's compliancestatus.

The Administrator will monitor soil-disturbing activities for non-farm residential, commercial, industrial, or other non-farm purposes on land of less than one contiguous acre to ensure compliance required by these Rules.

The Administrator shall not review or approve Comprehensive Stormwater Management Plans, of any type, for applicants that have an existing development project or site(s) that is not in compliance with its approved erosion and sediment control plan, or a project site(s) that is otherwise not in compliance with the Lorain County Comprehensive Stormwater ManagementPlan.

The Administrator shall not review or approve Lorain County Comprehensive Stormwater Management Plans for sublots or other areas within existing development projects that are not in compliance with its approved erosion and sediment control plan or otherwise not in compliance with the Lorain County Comprehensive Stormwater Management Plans. Such development projects include but not limited to, subdivisions or other common plans of development

The County of Lorain reserves the right to withhold relevant inspections and/or other approvalsfrom its departments and/or agencies for development projects or activities in support of development projects that are not in compliance with these Rules.

The County shall not issue building permits for projects regulated under the Lorain County Comprehensive Stormwater Management Plan that have not received approval for a Comprehensive Stormwater Management Plan for said project(s).

18.0 VIOLATIONS

No person shall violate or cause or knowingly permit to be violated any of the provisions of this regulation, or fail to comply with any of such provisions or with any lawful requirements of any public authority made pursuant to this regulation, or knowingly use or cause or permit the use of any lands in violation of this regulation or in violation of any permit granted under this regulation.

19.0 APPEALS

Any person receiving a denial of permit may appeal the determination to the Board of Commissioners or its designee. The Notice of Appeal shall be mailed to the Clerk of the Board of Commissioners within 14 days of the Notice of Denial. A hearing shall take place within thirty (30) days of receipt of the Notice. Written notice of the hearing will be sent to the appellant.

20.0 PENALTY

No person, firm, entity or corporation; including but not limited to, the owner of the property, his agents and assigns, occupant, property manager, and any contractor or subcontractor shall violate any rule adopted or order issued under this section. Notwithstanding Section 17.B of the section, if the Board of County Commissioners determines that a violation of any rule adopted or administrative order issued this section exists, the Board may request, in writing, the prosecuting attorney of the County to seed an injunction or other appropriate relief in the Court of Common Pleas to abate excessive erosion and sedimentation and secure compliance with the rules or order. In granting relief, the Court of Common Pleas may order the construction of sediment control improvements or implementation of other control measures any may assess a civil fine or not less than one hundred ($100.00) or more than five hundred dollars ($500.00). Each day of violation or a rule adopted or administrative order issued under this section shall be considered a separate violation subject to a civil fine.

Lorain County Comprehensive Storm Water Management Plan Fee Schedule

Please make all checks payable to: Lorain County Commissioners

REVIEW FEES

Single Small Lot Residential – Not Part of a Greater Plan of Development **Fee**

Single Projects	$65.00

Residential Developments **Fee**

On five (5) acre or more (these fees are cumulative)	
a. for first five (5) acre	$ 65.00
b. for each additional acre or any part thereof:	$ 10.00/ acre

Non-Residential Property **Fee**

On five (5) acre or more (these fees are cumulative)	
a. for first five (5) acre	$ 250.00
b. for all acreage over 5 acres	$ 50.00 / acre

SITE INSPECTION FEES **Fee**

Both Residential and Non-Residential

Sites 1 – 5 acres	$ 250.00
Each additional acre or portion thereof	$25.00/ acre
** ***Please note*****: Non-compliant sites will incur an additional inspection fee of $100.00 per hour for each inspection required until site meets compliance.**	

Appendix A
Inspection and Maintenance Agreement for SCMs

INSPECTION AND MAINTENANCE AGREEMENT
FOR STORM WATER CONTROL MEASURES

This Inspection and Maintenance Agreement, made this _____ day of _____ 20__, by and between Columbia Northwest Properties, LTD (hereafter referred to as the "Owner") and the ***Lorain County Storm Water Management District***, provides as follows:

WHEREAS, the Owner is responsible for certain real estate described as Lorain County Auditor's Tax Map Parcel Nos._____, located at _____ _____ ***(complete street address or attach legal description of the property***) that is to be developed as _____ ***(Development's official name)***, and referred to as the "Property**;"** and,

WHEREAS, the Owner is providing a storm water management system consisting of the following storm water control measures (SCMs):

1. ***(List all SCMs)***

as shown and described on the attached Comprehensive Storm Water Management Plan ***attached and incorporated fully herein and Marked as "Exhibit A"***; also on file with the Lorain County Storm Water Management District, and,

WHEREAS, to comply with the Comprehensive Storm Water Management Regulations of Lorain County, as they exist on the date of this agreement pertaining to this project, the Owner has agreed to inspect, operate, maintain, and repair the SCMs in accordance with the terms and conditions hereinafter set forth.

NOW, THEREFORE, for and in consideration of the mutual covenants and undertaking of the parties, the parties hereby agree as follows:

A. FINAL INSPECTION and APPROVAL

1. The Owner shall record all easements as described in Section 11.0 of the Comprehensive Storm Water Management Regulations, and shall submit copies thereof to the Lorain County Engineer.

2. The Owner shall install and make functional all SCMs, and request a final inspection by the Lorain County Engineer, as described in Section 12.0 (A) of the Comprehensive Storm Water Management Regulations.

3. The Owner shall further submit to the Lorain County Engineer the Owner's Professional Engineer's Certification and Inspection, including the Owner's professional surveyor's As-Built Survey, as described in Section 12.0 (B) of the Comprehensive Storm Water Management Regulations.

4. The Owner shall further record this complete Inspection and Maintenance Agreement, including copies of the approved Inspection and Maintenance Plan; and the Owner shall submit copies thereof to the Lorain County Engineer as described in Section 12.0 (C) of the Comprehensive Storm Water Management Regulations.

5. Within 30 days of receipt of the above documents, the Lorain County Engineer shall then make a final inspection of SCMs, and the Owner shall make any necessary repairs as described in Section 13.0 of the Comprehensive Storm Water Management Regulations.

6. The Owner shall further pay all fees in accordance with Section 14.0 of the Comprehensive Storm Water Management Regulations.

7. Within 30 days of satisfactory completion of all these requirements, the Lorain County Engineer shall approve in writing, and shall notify the ***Lorain County Storm Water Management District*** that the SCMs are constructed in accordance with the approved plans and specifications of the approved Comprehensive Storm Water Management Plan.

B. MAINTENANCE of STORMWATER CONTROL MEASURES

1. The Owner agrees to maintain in perpetuity the SCMs in accordance with the approved Maintenance Plans described in #2 below, and in a manner that will permit the SCMs to perform the purposes for which they were designed and constructed, and in accordance with the standards by which they were designed and constructed, all as shown and described in the approved Comprehensive Storm Water Management Plan. This includes all pipes and channels built to convey storm water to the SCMs, as well as structures, improvements, vegetation, and non-structural measures provided to control the quantity and quality of the storm water runoff.

2. The Owner shall provide a Maintenance Plan for each SCM. The Maintenance Plans shall include the following:

   i. The location of each SCM and identification of the drainage areas served by each SCM.

   ii. Photographs of each SCM, including all inlets and outlets upon completion of construction.

   iii. A schedule of inspection.

   iv. A schedule for regular maintenance for each aspect of the SCM and description of routine and non-routine maintenance tasks to ensure continued performance of the SCM as detailed in the approved Comprehensive Storm Water Management Plan. The Owner shall also provide a maintenance inspection checklist written so the average person can understand it. The maintenance plan shall include detailed drawings of each SCM and outlet and control structures (with the parts of the structures labeled). This schedule may include additional standards, as required by the ***Lorain County Storm Water***

Management District, to ensure continued performance of SCMs permitted to be located in, or within 50 feet of, water resources.

v. Location and documentation of all access routes and access and maintenance easements on the Property.

Alteration or termination of these stipulations is prohibited.

3. The Owner shall maintain, update, and store the inspection, maintenance and repair records for the SCMs.

4. The Owner shall regularly inspect, shall perform all maintenance in accordance with the Inspection and Maintenance Plan, and shall complete all repairs identified, and any additional repairs or improvements necessary to make the SCMs function properly as requested in writing by the ***Lorain County Storm Water Management District.***

C. INSPECTION, MAINTENANCE and REPAIR of SCMs

1. During the first year of operation, the Owner shall inspect all SCMs listed in this Agreement, at a minimum of every three (3) months, and after major storm water runoff events.

2. The Owner's Professional Engineer shall inspect all SCMs listed in this Agreement at least once each year, and shall submit his report to the ***Lorain County Storm Water Management District*** including his recommendations and including his summary of the prior year's activities.

3. Upon request, The Owner shall submit Inspection Reports, Maintenance Logs, and Repair Records in writing to the ***Lorain County Storm Water Management District*** within seven (7) days. The reports shall be on the form attached as Exhibit C.

4. The Owner grants permission to the ***Lorain County Storm Water Management District*** to enter the Property with prior notification to the Owner to inspect all aspects of the SCMs and related drainage whenever the ***Lorain County Storm Water Management District*** deems necessary to verify that the SCMs are being maintained and operated in accordance with the terms and conditions hereinafter set forth. The ***Lorain County Storm Water Management District*** shall maintain public records of these reports of such site inspections, and shall deliver copies of said reports to the Owner, and shall indicate in writing any corrective actions and repairs or improvements necessary to make the SCMs function properly.

5. The Owner shall complete all corrective actions and repairs within five (5) working days of their discovery through Owner inspections, or through a request from the ***Lorain County Storm Water Management District.*** If repairs do not occur within this five (5) day period, the Owner shall request written approval from the ***Lorain County Storm Water Management District*** for his schedule of repairs.

6. In the event of any default or failure by the Owner in the performance of any of the covenants and warranties pertaining to the maintenance of the SCMs, or in the event the Owner fails to maintain the SCMs in accordance with the approved design standards and Inspection and Maintenance Plan, or, in the event of an emergency as determined by the ***Lorain County Storm Water Management District,*** in the sole discretion of the ***Lorain County Storm Water Management District,*** after providing reasonable notice to the Owner, may enter the property and take whatever steps necessary to correct deficiencies and to charge the cost of such repairs to the Owner. The Owner shall reimburse the ***Lorain County Storm Water Management District*** upon demand, within ten (10) days of receipt thereof for all actual cost incurred by the ***Lorain County Storm Water Management District*** (or later with written permission from the ***Lorain County Storm Water Management District***). All costs expended by the ***Lorain County Storm Water Management District*** in performing such necessary maintenance or repairs shall constitute a lien against the properties of the Owner. Nothing herein shall obligate the ***Lorain County Storm Water Management District*** to maintain the SCMs.

D. FUNDING

The Owner shall specify the method of funding for the perpetual inspection, operation, and maintenance of the SCMs listed in this Inspection and Maintenance Agreement. A description of the funding mechanism shall be submitted with its application to the ***Lorain County Storm Water Management District*** and approved by the ***Lorain County Storm Water Management District.***

E. INDEMNIFICATION

1. The Owner hereby agrees to save, hold harmless, and to indemnify the ***Lorain County Storm Water Management District*** and its employees and officers and agents from and against all liability, losses, claims, demands, costs and expenses arising from, or out of, default or failure by the Owner to maintain the SCMs, in accordance with the terms and conditions set forth herein, and from acts of the Owner arising from, or out of, the construction, operation, repair or maintenance of the SCMs.

2. The Owner hereby releases the ***Lorain County Storm Water Management District*** from all damages, accidents, casualties, occurrences, or claims that might arise or be asserted against the ***Lorain County Storm Water Management District*** from the presence, existence, or maintenance of the SCMs.

3. The parties hereto expressly do not intend by execution of this Inspection and Maintenance Agreement to create in the public, or any member thereof, any rights as a third party beneficiary, nor to authorize anyone not a party hereof to maintain a suit for any damages pursuant to the terms of this Inspection and Maintenance Agreement.

4. This Inspection and Maintenance Agreement shall be a covenant that runs with the land and shall inure to the benefit of and shall be binding upon the parties hereto, their respective successors and assigns, and all subsequent owners of the property.

5. The current Owner shall promptly notify the ***Lorain County Storm Water Management District*** when the Owner legally transfers any of the Owner's responsibilities for the SCMs. The Owner shall furnish to the ***Lorain County Storm Water Management District*** a copy of any document of transfer, executed by both parties.

6. Upon execution of this Inspection and Maintenance Agreement, The ***Lorain County Storm Water Management District*** shall record it in the Recorder's Office of ***Lorain County***, Ohio, at the Owner's expense.

7. In the event that the ***Lorain County Storm Water Management*** District shall determine in its sole discretion that any or all of the SCMs are no longer necessary, then the ***Lorain County Storm Water Management District*** shall, at the request of the Owner, execute and record a release of this agreement, at the Owner's expense.

IN WITNESS WHEREOF, the Owner has caused this Inspection and Maintenance Agreement to be signed in its names by a duly authorized person.

By:_____, _____

By:_____, PE, PS
Lorain County Engineer, on behalf of the Lorain County Storm Water Management District

Approved as to Form:

_____
By: Assistant County Prosecutor

_____
Print Name