Jefferson County, WV

Stormwater Management Ordinance
Department of Engineering

August, 2013

ORDINANCE AND ORDER

An Ordinance and Order to ADOPT this "Stormwater Management Ordinance".

WHEREAS, In 2002 the State of West Virginia signed a Memorandum of Understanding agreeing to join with the states of Delaware, Maryland, New York, Pennsylvania, Virginia and the District of Columbia, to improve water quality in the Chesapeake Bay; and

WHEREAS, The West Virginia Department of Environmental Protection (WVDEP) is required to ensure that the State of West Virginia meets the Environmental Protection Agency federally mandated TMDL requirements; and

WHEREAS, The West Virginia Department of Environmental Protection formally requested in a letter received on September 23, 2011, that Jefferson County adopt the 1-inch rainfall stormwater runoff capture requirement as part of their current stormwater management regulations; and

WHEREAS, it is the desire of the County Commission of Jefferson County, West Virginia to adopt stormwater management quality control regulations to reduce pollution from stormwater runoff from land development in Jefferson County, for the public safety, health, and well-being; and

WHEREAS, the stormwater quality control regulations are in addition to the existing stormwater quantity control regulations, and all of which shall be combined into one ordinance;

NOW, THEREFORE, BE IT ORDAINED AND ORDERED BY The County Commission of Jefferson County, by authority of the Code of the State of West Virginia, under Chapter 7, Article 1, Chapter 8A, Articles 4 & 5 and Chapter 22, Articles 11 & 12; that this Ordinance and Order shall take effect and be in force from the 1st day of January, 2014, the public welfare requiring it.

PASSED AND APPROVED BY The County Commission of Jefferson County, West Virginia on the 31st day of October, 2013.

BY: Dale Manuel

Dale Manuel, President
County Commission of Jefferson County

ATTEST:

Jennifer Maghan
CLERK OF JEFFERSON COUNTY

COUNTY COMMISSION JEFFERSON COUNTY WEST VIRGINIA

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ARTICLE I GENERAL PROVISIONS

A. STATUTORY AUTHORITY

(1) Short Title

(a) This Ordinance and Ordinances supplemental or amendatory thereto shall be known and may be cited as the "Stormwater Management Ordinance of Jefferson County" and hereinafter referred to as the "Ordinance."

(b) EFFECTIVE DATE: January 1, 2014

(2) The provisions of this Ordinance are enacted pursuant to West Virginia Code:

- Chapter 7, County Commissions and Officers, Article 1, "County Commissions Generally"
- Chapter 8A, Land Use Planning, Article 4, "Subdivision and Land Development Ordinance"
- Chapter 8A, Land Use Planning, Article 5, "Subdivision or Land Development"
- Chapter 22, Environmental Resources, Article 11, "Water Pollution Control Act"
- Chapter 22, Environmental Resources, Article 12, "Ground Water Protection Act"

(3) The provisions of this Ordinance are also enacted pursuant to the Chesapeake Bay Restoration Act of 2000.

B. PURPOSE AND OBJECTIVES

This Ordinance has the following purpose:

(1) Protect, maintain, and enhance the environment of Jefferson County and the public health, safety, and general welfare of the citizens of Jefferson County by controlling discharges of pollutants to Jefferson County's stormwater system, and maintain and improve the quality of the receiving waters into which all stormwater flows, including, without limitation, lakes, rivers, streams, ponds, wetlands, and groundwater of the community

(2) Enable Jefferson County to comply with the West Virginia Department of Environmental Protection (WVDEP)-administered National Pollutant Discharge Elimination System (NPDES) stormwater permit program and applicable regulations (40 CFR, §122.26) for stormwater discharges

(3) Enable Jefferson County to comply with the Environmental Protection Agency's (EPA) Total Maximum Daily Loads (TMDLs) Water Quality Standards established for the Potomac River Basin

(4) Enable Jefferson County to comply with the West Virginia Water Pollution Control Act, West Virginia Code, Chapter 22, Article 11

(5) Allow Jefferson County to exercise the powers granted in West Virginia Code §8A-4, Article 4, "Subdivision and Land Development", Article 5, "Subdivision or Land Development," and §22, Article 12, "Ground Water Protection Act," which provide, among other powers that counties have with respect to stormwater systems and stormwater management programs, the power by ordinance or resolution, as the case may require, and by appropriate action based thereon to do the following:

(a) Establish standards for setback requirements, Lot sizes, streets, sidewalks, walkways, parking, easements, rights-of-way, drainage, utilities, infrastructure, curbs, gutters, street lights, fire hydrants, stormwater management, and water and wastewater facilities

(b) Adopt any rules and regulations deemed necessary to accomplish the purposes of this Ordinance, including the adoption of a system of fees for services and permits

(c) Establish standards to regulate the quantity of stormwater discharged and to regulate stormwater contaminants that may be necessary to protect water quality

(d) Establish standards for flood-prone or subsidence areas

(e) Review and approve plans and plats for stormwater management in proposed residential and nonresidential subdivisions as applicable under Subsection D below

(f) Issue permits for stormwater discharges, or for the construction, alteration, extension, or repair of stormwater facilities

(g) Suspend or revoke permits when it is determined that the permittee has violated any applicable ordinance, resolution, or condition of the permit

(h) Ensure that required improvements are installed and not avoided by a series of minor subdivisions or land developments

(i) Define control measures for drainage, erosion, and sediment

C. ADMINISTERING ENTITY

(1) Pursuant to West Virginia Code §7, Article 1, "County Commissions Generally," any county commission in the State of West Virginia is hereby authorized and empowered to own, acquire, construct, equip, operate, and maintain within the respective county a stormwater system, stormwater works, and stormwater management program as defined herein.

(2) Jefferson County is the entity responsible for administering the provisions of this Ordinance.

D. APPLICABILITY

(1) This Ordinance shall be applicable to all activities as defined herein. A Stormwater Management Plan for any new development or redevelopment shall be required as described below. In addition to Stormwater Quantity and Quality Control Plans, stormwater Runoff conveyance systems, Erosion and Sediment Control Plans, and stormwater management facilities' maintenance requirements must be included in all Stormwater Management Plans. Stormwater management quantity and quality control shall be applicable as follows:

(a) *Quantity* control criteria for newly developed impervious surfaces and/or changes in land cover shall apply to

(i) Minor Site Developments, as defined by the Jefferson County Subdivision and Land Development Regulations, requiring a Limited Site Plan, and

(ii) Rural Site Plans, and

(iii) Any Site Development requiring a Full Site Plan, and

(iv) Any Major residential or commercial subdivision requiring a Preliminary Plat.

(b) In addition to the quantity control requirements noted above, *Quality* control criteria for newly developed impervious surfaces shall apply to

(i) Rural Site Plans involving the Development of 5,000 square feet or more of impervious surface or resulting in more than one acre of land disturbance, and

(ii) Any Site Development requiring a Full Site Plan, and

(iii) Any Major residential or commercial subdivision requiring a Preliminary Plat.

(2) The following activities are exempt from this Ordinance:

(a) Any emergency activity that is immediately necessary for the protection of life, property, or natural resources

(b) Projects that do not require Site Plans or Preliminary Plat Plans. This includes Minor Subdivisions as defined under the Subdivision and Land Development Ordinance.

(c) The construction of single-family or duplex residential structures or additions or modifications to existing single-family or duplex residential structures

(i) However, despite the exemption, minimal Erosion and Sediment control measures shall be required and include the following:

1. Installation and maintenance of a stone construction entrance during the entire construction phase to reduce the transport of sediment from the site by vehicles and equipment leaving the site, and
2. Installation of a Silt Fence during the entire construction phase to control erosion and sediment runoff from the Site, and
3. All disturbed areas on the Site shall be stabilized, within seven days of final grading or becoming inactive for more than 30 days, with permanent vegetation or protective ground cover suitable for the time of year.

(ii) The Erosion and Sediment control measures shall be constructed and installed according to the details and specifications as established by the Chief County Engineer.

(iii) The minimal stone construction entrance and Silt Fence shall be in place at the time of the footer inspection. Failure to meet minimal requirements will result in a failed footer inspection under the building code.

The final grading and stabilization of the Site shall be complete at the time of final inspection. Failure to meet this requirement will result in a failed final inspection and withholding of the Use and Occupancy Certificate issued under the building code.

(d) Any logging or Agricultural Activity that is consistent with an approved farm conservation plan or a timber management plan prepared or approved by the Eastern Panhandle Conservation District.

(e) Repairs to any Stormwater Management Facility.

(f) Subdivision Plats or Site Plans approved before the adoption date of this Ordinance. However, any and all Subdivision Plats and Site Plans approved prior to the adoption of this Ordinance shall still be required to meet the stormwater management requirements in effect at the time of their approval and under which they were approved.

(g) Any vested development that has an active application or submittal at the time of adoption of this ordinance and meets at least one of the following criteria, is exempt from this ordinance.

- An approved master planned development with a current CIS that has submitted at least the first phase of a multi-phased master planned development, or
- Any site plan within an approved non-residential subdivision that has existing central water quantity control structures shall be required to

provide stormwater management controls under the regulations, conditions and terms in effect at the time of the original approval.

However, if, after the adoption of this ordinance, there is any physical expansion to said exclusion listed above, this ordinance shall apply to the expanded area only.

(3) Compatibility with Other Permits and Ordinance Requirements

(a) Compliance with the requirements herein does not create exclusion to permitting requirements from the WVDEP, the U.S. Army Corps of Engineers, or any other agency or reviewing body that has jurisdiction over the proposed project area.

(b) Whenever this Ordinance imposes a conflicting restriction regarding stormwater regulation, the provisions of the more restrictive ordinance shall control.

E. SEVERABILITY

If any section, clause, sentence, part, or provision hereof shall be held to be invalid, or unconstitutional, by any court of competent jurisdiction, such decision of the court shall not affect or impair the remaining sections, clauses, sentences, parts, or provisions of this Ordinance.

F. INCORPORATION BY REFERENCE

(1) For the purposes of this Ordinance, Jefferson County has adopted by reference the following published standards:

(a) *West Virginia Stormwater Management and Design Guidance Manual (2012)*

(b) Chesapeake Stormwater Network Technical Bulletin No. 1, "Stormwater Design Guidelines for Karst Terrain in the Chesapeake Bay Watershed," version 2.0 (June 2009)

(c) *West Virginia Erosion and Sediment Control Best Management Practice Manual* (2006)

(d) *West Virginia Erosion and Sediment Control Handbook for Developing Areas*

(e) *Virginia Stormwater Best Management Practices Clearinghouse*

(f) *Maryland Stormwater Design Manual*

(g) *Pennsylvania Stormwater Best Management Practices Manual*

(2) All Stormwater Management Plans shall be consistent with the regulations and design standards established in the listed published standards.

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ARTICLE II STORMWATER MANAGEMENT PROGRAM PROCEDURES AND REQUIREMENTS

A. STORMWATER MANAGEMENT PLAN REQUIREMENT, REVIEW, AND APPROVAL

(1) Any person or entity proposing to perform any Land Development Activity(ies) pursuant to the applicability standards outlined under Article I.D. of this Ordinance shall submit a complete Stormwater Management Plan to the Jefferson County Engineering Department as part of a subdivision Preliminary Plat or Site Plan submittal and approval.

(a) The Jefferson County Stormwater Management Plan is required in addition to any permitting or Notice of Intent issuances required by the WVDEP for land disturbance activities in excess of one acre.

(2) Each Stormwater Management Plan submittal shall include the minimum content specified in Article II and meet the minimum stormwater design requirements specified in Article IV of this Ordinance.

(3) The Stormwater Management Plan shall be in a format acceptable to the Jefferson County Engineering Department and contain any professional certifications and seals required by them and/or as required by any applicable professional licensing board in the State of West Virginia. This shall include, but is not limited to, any surveys, engineered plans, and details, specifications, design calculations, analyses, or reports.

(4) Unless specified otherwise by this Ordinance, the Stormwater Management Plan must comprise the following:

(a) Erosion and Sediment Control Plan in accordance with Article II.B

(b) Stormwater Control and Conveyance Plan in accordance with Article II.C

(c) Maintenance Plan requirements in accordance with Article II.D

(5) No Site Plan and/or Subdivision Preliminary Plat Plan shall be approved until a satisfactory Stormwater Management Plan including all components (Erosion and Sediment Control Plan, Stormwater Control and Conveyance Plan, and Maintenance Plan) has been submitted, undergone a review for compliance with the requirements of this Ordinance and been approved by the Jefferson County Engineering Department.

(6) Approval of the Subdivision Plat or Site Plan by the Jefferson County Engineering Department shall constitute approval of the Stormwater Management Plan.

(7) No owner or developer shall commence any land disturbance activity prior to meeting the requirements of this Ordinance, if applicable.

B. EROSION AND SEDIMENT CONTROL

(1) Review and Approval of Erosion and Sediment Control Plans

(a) No changes shall be made in the contour of the land and no grading, excavating, removal, or destruction of topsoil, trees, or other vegetative cover shall commence until an Erosion and Sediment Control Plan for stabilizing disturbed areas has been reviewed and approved by the Jefferson County Engineering Department.

(b) The Erosion and Sediment Control Plan shall be submitted as part of the Stormwater Management Plan at the same time the Subdivision Plat or Site Plan is to be submitted.

(c) The owner or developer shall submit the Erosion and Sediment Control Plan, and any supporting computations, to the Jefferson County Engineering Department for review and approval as part of the Stormwater Management Plan. The Erosion and Sediment Control Plan shall contain sufficient information and notes to describe how soil Erosion and off-site sedimentation will be minimized. The Jefferson County Engineering Department shall review the plan to determine compliance with the *West Virginia Erosion and Sediment Control Handbook for Developing Areas* and the regulations established in this Ordinance. The plan shall serve as a basis for all subsequent grading and stabilization.

(d) All plans must meet the requirements of the WVDEP's Construction Stormwater NPDES regulations, as applicable. In the event of conflict between the Jefferson County Subdivision Ordinance's regulations and WVDEP's requirements, WVDEP's requirements shall prevail.

(e) Approval of the Subdivision Plat or Site Plan by the Jefferson County Engineering Department shall constitute approval of the Erosion and Sediment Control Plan.

(2) Contents of Erosion and Sediment Control Plans

(a) The applicant is responsible for submitting an Erosion and Sediment Control Plan that meets the requirements of the Jefferson County Engineering Department, this Ordinance, and the *West Virginia Erosion and Sediment Control Handbook for Developing Areas*. The plan shall include sufficient information to evaluate the potential impacts of the proposed grading on water resources and the effectiveness and acceptability of measures proposed to minimize soil erosion and off-site sedimentation.

(b) The Erosion and Sediment Control Plan shall be submitted as a part of the Stormwater Management Plan. The Erosion and Sediment Control Plan shall be at an appropriate scale and include, at a minimum, the following information:

(i) North arrow and graphic scale

(ii) Symbol key for all erosion and sediment control measures (e.g., stabilized construction entrance, silt fence, check dams, culvert inlet protection, etc.) shown on the plan

(iii) The existing and proposed topography/grading contours

(iv) The limits of the disturbed area

(v) Storm drainage provisions, including velocities and peak quantities of the Q10 discharge rates at outfalls

(vi) Erosion and sediment control provisions to minimize erosion and prevent off-site sedimentation

1. Provisions to preserve topsoil and limit disturbance
2. Details of grading practices
3. Design details and construction notes for structural controls
4. Details and notes of temporary and permanent stabilization measures, including placement of the notes included in Figure 1

Figure 1- Erosion and Sediment Control Notes

1. Any area of exposed soil where no construction activity is anticipated for a period of longer than three weeks or where construction activity has stopped for three weeks shall be temporarily stabilized.
2. Following initial soil disturbance or re-disturbance, permanent stabilization shall be completed within seven calendar days after completion of all perimeter dikes, swales, ditches, perimeter slopes, and all slopes greater than 3 horizontal to 1 vertical (3:1); and seven calendar days after reaching final grade for all other disturbed or graded areas.

   These provisions do not apply to those areas that are shown on the plan for material storage or for those areas on which actual construction activities are currently being performed.

   These time requirements may be extended, as deemed necessary by the Jefferson County Engineer in the event that adverse conditions prevent compliance with the stated time limitations for the completion of permanent or temporary stabilization.
3. Stabilization will be considered adequate when the following conditions are met:
   a) Water courses, stream banks, and drainage easements shall be 100% stabilized and free from erosion and deposition.
   b) Slopes steeper than 10% shall have at least 98% stable ground cover, as determined by the Jefferson County Engineer.
   c) All other areas shall have at least 85% stable ground cover, as determined by the Jefferson County Engineer.
   d) Grass vegetation shall have reached a minimum of 3 inches of height or have been mowed back to a minimum of 2 inches of height.
4. For all projects adjacent to or within 500 feet of a continuously flowing stream, no grading, excavating, removal, or destruction of topsoil, trees, or other vegetative cover, or construction activity shall result in point or non-point loading of suspended matter such that turbidity standards spelled out in the Water Resources Board legislative rules are violated. Said standards state that turbidity shall not exceed 10 NTUs over background turbidity when the background is 50 NTUs or less, or have more than a 10% increase in turbidity (plus 10 NTUs minimum) when the background turbidity is more than 50 NTUs.
5. Indication whether an off-site borrow pit is (or is not) proposed for this project.
6. Maintenance shall be performed as necessary to ensure that all erosion and sediment control measures are performing as designed. The Jefferson County Engineer may require modifications to an approved plan, require additional sediment and erosion control measures, or cause new plans to be submitted as a result of field inspection revealing the approved plans do not provide adequate protection.
7. All residential and commercial/industrial building Lots shall have a stabilized construction entrance installed prior to beginning construction on the Lot.

(vii) Temporary and permanent seeding specifications, including:
1. Type of seed (mixture) and application rate
2. Type of lime and fertilizer and the associated application rates
3. Type of mulching, application rate, and type of anchoring

(viii) Sequence of construction outlining the installation and maintenance of erosion and sediment controls, including permanent and temporary stabilization and the various stages or phases of earth disturbance and construction. The sequence of construction shall, at a minimum, outline the sequence for the installation of erosion and sediment control devices for the following applicable activities:

1. Installation of the stabilized construction entrance
2. Clearing and grubbing for those areas necessary for installation of perimeter controls
3. Construction of perimeter controls (e.g., dikes, silt fence, sediment traps, sediment basins, etc.)
4. Remaining clearing and grubbing
5. Road grading
6. Grading of ditch lines and drainage swales
7. Utility installation
8. Grading for stormwater management facilities
9. Grading for the remainder of the site
10. Final grading, landscaping, or stabilization
11. Maintenance schedule for all erosion and sediment control devices
12. Removal of temporary erosion and sediment controls

(ix) Any off-site source of borrow materials that is located in Jefferson County, and not regulated directly by an agency of the state or federal governments, shall be so noted on the Erosion and Sediment Control Plan, and an Erosion and Sediment Control Plan shall be provided for the borrow pit. If no off-site borrow source is proposed, it shall be so noted on the Erosion and Sediment Control Plan.

(x) The following note shall be placed on the Site Plan, Preliminary Plat, and Final Plat of subdivision: "All residential and nonresidential building lots shall have a stabilized construction entrance installed prior to beginning construction on the lot."

(xi) Computations as may be necessary to show adequate sizing of erosion and sediment control measures.

(c) The Jefferson County Engineer may waive the inclusion of any specific information required by this section that is considered by the Jefferson County Engineer to not be required or applicable for the affected site.

(3) Modifications to the Erosion and Sediment Control Plan.

(a) The Jefferson County Engineer may require modifications to an approved plan, require additional sediment and erosion control measures, or cause new plans to be submitted as a result of field inspection revealing that the approved plans do not provide adequate protection. Modifications may also be requested by the developer or engineer of record due to unforeseen field conditions.

C. Stormwater Control and Conveyance Plan Requirements

(1) All Stormwater Control and Conveyance Plans shall be appropriately sealed and signed by a professional engineer in adherence to all minimum standards and requirements pertaining to the practice of that profession in accordance with West Virginia Code Chapter 30, Professions and Occupations, and attendant regulations certifying that the plan meets all submittal requirements outlined in this Ordinance and is consistent with good engineering practice.

(2) The developer is responsible for submitting a Stormwater Control and Conveyance Plan that meets the design requirements of this Ordinance. The plan shall be accompanied by a report that includes sufficient information to evaluate the environmental characteristics of affected areas, the potential impacts of the proposed development on water resources, and the effectiveness and acceptability of measures proposed for managing stormwater runoff. The developer or builder shall certify on the drawings that all clearing, grading, drainage, construction, and development shall be conducted in strict accordance with the approved plan. The minimum information submitted for support of stormwater management shall include those components listed in subsection (3) of this section.

(3) The Stormwater Control and Conveyance Plan shall include the following:

(a) Name, address, and telephone number of all persons having a legal interest in the property

(b) Tax reference number and parcel number of the property or properties affected

(c) Existing and proposed buildings, roads, and parking areas

(d) Existing and proposed drainage areas, including areas necessary to determine downstream analysis for proposed stormwater management facilities

(e) Existing and proposed utilities, easements, and structural stormwater management and sediment control facilities

(f) Proposed land use with tabulation of the percentage of surface area to be adapted to various uses

(g) Clearing and grading limit boundaries

(h) A 1-inch = 200-foot topographical base map of the site, which extends a minimum of 200 feet beyond the limits of the proposed development

(i) Existing surface water drainage including streams, ponds, culverts, ditches, drainage patterns, and wetlands

(j) A written or graphic inventory of the natural resources at the site and surrounding area, including forest cover, wetlands, and other native vegetative areas, as it exists prior to the commencement of the project and a description of the watershed and its relation to the project site

(k) Environmentally sensitive features as defined in the Jefferson County Subdivision Ordinance that provide particular opportunities or constraints for Development

(l) A stable maintenance route to the stormwater management feature

(m) All necessary construction specifications

(n) SWM features to meet all Natural Resources Conservation Service (NRCS)-378 pond design criteria, including embankment width, core trench, anti-seep collars, emergency spillway, etc., as described in at least one of the following documents as recommended by the *West Virginia Stormwater Management and Design Guidance Manual*:

(i) *West Virginia Erosion and Sediment Control Best Management Practice Manual*

(ii) *Virginia Stormwater Best Management Practices Clearinghouse*

(iii) *Maryland Stormwater Design Manual*

(iv) *Pennsylvania Stormwater Best Management Practices Manual*

(o) Analysis of the impacts of stormwater flows downstream. The design release rate of the structure shall be modified if there is a risk that any increase in flooding or stream channel erosion will occur at any point.

(p) A sequence of construction

(q) A plan and profile view through the centerline of the SWM feature, including the forebay area, micropool area, embankment, and outlet, showing existing and proposed grades and all pertinent features at accurate elevations

(r) Geotechnical properties for the hydrologic and structural properties of soils, especially for dam embankments, shall be described in a soils report if deemed necessary by the Jefferson County Engineer. The submitted report shall include boring depth, sampling frequency and types, and associated laboratory testing with results and conclusions, and follow the criteria in Appendix B of the *West Virginia Stormwater Management and Design Guidance Manual*. Soil properties for infiltration facilities shall also conform to the guidance and specification outlined in

the *West Virginia Stormwater Management and Design Guidance Manual.*

(s) Outlet protection information including dimensions, depth, geotextile, and stone sizing

(t) Tabular summary of all SWM facilities provided in spreadsheet format (Microsft Excel or equivalent) with the following details;

(i) Facility location based upon West Virginia State Plane Coordinate System.

(ii) Description of type of system

(iii) Total area the facility is providing stormwater management services for.

(v) Digital data submissions of the same information found on the printed sets of plans are required in addition to the printed sets of plan submission requirement. Printed sets of plans remain mandatory and will continue to be recognized as the official document.

The following digital formats are acceptable:
DXF: AutoCAD Drawing Exchange Format, release 13 or later
DWG:AutoCAD Drawing File, release 13 or later

Data formats that are native to GIS (i.e., shapefiles and geodatabases) are also acceptable, though not required. Additional formats will only be accepted if they are compatible with GIS and increase the efficiency for data capture and integration.

The following coordinate system, horizontal datum and mapping units are required for all digital data submissions:

Coordinate System: State Plane, West Virginia North, FIPS Zone 4701
Horizontal Datum: NAD83
Mapping Units: US Survey Feet

(w) Any other information required by the Jefferson County Engineering Department or representative thereof

(x) A Stormwater Control and Conveyance Plan shall be submitted including all hydrologic and hydraulic design calculations for the predevelopment and post-development conditions for the design storms specified in this Ordinance. This report shall be dated, and signed and sealed by the Engineer of Record. Such calculations shall include the following:

(i) Description of the design storm frequency, intensity, and duration

(ii) Time of concentration

(iii) Soil Curve Numbers (CNs) or runoff coefficients

(iv) Peak runoff rates and total runoff volumes for each watershed

(v) Infiltration rates, where applicable

(vi) Culvert and/or channel capacities

(vii) Flow velocities

(viii) Data on the increase in rate and volume of runoff for the specified design storms

(ix) Documentation of sources for all computation methods and field test results

(4) The Stormwater Control and Conveyance Plans shall contain at a minimum, the following. Additional information may be required at the discretion of the County Engineer.

(a) Plan over Profile sheets of any storm sewer system shall be shown on the preliminary plat and/or site plan, as applicable; and shall show:

(1) Inlet identification that corresponds with plan view

(2) Top and bottom of storm inlet elevations.

(3) Pipe size, shape, material type & length.

(4) Pipe inlet and outlet invert elevations.

(5) Slope of pipe.

(6) Outlet end-section type.

(7) Outfall rip-rap apron/energy dissipation device at 0% grade.

(8) Q10 flow rate and velocity, or any other flow rate and velocity information as required under any other State or local regulations pertaining to stormwater management.

(9) Hydraulic Grade line

(10) All applicable details of inlets, and other associated structures

(b) Culverts shall be shown in both plan and profile views on the preliminary plat and/or site plan, as applicable, and shall show:

(1) Culvert identification that corresponds with plan view

(2) Invert elevations at the inlet and outlet of the culvert.

(3) Pipe size, shape, material type & length.

(4) Slope of pipe.

(5) Outlet end-section type.

(6) Outfall rip-rap apron/energy dissipation device at 0% grade.

(7) Q10 flow rate and velocity, or any other flow rate and velocity information as required under any other State or local regulations pertaining to stormwater management.

(c) Drainage swales shall be shown on the preliminary plat and/or site plan, as applicable, and shall show:

(1) Grading of the swales.

(2) Typical cross section of the swale showing the 10-year water surface.

(3) Any required lining.

(4) Slope of the swale.

(5) Q10 flow rate and velocity, or any other flow rate and velocity information as required under any other State or local regulations pertaining to stormwater management.

(6) Any applicable details.

(d) The Stormwater Control and Conveyance Plan shall include all hydrologic and hydraulic design calculations for all storm sewer, roadway culverts and drainage swale conveyance systems, including a narrative explaining the design methodologies. The report shall be dated and signed and sealed by the Engineer of Record.

D. MAINTENANCE REQUIREMENTS

(1) The design and planning of all stormwater management facilities shall include detailed maintenance procedures to ensure their continued function. These maintenance procedures will identify the parts or components of a stormwater management facility that need to be maintained and the equipment and skills or training necessary.

(2) The Stormwater Management Plan must ensure access to all stormwater management facilities at the site for the purpose of inspection and repair by securing all the maintenance access easements needed on a permanent basis. These easements will be recorded and will remain in effect even with the transfer of title to the property.

(3) Prior to the approval of any Stormwater Management Plan that has stormwater management facilities requiring access easements, the developer or owner of the site must demonstrate that all required easements are obtained and recorded - or will be recorded - prior to recordation of the Final Plat or final approval of the Site Plan.

(4) Ownership, maintenance, inspections, and cleaning of stormwater management facilities shall be the responsibility of the Homeowners Association or Lot Owners Association and/or property owner or other responsible entity. All stormwater management facilities shall be conveyed by deed to the responsible party at the same time transfer of all other common areas is required under the Subdivision

and Land Development Regulations. This shall be stated on the Subdivision Preliminary Plat, Final Plat, and/or Site Plan, along with any other required maintenance plan notes and inspection schedule.

(5) Inspection and maintenance of stormwater facilities

(a) The Homeowners Association or Lot Owners Association and/or property owner or other entity responsible for the maintenance of the stormwater management facilities constructed pursuant to this Ordinance shall maintain in good condition and promptly repair and restore all grade surfaces, walls, drains, dams and structures, discharge structures, trash racks, vegetation, erosion and sediment control measures, and other protective devices. Such repairs or restoration and maintenance shall be in accordance with the approved plans and specifications.

(b) The party responsible for the maintenance of the stormwater management system shall maintain and provide written records of all maintenance and repairs within 30 days of work completion to the WVDEP. A copy of these records shall also be submitted to the Jefferson County Engineering Department as notification that maintenance work was performed.

(c) A periodic maintenance schedule shall be developed for the life of any stormwater management facility. This maintenance schedule shall be included in the approved Stormwater Management Plan and placed on approved Site Plans and Subdivision Preliminary and Final Plats, along with the following statement:

"All maintenance and repair, periodic inspections, and cleaning of stormwater management facilities shall be the responsibility of the Homeowners Association or Lot Owners Association, and/or property owner or other responsible entity, and shall be performed in accordance with the Jefferson County Stormwater Management Ordinance under which the project was approved."

(d) The minimum maintenance requirements listed on the following page shall be printed on the Stormwater Management Plan, Site Plan, Preliminary Plat Plan, and Final Plat:

(6) Inspection report requirements (see Attachment B)

Jefferson County, West Virginia

Stormwater Management Facilities Maintenance Requirement

1. In accordance with the Jefferson County Stormwater Management Ordinance under which this project was approved, periodic inspection and maintenance shall be performed to ensure the proper function of all stormwater management facilities.

2. All maintenance and repair, periodic inspections, and cleaning of stormwater management facilities shall be the responsibility of the Homeowners Association or Lot Owners Association, and/or property owner or other responsible entity, and shall be performed in accordance with the Jefferson County Stormwater Management Ordinance under which the project was approved.

STORMWATER FACILITY MAINTENANCE AND INSPECTION SCHEDULE

1. Regular Maintenance:
   - A. Mowing (seasonal) and removal of trash and debris shall be performed on a monthly basis at a minimum.
   - B. Repair and stabilization of eroded areas shall be performed during growing season and on an annual basis at a minimum.

2. Periodic Inspections:

All elements of the stormwater management facilities shall be inspected for proper operation and maintenance as follows:

- A. After the first year of operation
- B. Once every year after the first year of operation
- C. Within 15 days after any maintenance activities are performed and completed
- D. After a 3-inch rainfall within a 24-hour period storm event (2-year, 24-hour storm event)
- E. As requested by the Jefferson County Engineering Department in response to complaints or notice of possible violations

Best Management Practices (BMPs) Maintenance Procedures

1. Maintenance for rain gardens, vegetated drainage swales, riparian buffers, infiltration basins, etc., shall be performed in accordance with the BMP maintenance specifications in the West Virginia Department of Environmental Protection's *West Virginia Stormwater Management and Design Guidance Manual.*

Project-Specific Maintenance Procedures Required

(Determined by the Stormwater Management Plan Engineer-of-Record)

1.

2.

3.

ARTICLE III WAIVERS AND MODIFICATIONS OF REQUIREMENTS

A. GENERAL

(1) This Article is intended to provide a procedure to achieve the water quality and quantity objectives of this Ordinance while providing reasonable flexibility for difficult site conditions and innovative site design approaches.

(2) The provisions of this Ordinance are the minimum requirements for the protection of the public's health, safety, and welfare, and should be strictly adhered to. Written requests for waivers to or modifications of these requirements should be granted only where the requirement of strict adherence would be unreasonable, cause undue hardship, or an alternative standard can be demonstrated to provide equal or better results.

B. REQUEST FOR WAIVER OR MODIFICATION

(1) Every person or entity defined under Article I.D. of this Ordinance shall submit a complete Stormwater Management Plan unless a written request for a waiver seeking relief from the stormwater management standards of this Ordinance is filed with the Jefferson County Engineering Department and such request is granted by the Jefferson County Engineering Department.

(2) If the owner or developer demonstrates to the satisfaction of the Jefferson County Engineering Department that any stormwater management requirements of this Ordinance are unreasonable or cause undue hardship as it applies to the proposed land disturbance activity(ies), the Jefferson County Engineering Department may grant relief to such standards, provided that such relief meets the findings specified under Section B.(4) below.

(3) The owner or developer shall submit all requests for waivers in writing to the Jefferson County Engineering Department and shall include such requests as a part of the Stormwater Management Plan review and approval process as defined under Article II.D. of this Ordinance. The owner or developer shall state in full the facts of unreasonableness or hardship on which the request is based, the provision or provisions of the Ordinance that are involved, and the minimum waiver or relief that is necessary. The owner or developer shall state how the requested waiver and their proposal shall result in an equal or better means of complying with the water applicable quality and quantity objectives and requirements of this Ordinance.

(4) The Jefferson County Engineering Department may grant waivers or a modification of the requirements when the following findings are made, as relevant:

(a) The waiver will not create an adverse impact to water quality and water quantity.

(b) The waiver is the minimum action necessary to provide relief.

(c) The applicant is *not* requesting a waiver based solely on cost considerations.

(d) Existing off-site stormwater problems will not be exacerbated.

(e) Runoff is not being diverted to a different drainage area.

(f) Increased flooding or ponding on off-site properties or roadways will not occur.

(g) Potential icing conditions will not occur.

(h) Increase of peak flow or volume from the site will not occur.

(i) Erosive conditions due to increased peak flows or volume will not occur.

(j) Increased 100-year floodplain levels will not result.

(k) Increased or unusual municipal maintenance expenses will not result from the waiver.

(l) The amount of stormwater generated has been minimized to the greatest extent allowed.

(m) Infiltration of runoff throughout the proposed site has been provided where practicable, and predevelopment groundwater recharge protected at a minimum.

(n) Peak flow attenuation of runoff has been provided.

(o) Long-term operation and maintenance activities are established.

(p) The downstream waterways within the watershed containing the site that will receive runoff will not be subject to each of the following criteria:

(i) Deterioration of existing culverts, bridges, dams, and other structures

(ii) Deterioration of biological functions or habitat

(iii) Accelerated streambank or streambed erosion or siltation

(iv) Increased threat of flood damage to public health, life, and property

(5) The Chief County Engineer may also, at their discretion, grant waivers or modifications to the Quality control requirements for projects of minimal size and magnitude where Quality control measures would not be practicable and/or economically feasible, and any impacts of such a project would be relatively insignificant. Should the justification for such waivers be questionable, the Chief County Engineer may refer the request to the Jefferson County Planning Commission for a determination.

ARTICLE IV STORMWATER MANAGEMENT DESIGN CRITERIA

A. REFERENCE TO THE DESIGN MANUAL

(1) The Jefferson County Engineering Department shall use the technical specifications and standards in the *West Virginia Stormwater Management and Design Guidance Manual* as the tool for making decisions about stormwater design, implementation, and performance of structural and nonstructural stormwater BMPs.

(2) The *West Virginia Stormwater Management and Design Guidance Manual* includes a list of stormwater quality treatment practices, including the specific design criteria for each stormwater practice. Stormwater treatment practices that are designed, constructed, and maintained in accordance with these design and sizing criteria will be presumed to meet the minimum water quality performance standards. If the specifications or guidelines found therein are more restrictive than other requirements, they shall not prevent the application of the specifications or guidelines in the *West Virginia Stormwater Management and Design Guidance Manual.*

(3) Reference is also made to NRCS 378, for the design and construction of conventional pond facilities.

B. GENERAL PERFORMANCE CRITERIA

(1) Low Impact Development (LID) is a stormwater management method that is modeled after nature. LID is unique to each site and uses both structural and nonstructural practices to control runoff close to where it falls. LID is recommended as the standard stormwater management practice.

(a) The use of LID and BMPs in conjunction with traditional stormwater management shall control stormwater runoff at the source and more closely approximate predevelopment runoff conditions.

(b) Karst Terrain Considerations

(i) Developers and designers shall minimize the amount of impervious cover created at the site to reduce the volume and velocity of stormwater runoff generated.

(ii) Developers and designers shall place a high priority on preserving as much of the length of natural Karst swales present on the Site as possible to increase infiltration and accommodate flows from major storm events.

(iii) Developers and designers should consider small-scale LID practices as prescribed in the latest version of the Chesapeake Stormwater Network Technical Bulletin No. 1, "Stormwater Design Guidelines for Karst Terrain in the Chesapeake Bay Watershed."

(c) The design criteria, hydrologic analysis, and computational procedures for LID stormwater management design plans shall be those of the latest

edition of the *West Virginia Stormwater Management and Design Guidance Manual.*

(d) LID stormwater management design plans shall not conflict with existing state or Jefferson County laws, ordinances, regulations, or policies.

(e) Storm drainage easements shall be recorded to identify the locations of integrated management practices on lots or parcels. The property owner shall not remove or structurally alter integrated management practices without prior written approval from the Jefferson County Engineering Department.

(f) Stormwater runoff from parking lots should utilize stormwater management infiltration facilities and/or stormwater management filtering systems. These should be placed within or near the parking lot islands, if feasible.

(g) Stormwater runoff being infiltrated into the groundwater by means of a Class V well must utilize BMPs that are considered Class V wells provided through the WVDEP at http://www.dep.wv.gov/WWE/Programs/stormwater/MS4/permits/Documents/ClassV_Well_IdentificationGuide[1].pdf.

BMPs considered Class V wells must obtain any Underground Injection Control Permit (UIC Permit) as required and provided by the WVDEP.

(2) All stormwater control facilities shall be designed to achieve post-development hydrologic conditions that are consistent with predevelopment conditions and to improve runoff conditions for redevelopment.

(3) The site shall maintain, as closely as possible, the predevelopment infiltration processes and rates by implementing infiltration close to the source of runoff.

(4) Stormwater shall be treated to reduce pollutants during conveyance and collection.

(5) Peak flows shall be attenuated to prevent high runoff rates and subsequent flooding of the receiving stream.

(6) Site design should implement runoff reduction techniques to reduce the amount of stormwater that must be collected, conveyed, and treated by stormwater management facilities.

(7) The applicant shall improve runoff conditions for redevelopment projects.

C. Stormwater Quantity Control Criteria

(1) Figures for determining the rainfall amounts for the design storms shall be obtained from the National Oceanic and Atmospheric Administration (NOAA) point precipitation frequency estimates. The NOAA Site for these estimates is provided below: http://hdsc.nws.noaa.gov/hdsc/pfds/index.html.

(2) Wooded sites shall use a ground cover of woodland in good condition. All other predevelopment land use shall be considered meadow except as noted in Table 1.

(3) For all new land development projects, the post-development peak discharge rate shall not exceed the predevelopment peak rate (adjusted for Karst if required) for the 2-year, 10-year, and 100-year storm events if applicable under Table 1.

(4) A hydrologic analysis for calculating the watershed runoff for both the predevelopment and post-development conditions shall be provided and based on the 24-hour rainfall event. This may be done using the NRCS methodologies (e.g., TR-20 and TR-55, etc.) that takes into consideration the ground cover, time of concentration, area of the watershed, and the 24-hour rainfall amount and rainfall distribution for the region; or the modified calculation method provided in Appendix E of the *West Virginia Stormwater Management and Design Guidance Manual* to help prevent overestimations under the TR-20 and TR-55 methods; or any other acceptable methodology in the public domain and approved by the Jefferson County Engineer or authorized representative.

(5) Table 2 provides for reduction of the predevelopment flows due to the Karst geology characteristics of Jefferson County. This results in lower predevelopment runoff rates for the 1-year, 2-year, 10-year, and 100-year, 24-hour storm events.

The Karst adjustment factors shown in Table 2 shall only apply to the area of Jefferson County depicted as Karst on Map 1: Karst Geology Map of Jefferson County located at the end of this Section.

(6) Nonstructural quantity control and conveyance methods should be utilized whenever possible.

(7) The owner or developer must demonstrate that downstream conveyance facilities are adequate.

(8) Drainage easements that will establish operation and maintenance for on-site properties shall be obtained.

(9) Stormwater quantity control shall be provided that reduces the post-development runoff rate from the site such that it does not exceed the "Karst adjusted" predevelopment runoff discharge.

(10) Quantity control may be provided by stormwater detention and retention basins, underground detention storage infiltration basins or trenches, and/or any other means approved by the Jefferson County Engineer. Provide the hydrologic and hydraulic routing calculations and analysis in the Stormwater Management Plan.

(11) The runoff from any predevelopment area draining to a sinkhole shall not be counted in the calculation of the predevelopment runoff from the site.

(12) An off-site stormwater management facility may be used instead of an on-site facility when:

(a) An adequate route of conveyance between the site and the off-site facility exists, or will be built as part of the project; and

(b) The off-site facility has the capacity or can be retrofitted to meet the criteria stated above; and

(c) The developer has demonstrated the right to convey the runoff and use the off-site stormwater management facility.

(13) Standards and methods for stormwater facilities should be constructed in accordance with standards described in NRCS 378, and/or the *West Virginia Stormwater Management and Design Guidance Manual.*

(14) The emergency spillway and principal spillway outfalls shall be constructed in a cut section only (to prevent erosion and collapse of the basin embankment) and shall maintain a flat (0%) grade to the end of the designed length of the control section, and shall provide a stabilized flow path to a rip-rap outfall apron, plunge pool, or other approved outfall spreader.

(15) Where the outfall of a stormwater management facility is less than 75 feet from the immediate downstream property line, the outfall rip-rap apron shall be depressed 6 inches to create a plunge pool.

(16) Where a stormwater management basin exceeds 6 feet in height above the existing ground, anti-seep devices shall be provided along the principal spillway pipe to prevent "piping" and collapse of the basin embankment.

(17) Where a stormwater management basin embankment exceeds 10 feet in height above the existing ground, a dam breach/failure analysis is required to identify the potential for damage to homes, buildings, roads, utilities, etc. Any facility that falls under the criteria of the West Virginia Dam Control and Safety Act shall meet the design standards of that act. Documentation of approval by the WVDEP Dam Safety staff shall be provided prior to approval by Jefferson County.

(18) All stormwater management basin embankments shall have core trenches consistent with the size of the embankment. The NRCS Pond 377 and 378 Engineering Standards shall be used as a guide for designing pond embankments, spillways, anti-seep collars, and core trenches, etc., unless another standard is approved by the Jefferson County Engineer.

(19) All stormwater management basins shall be able to pass the 100-year, 24-hour storm event with a minimum of 1 foot of freeboard.

(20) The stormwater management basin shall have a minimum slope of 1.0% across the bottom and slope toward the low-flow outlet at the control structure to ensure that the pond drains and to prevent the puddling of water after the basin has emptied. This requirement does not apply to stormwater management basins designed as shallow marsh wetlands and/or stormwater retention or infiltration basins.

Finish contours/grades and/or spot elevations shall be provided on the Stormwater Management Plan, Preliminary Subdivision Plat, or Site Plan, as applicable, detailing the bottom of pond grading. Sediment forebays shall be

provided at all points of concentrated inflow. Sediment forebays shall be lined consistent with WVDEP specifications under the groundwater protection program.

(21) The Infiltration BMP checklist should be utilized, as provided in Chapter 4.2.6 in the *West Virginia Stormwater Management and Design Guidance Manual* for any Infiltration BMPs to be utilized.

(22) Infiltration rates for Infiltration basins shall be determined from percolation tests performed by a licensed septic installer or a licensed geotechnical engineer, or based on the NRCS Soils Manual for Jefferson County using Infiltration rates for the soil type at the Site. The method used shall be approved by the Jefferson County Engineer. Infiltration basins shall be designed to infiltrate/empty within 72 hours after the storm event has ended.

(23) Stormwater management easements shall be provided where necessary to provide for access and maintenance of the stormwater management facilities. All easements shall be shown on the Stormwater Management Plan, Preliminary Subdivision Plat, and Final Subdivision Plat.

For stormwater detention, retention, and infiltration basins, the limits of the 100-year, 24-hour storm event storage elevation shall be delineated on the Preliminary Plat and/or Site Plan, as applicable. The stormwater management facility and the 100-year storm event storage limits shall be located within a lot/common area specifically designated for stormwater management purposes; or a stormwater management easement shall be provided that provides access to and contains both the stormwater management facility and the 100-year storm event storage limits. The limits of the 100-year storm event shall not encroach into a roadway.

All other stormwater management facilities shall have easements where necessary to provide for access and maintenance.

(24) The Stormwater Management Plan shall demonstrate adequate downstream conveyance of stormwater discharge from the Site. The capacity should be determined for the existing downstream storm drainage system to convey runoff discharged by a project to natural streams and rivers. If the capacity is less than the predevelopment runoff rate, then the capacity of the storm drainage system shall be used as the allowable release rate.

(25) Structural and nonstructural stormwater management practices that promote or otherwise make best possible use of on-site infiltration shall be considered first.

(26) For sites located adjacent to the Potomac River, Shenandoah River, or the Opequon Creek, stormwater quantity control may use the "quick release" approach to reduce the impact on the receiving stream's Peak Discharge. Use of the quick release approach shall be justified based on engineering analysis and approved by the Jefferson County Engineer on a case-by-case basis.

(27) Natural wetlands shall not be used to meet minimum requirements. If an outfall pipe discharges into a natural wetland, the velocity shall not exceed 2 feet per

second for the two-year storm event, and it shall be demonstrated that the discharge will not create erosion.

(28) Sites required to provide the 1-inch capture quality control shall be allowed to take quantity control credit. The post-developed Runoff Curve Number (RCN) may be adjusted based upon interpolation of Table 2-1 of the NRCS TR-55 manual.

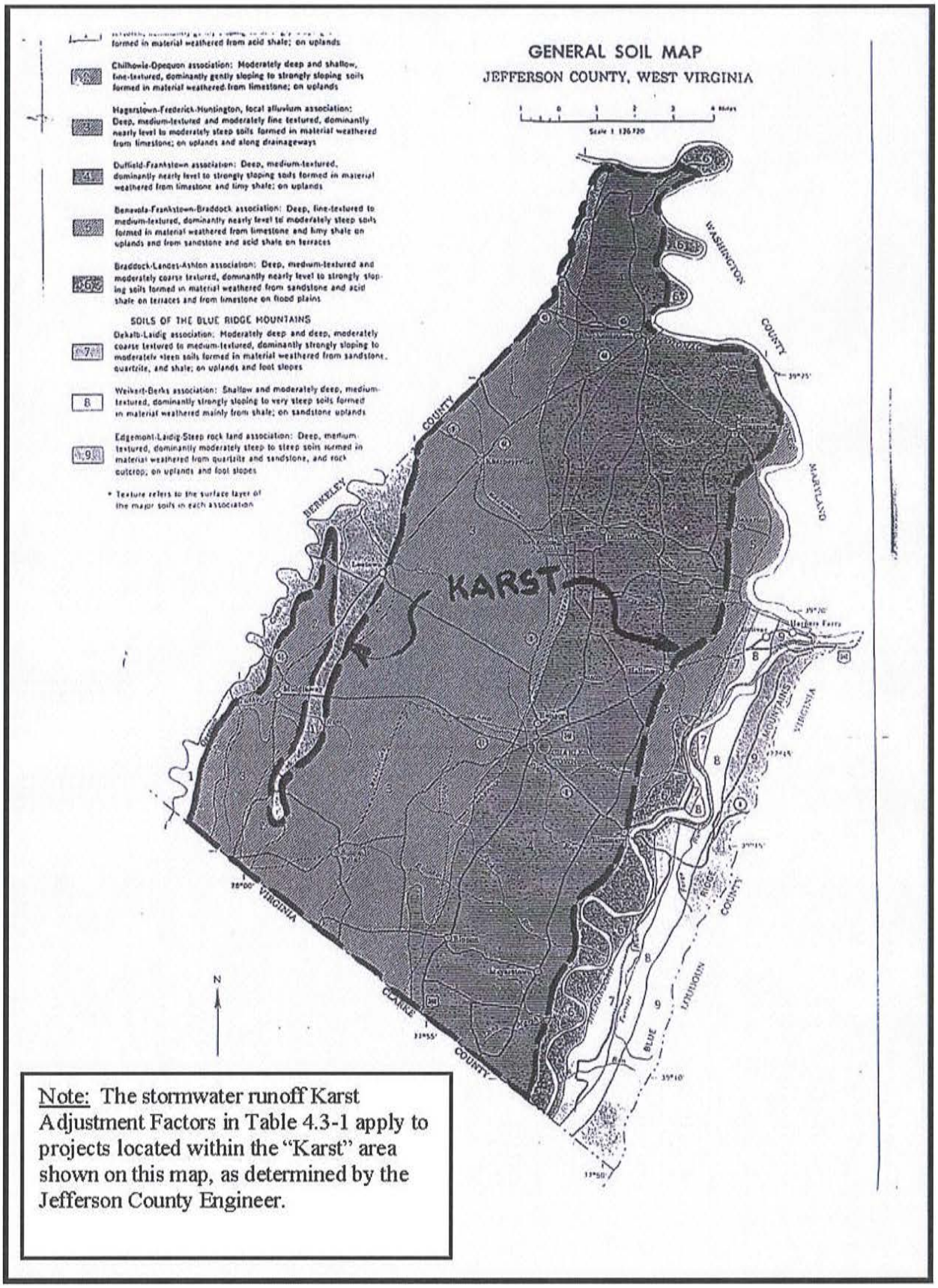
Table 1
Stormwater Management Quantity Control Criteria

	Criteria	2-Year Storm	10-Year Storm	100-Year Storm
1.	Conditions under which stormwater management is required.	All Sites	All Sites	Sites located within the upper two-thirds of the drainage basin as measured from the Potomac or Shenandoah Rivers, or Opequon Creek, and which are located within a "growth" area, and which have a Federal Emergency Management Agency (FEMA)-designated floodplain on or adjacent to the Site.
2.	Allowable assumptions for Predevelopment land use.	Model as wooded, meadow, or existing orchard	Model as land use at present time.	Model as land use at present time.
3.	Typical control device	2-year low-flow orifices and principal spillway	10-year high Weir and principal spillway	Highest Weir for control, or if not controlled, provide emergency overflow spillway cut into existing ground or size the principal spillway to pass the 100-year storm event.
4.	Minimum adjustment of Predevelopment Runoff for Karst geology.	Apply 100% to all on-site drainage areas and pro-rate off-site based on percentage of undeveloped off-site area in the total off-site drainage area.	Pro-rate based on percentage of undeveloped on-site and off-site area in the total drainage area.	Pro-rate based on percentage of undeveloped on-site and off-site area in the total drainage area.

Karst Geology – Runoff Adjustment Factors

	% Karst	Multiply Predevelopment Peak Discharge by Factors Below		
		2-Year Storm	10-Year Storm	100-Year Storm
	100	0.33	0.43	0.50
	90	0.34	0.46	0.56
	80	0.38	0.51	0.62
	70	0.47	0.58	0.68
	60	0.55	0.66	0.74
	50	0.64	0.73	0.80
	40	0.73	0.80	0.85
	30	0.82	0.86	0.89
	20	0.91	0.92	0.93
	10	1.00	0.98	0.97
	0	1.00	1.00	1.00

Note: Post-development Runoff adjustment may be made for Karst in large Lot subdivisions only, based on 1 acre per Lot plus the area of road rights-of-way modeled as "disturbed area," with the remaining undisturbed area considered Karst area. Such adjustment shall be reviewed and approved by the Jefferson County Engineer on a case-by-case basis.



Note: The stormwater runoff Karst Adjustment Factors in Table 4.3-1 apply to projects located within the "Karst" area shown on this map, as determined by the Jefferson County Engineer.

D. STORMWATER QUALITY CONTROL CRITERIA

(1) General Quality Control Provisions

(a) Stormwater quality control facilities shall reduce solids, sediment, nutrients, and other pollutants from stormwater runoff. This shall be presumed to occur when each of the following criteria is met:

(i) The facility is sized to capture the stormwater runoff volume of the first 1 inch of rainfall from a 24-hour storm event.

(ii) The facility is designed per the requirements and engineering calculations in the latest edition of the *West Virginia Stormwater Management and Design Guidance Manual.*

(iii) The facility is constructed in accordance with all applicable plans and permits.

(iv) The facility is maintained per Article VI.

(v) Water quality calculations can be estimated utilizing WVDEP's Stormwater Spreadsheet Tool provided through http://www.dep.wv.gov/WWE/Programs/stormwater/MS4/permits/Pages/ToolsandGuidance.aspx,

or other models available in the public domain as deemed acceptable by the Jefferson County Engineering Department.

(b) Infiltration of runoff shall be as close to the source of runoff as possible via Infiltration testing and analysis of Infiltration rates. Preference shall be given to a combination of surface and subsurface infiltration measures.

(c) Water quality improvements shall be achieved in conjunction with or as part of infiltration design.

(d) In order to promote activities that reduce existing impervious surfaces or help create less "accessory" impervious surface, the following incentive standards may be applied to these types of projects. A reduction of 0.2 inches from the 1 inch runoff reduction standard may be applied to any of the following types of development. Reductions are additive up to a maximum reduction of 0.75 inches for a project that meets four or more criteria. The owner or developer may choose to be more restrictive and allow a reduction of less than 0.75 inches if they choose. In no case will the reduction be greater than 0.75 inches.

(i) Redevelopment

(ii) Brownfield Redevelopment

(iii) Transit oriented development

(iv) Vertical density (Floor to Area Ratio (FAR) of 2 or >18 units per acre)

(e) If a high water table or other constraints exist, the following hierarchy should be followed in order of preference:

(i) BMPs that capture and infiltrate or permanently retain on-site the total volume of the first 0.50 inches

(ii) If the applicant can demonstrate through on-site soil evaluations that conditions do not allow for item (e)(i), then BMPs that capture and infiltrate or otherwise permanently retain the largest percentage of the total volume of the 0.50-inch, 24-hour storm event

(iii) Infiltration practices shall be designed that capture and infiltrate at least the first 0.50 inches of runoff from all impervious areas. If the volume of runoff is greater than the volume to be infiltrated or retained, the difference should be treated by an acceptable BMP.

(f) For all new development activities, each of the following regulations shall apply:

(i) Stormwater management practices that provide or encourage infiltration shall be considered first and foremost in all site designs.

(ii) Stormwater quality management practices shall be designed to capture and treat the runoff volume from the first 1 inch of rainfall from a 24-hour storm event.

(iii) Stormwater shall be infiltrated and/or discharged within the same drainage area of the stream receiving the runoff prior to development.

(g) Site design shall minimize disturbance. All grading should be designed to distribute runoff evenly. Areas of depression should be designed for subsurface infiltration techniques.

(h) All stormwater BMPs, including methods and systems identified in the *West Virginia Stormwater Management and Design Guidance Manual,* shall be considered and developed according to standards described therein.

(i) During site construction, the infiltration area shall be protected from compaction, storage of fill, or construction materials.

(j) Where sediment transport in the stormwater runoff is anticipated to reach the infiltration system, appropriate permanent measures to prevent or collect sediment shall be installed prior to discharge to the infiltration system.

(k) For redevelopment activities, water quality improvements shall be provided for drainage areas not otherwise addressed by infiltration practices either at the source of runoff and/or during conveyance away from the source of runoff. Stormwater quality management shall be designed to capture and treat the stormwater runoff volume from the first 1 inch of rainfall from a 24-hour event over the newly developed impervious cover of development, except where the provisions of Article IV D.(1).(d).(i) are being utilized.

(2) **Stormwater Hotspots**

(a) Stormwater discharges from land uses or activities with a high potential for pollutant loadings (Stormwater Hotspots) require the use of specific filtering or bioretention BMPs prior to infiltration which are indicated on Table 2 on the following page. Stormwater control from these hotspots shall be controlled by the following:

(i) **Stormwater Pollution Prevention Plan (SWPPP).** In addition to a Stormwater Management Plan as required in Article II.A, additional permitting may be required by the WVDEP. Documentation of approval by the WVDEP of any additional permits shall be provided prior to approval by Jefferson County. The WVDEP may also require submittal of a Stormwater Pollution Prevention Plan (SWPPP). The SWPPP outlines pollution prevention and treatment practices that will be implemented to minimize polluted discharges from the Site. All SWPPPs shall be prepared following the guidelines in the West Virginia NPDES General Permit regulations even if an NPDES permit is not required. Copies of approved SWPPPs shall be provided to the Jefferson County Engineering Department.

(ii) **Restricted Infiltration.** A minimum of 50% of the total water quality volume must be treated by a filtering or bioretention practice prior to any infiltration. Portions of the site that are not associated with the hotspot-generating area should be diverted away and treated by an acceptable stormwater BMP.

(iii) **Infiltration Prohibition**. In cases where Infiltration is prohibited, an alternative stormwater practice such as closed bioretention, sand filters, or constructed wetland must be used to filter the entire (100%) water quality volume before it reaches surface or groundwater.

Table 2: Potential Stormwater Hotspot Land Uses

Potential Stormwater Hotspot Operation	SWPPP Required	Restricted Infiltration	Infiltration Prohibited
Facilities with NPDES industrial permits	Yes	□	□
Public works yard	Yes		✓
Auto and metal recyclers/scrap yards	Yes		✓
Petroleum storage facilities	Yes		✓
Highway maintenance facilities	Yes		✓
Wastewater, solid waste, composting facilities	Yes		✓
Industrial machinery and equipment	Yes	✓	
Trucks and trailers	Yes	✓	
Aircraft maintenance areas	Yes		✓
Fleet storage areas	Yes		✓
Parking Lots (40 or more parking spaces)	No	✓	
Gas stations	No		✓
Highways (2,500 Average Daily Traffic)	No	✓	
Construction business (paving, heavy equipment storage and maintenance)	No	✓	
Retail/wholesale vehicle/equipment dealers	No	✓	
Convenience stores/fast food restaurants	No	✓	
Vehicle maintenance facilities	No		✓
Car washes (unless discharged to sanitary sewer)	No		✓
Nurseries and garden centers	No	✓	
Golf courses	No	✓	

Key: □ depends on facility
✓ Yes
Shaded Area: Facilities or operations not technically required to have NPDES permits, but can be designated as potential Stormwater Hotspots by the Jefferson County Engineer

Source: Chesapeake Stormwater Network Technical Bulletin No. 1, "Stormwater Design Guidelines for Karst Terrain in the Chesapeake Bay Watershed," version 2.0 (June 2009)

E. SMALL-SCALE STORMWATER MANAGEMENT PRACTICES

Small-scale stormwater practices, LID, better site design (BSD), and nonstructural techniques designed to mimic natural hydrologic runoff and minimize the impact of land development on water resources must be utilized and described in the Stormwater Management Plan. Only when absolutely necessary is the use of structural BMP warranted.

(1) The following methods and practices should be utilized to the greatest extent possible, and identified within the Stormwater Management Plan, to meet minimum control requirements before resorting to structural BMPs.

(a) Preserving and protecting natural resources

(b) Minimizing the removal of trees and underbrush as much as possible during construction

(c) Conserving natural drainage patterns

(d) Minimizing impervious area

(e) Utilizing alternative surfaces such as permeable pavement to reduce runoff

(f) Limiting soil disturbance, mass grading, and compaction

(g) Clustering development

(h) Reducing impervious infrastructure as much as possible, including eliminating or reducing cul-de-sacs and reducing sidewalk widths while still meeting local code requirements

(i) Utilizing parking lot landscaping and low-impact residential landscaping in development

(j) Utilizing BSD practices described in Chapter 4.1 of the *West Virginia Stormwater Management and Design Guidance Manual*

(2) The following nonstructural stormwater management practices shall be applied according to the *West Virginia Stormwater Management and Design Guidance Manual* to minimize increases in stormwater runoff in new development:

(a) Sheetflow to natural conservation areas
(b) Disconnection of rooftop runoff
(c) Disconnection of non-rooftop runoff
(d) Sheet flow to buffers
(e) Grass channels
(f) Environmentally sensitive development
(g) Landscape infiltration
(h) Dry wells
(i) Micro-bioretention
(j) Rain gardens
(k) Swales
(l) Any other practices approved by the Jefferson County Engineering Department

(3) The use of these practices must not conflict with existing state or local laws, ordinances, regulations, or policies.

(4) Nonstructural stormwater management practices approved by Jefferson County for development/redevelopment projects must be recorded and remain unaltered by subsequent property owners. Prior approval from the Jefferson County Engineering Department must be obtained before nonstructural stormwater practices are altered.

(5) The regenerative stormwater conveyance systems should be utilized, as described in Chapter 4.2.7 of the *West Virginia Stormwater Management and Design Guidance Manual*, when at all possible and appropriate for the site.

(6) Mosquito abatement: Stormwater management facilities containing permanent pools of water should be designed with adequate depth, plantings, and habitat for mosquito predators and other means to control mosquito populations.

(7) All stormwater management structures shall be located within a common area, right-of-way, or easement. There are to be no individual lot stormwater management structures (i.e., structure to be put in when the home is built).

F. REDEVELOPMENT

(1) For redevelopment activities meeting the applicability standards defined in Article I.D, one of the following standards shall be accomplished. Selection of these performance standards shall be based on suitability as determined by the Jefferson County Engineer.

(a) Reduce impervious cover by at least 20% based on a comparison of existing impervious cover to proposed impervious cover.

(b) Achieve a 10% reduction in volume of runoff discharged by a 1-year, 24-hour storm event. Runoff calculations shall be based on a comparison of existing to proposed site conditions.

(c) Reduce post-development peak discharge rates to 90% of the predevelopment rates for the 2-year, 10-year, and 100-year, 24-hour storm events based on a comparison of existing ground cover to post-development site conditions.

(2) In instances where project development cannot meet the standards described in Part (1) of this section on site, two alternatives are available:

(a) Off-site mitigation: Runoff reduction can be accomplished at another location in the same watershed as the original project, approved by the Jefferson County Engineering Department. If mitigation is occurring off-site at a new development site, mitigation measures for the original project must be in addition to stormwater management requirements for the new development.

G. SOIL STUDIES AND KARST TERRAIN REQUIREMENTS

(1) Soil studies for infiltration practices should be conducted according to the Infiltration Design Checklist and the Feasibility Criteria and Design Considerations included in Chapter 4.2.6 on infiltration of the *West Virginia Stormwater Management and Design Guidance Manual.*

(2) Due to the prevalence of Karst Terrain in Jefferson County, it should be assumed that a project is located in a region of Karst Terrain unless otherwise indicated by the developer, property owner, or other interested party using Map 1 -- *Karst Geology Map of Jefferson County,* or by U.S. Geological Survey Geologic Maps.

(a) If the presence of Karst Terrain cannot be accurately determined from Map 1, contact the Jefferson County Engineering Department for clarification.

(b) If a quantity other than 100% of the site is to be determined as Karst Terrain, the property owner, developer, or other interested party must conduct a detailed site investigation as described in Chesapeake Stormwater Network Technical Bulletin No. 1, "Stormwater Design Guidelines for Karst Terrain in the Chesapeake Bay Watershed" to identify the percentage of Karst Terrain at the Site.

(i) The resulting report must be signed and dated by the engineer who conducted the investigation and provided to the Jefferson County Engineering Department for review.

(c) If the presence of Karst Terrain is in dispute, the property owner, developer, or other interested party must conduct a detailed site investigation as described in Chesapeake Stormwater Network Technical Bulletin No. 1, "Stormwater Design Guidelines for Karst Terrain in the Chesapeake Bay Watershed."

(i) The resulting report must be signed and dated by the engineer who conducted the investigation and provided to the Jefferson County Engineering Department for review.

H. STORMWATER CONVEYANCE AND DRAINAGE CRITERIA

(1) Drainage Culverts

(a) Roadway culverts shall be designed to pass the 10-year, 24-hour storm event without overtopping the roadway at the edge of the shoulder. Provide calculations in the Stormwater Management Plan.

(b) Roadway drainage culverts shall be galvanized corrugated metal pipe (CMP) or an approved, equal alternative by the Jefferson County Engineer. The culverts shall be a minimum of 15 inches in diameter or equivalent elliptical/arched pipe size.

(c) The inlet and outlet ends of roadway drainage culverts shall be protected from scour by rip-rap aprons or other energy-dissipating devices. The Jefferson County Engineer may waive this requirement for the inlet end if inlet ends contain manufactured ends or concrete end walls that extend the full width of the drainage ditch or swale, effectively preventing culvert inlet erosion.

(d) Drainage culvert outfalls shall be at a 0% grade (flat) for the length of the rip-rap apron or energy-dissipating device. The Jefferson County Engineer may waive this requirement where it is not practical to meet this requirement due to topographic constraints.

(e) Roadway culverts shall have a minimum of 12 inches of cover over the pipe.

(f) Roadway culverts shall have manufactured end sections or concrete end walls at the inlet and outlet ends. Residential culverts of 18" or less are exempt from this requirements.

(g) Profiles of the roadway culverts shall be shown on the Stormwater Management Plan, as applicable, and shall show the following:

(i) Culvert identification that corresponds with plan view

(ii) Pipe size, shape, material type, and length

(iii) Inlet and outlet invert elevations

(iv) Slope of pipe

(v) Inlet and outlet end section type

(vi) Outfall rip-rap apron/energy-dissipation device at 0% grade

(vii) Q10 flow rate and velocity

(h) Construction details and specifications shall be provided on the Preliminary Plat and/or Site Plan, as applicable, for the culvert pipe, outfall aprons, and culvert end sections/wing walls.

(i) Individual lot driveway culverts shall be sized for the 10-year storm event; however, the minimum is 15 inches in diameter. Driveway culverts shall be galvanized CMP or an approved, equal alternative by the Jefferson County Engineer. A table of lot number and driveway culvert size shall be provided on the Stormwater Management Plan, if applicable.

(2) Roadway Ditch Lines

(a) Roadway ditch lines shall be a minimum depth of 1½ feet, with a 4:1 slope in from the road shoulder and a 2:1 return slope back out.

(b) Roadway ditch lines shall have a minimum linear slope of 1.5% unless a trapezoidal ditch (minimum 2 feet wide) is used; then a minimum of 0.5% is acceptable.

(c) Roadway ditch lines shall not meander and shall be generally parallel to the roadway, except where necessary to direct runoff into culverts, move a ditch to the bottom of a fill slope, or to provide for a suitable discharge point.

(d) Ditch line invert treatment shall be provided based on the 10-year, 24-hour storm event flows and the velocity of the water in the ditch line, as shown on Table 3.

Table 3

Ditch Material	Maximum Allowed 10-Year Storm Event Velocity (Feet per Second)	Maximum Allowed Ditch Slope (Percent)
Seed & Mulch (Grass)	2.0	3.5
Mesh Ditch Liner	3.0	5.0
Solid Sodding	5.0	10.0
Loose Rip-Rap	7.0	10.0
Concrete Channel	Governed by ability to dissipate energy at outfall to provide a maximum velocity of 4 fps.	

(e) The location and type of ditch line treatment and a typical section of the roadway ditch line shall be provided on the Stormwater Management Plan as applicable.

(f) Turnouts constructed in sufficient quantity and/or size to effectively disperse the 2-year, 24-hour flow of runoff is required for ditches terminating at an embankment or a capped ditch end to prevent erosion of embankments and overtopping.

(3) Curb and Gutter

(a) The curb and gutter shall be provided when required by the Jefferson County Subdivision and Land Development Regulations.

(b) Curb and gutter construction details shall be provided on the Preliminary Plat and/or Site Plan as applicable.

Road curbs and gutters shall be constructed of 3,000 psi strength Portland cement concrete. Curbs shall be to a height of no less than 6 inches above the finished road surface. The base of the curb shall be a minimum of 7 3/8 inches in width. The curb face may slope outward to join a rounded edge having a radius of 1½ inches or more. Other curb designs may be approved by the Jefferson County Engineer.

Drainage gutter and storm drain inlet devices shall be designed to carry the peak flow from a 2-year Frequency, 24-hour storm event with a maximum spread of one-half the travel way.

(4) Roof Drains

For all nonresidential sites, the building structure roof drain discharge points shall be located so as to avoid icing of walkways, driveways, and building entrances. The location of roof drain discharge points shall be shown or noted on the Stormwater Management Plan, as applicable.

(a) Any properties utilizing rainwater harvesting techniques from roof drains on structures located on the Site must utilize standards and maintenance practices described in Chapter 4.2.8 of the *West Virginia Stormwater Management and Design Guidance Manual.*

(5) Drainage Swales

(a) Drainage swales shall be sized for the 10-year, 24-hour storm event. Provide calculations in the Stormwater Management Plan.

(b) Drainage swale grading and drainage swale details shall be provided on the Stormwater Management Plan, as applicable.

(6) Storm Sewers

(a) Storm sewer system piping shall be designed for the 10-year storm event. Storm sewer inlets shall be designed for the 2-year storm event. Inlet structures located in a sump shall be checked to prevent curb overtopping during the 10-year event. Provide calculations in the Stormwater Management Plan.

(b) Storm sewer systems may utilize curbs and gutters where needed to capture and divert runoff into storm inlets.

(c) Storm sewer pipe shall be galvanized CMP or an approved, equal alternative by the Jefferson County Engineer. The pipe shall be a minimum of 15 inches in diameter or equivalent elliptical/arched pipe size.

(d) The outlet end of the storm sewer shall be protected from scour by rip-rap aprons or other energy-dissipating devices.

(e) Storm sewer outfalls shall be at a 0% grade (flat) for the length of the rip-rap apron or energy-dissipating device. The Jefferson County Engineer may waive this requirement where it is not practical to meet this requirement due to topographic constraints.

(f) Storm sewer pipe shall have a minimum of 12 inches of cover over the pipe.

(g) The outlet end of the storm sewer shall have manufactured end sections or concrete end walls.

(h) Profiles of the storm sewer system shall be shown on the Preliminary Plat and/or Site Plan, as applicable, and shall show the following:

(i) Inlet identification that corresponds with plan view

(ii) Top and bottom of storm inlet elevations

(iii) Pipe size, shape, material type, and length

(iv) Pipe inlet and outlet invert elevations

(v) Slope of pipe

(vi) Outlet end section type

(vii) Outfall rip-rap apron/energy-dissipation device at 0% grade

(viii) Q10 flow rate and velocity

(i) Drain inlets in residential subdivisions with closed section roads shall have bicycle-safe grates.

(j) Construction details and specifications shall be provided on the Preliminary Plat and/or Site Plan, as applicable, for the storm inlets and grates, manholes, pipe, end section/wing wall, outfall rip-rap apron, curb and gutter, etc.

(7) Drainage Easements.

(a) Drainage swales shall be located within drainage easements where necessary (e.g., on individual Lots, etc.) to retain the right to convey runoff from roadway ditch lines and common areas to stormwater management facilities and to provide access for maintenance of the drainage swale. Drainage swale easements shall be sized to contain the 10-year, 24-hour storm event flow within the easement. Drainage swale easements shall be a minimum width of 15 feet.

(b) Storm sewer systems shall be located within drainage easements where necessary (e.g., on individual Lots, etc.) to retain the right to convey runoff and to provide access for maintenance of the storm sewer system. Storm sewer system easements shall be a minimum width of 15 feet. The staff has the authority to require larger storm sewer drainage easements when large pipe diameters and/or bury depth make a 15-foot-wide easement impractical for access, maintenance, or replacement of the storm sewer.

(c) Drainage easements shall be shown on Stormwater Management Plan.

I. LANDSCAPING

(1) The applicant must present Landscaping details as part of the Stormwater Management Plan describing the woody and herbaceous vegetative stabilization and management techniques to be used within and adjacent to the stormwater facilities. The maintenance requirements component of the Stormwater Management Plan must also describe who will be responsible for the maintenance of vegetation at the site and what practices will be employed to ensure that adequate vegetative cover is preserved. This plan must be prepared by a qualified individual, as meets state code, who is familiar with the selection of emergent and upland vegetation appropriate for the selected BMP.

(2) Landscaping shall be required in and around all constructed stormwater management practices with a minimum surface area of 1,000 square feet.

(3) No woody plants shall be planted within the saturated zone or on a berm constructed for impounded water.

J. RIPARIAN BUFFERS

A riparian buffer is a transition zone between water and upland environments to protect the aquatic environment from pollution and sedimentation. It is measured from the top of the bank of the stream, or the wetland boundary. Any property that adjoins a watercourse or portion thereof shall provide a riparian buffer along said watercourse limiting development and the impact on these environmental transition zones.

(1) Activity within these buffers is limited to the following:

(a) Activities integral to the utilization of the watercourse that meet all other federal, state, county, and local code, ordinance, and permitting requirements, including but not limited to the construction and use of:

(i) Docks

(ii) Boat ramps

(iii) Piers

(iv) Other facilities designed to allow recreational access to the watercourse.

1. Corridor crossings for farm vehicles and livestock

(b) Public roads and improvements

(c) Corridor crossings for roads and railroads

(d) Public utility crossings, including but not limited to sewer, water, and electric

(e) Passive recreation uses

(f) Streambank improvement projects

(g) Any activity, as approved by the Jefferson County Engineering Department, that will minimally disrupt the existing tree cover and soil mantle in order to maximize filtering and overall physical removal of particulate-form pollutants from stormwater runoff

(2) Riparian buffer requirements are to be established and protected, as defined below. If wetlands or hillsides abut or are within the riparian buffer in (a) through (d) below, then they shall be included even when the distance exceeds the buffer in (a) through (d) below. The buffer widths are as follows:

(a) Lakes and Ponds - 75 feet

(b) Ephemeral Streams with stream channels - 50 feet (100 feet when located in the Elk Run and Elk Branch Watersheds)

(c) Potomac River and Shenandoah Rivers – 300 feet (unless a greater standard is required by the Zoning Ordinance)

(d) Opequon Creek and Perennial Streams - 100 feet

(e) Wetlands, Marl - 75 feet

(f) Wetlands, Farmed - 10 feet

(g) Wetlands - 50 feet

(h) Hillsides 15 to 25 percent - to the top of the slope where it falls below 15 percent or 400 feet, whichever is less.

(i) Hillsides 25 percent or more - to the top of the slope where it falls below 15 percent or 600 feet, whichever is less.

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ARTICLE V CONSTRUCTION INSPECTION AND BONDING

A. PERFORMANCE BOND

(1) All stormwater management and storm drainage infrastructure, and erosion and sediment control measures, shall be bonded in accordance with the bonding requirements of the Subdivision and Land Development Regulations and the Jefferson County Commission's bonding policy.

(2) The estimated cost for stormwater management and storm drainage infrastructure, and erosion and sediment control measures, that is part of a subdivision or site plan processed under the Subdivision and Land Development Regulations, shall be included in the itemized cost estimate prepared under the Subdivision and Land Development Ordinance. The purpose is to have one cost estimate for all site improvements.

(3) The construction bond and bond surety for the stormwater management and storm drainage infrastructure, and sediment and erosion control measures, that is part of a subdivision or site plan processed under the Subdivision and Land Development Regulations, shall be bonded with the bonding for all other bonded site improvements. The purpose is to have one bond and surety for all site improvements.

(4) The bonding for stormwater management and storm drainage infrastructure shall be administered in accordance with the Jefferson County Commission's bonding policy.

(5) Temporary erosion and sediment control measures located on individual residential Lots – measures that are required to be installed under an Improvement Location Permit – shall not require bonding.

B. INSPECTIONS DURING CONSTRUCTION

(1) The Jefferson County Engineering Department, or their agent, may conduct periodic inspections of the Stormwater Management Facilities during construction. In lieu of performing the inspections, the Jefferson County Engineering Department may require the owner/developer to provide third-party engineering inspections and inspection reports. Construction inspections shall utilize the approved Stormwater Management Plan to establish whether the work is in compliance.

(2) All inspections shall be documented by a written report prepared by the Jefferson County Engineering Department or agents thereof, or the third-party engineering firm, as may be applicable, and include each of the following:

(a) The name of the person or firm performing the inspection

(b) The date of the inspection

(c) The project name and location

(d) A statement of the stage of completion of the work on the date inspected

(e) A statement regarding compliance with the approved Stormwater Management Plan

(f) Documentation of any variations from the approved Stormwater Management Plan

(g) Any other variations or violations regarding the on-site conditions as compared to the approved Stormwater Management Plan

(h) A statement of any corrective action that is necessary

(3) The owner/developer shall be notified in writing of any violations and the required corrective actions.

(4) Additional work shall not proceed until the corrective action is taken and the Jefferson County Engineering Department or agents thereof authorize the work to proceed.

(5) For enforcement purposes, the Jefferson County Engineering Department may utilize any combination of the following:

(a) A notice of violation may be used to specify the need for correction.

(b) A stop-work order may be issued by the Jefferson County Engineering Department.

(c) The bonds or securities may be held or the case can be referred for legal action if reasonable efforts to correct the violation have not been attempted.

(d) A civil action or criminal prosecution may be brought against any person in violation of this Ordinance.

C. POST-CONSTRUCTION FINAL INSPECTION AND AS-BUILT PLANS

(1) Upon completion of a project, and before release of the construction bond for the stormwater management facilities, the owner/developer is required to certify that the completed project is in accordance with the approved Stormwater Management Plan.

The As-Built plans and certification letter shall be deemed satisfactory prior to approving a request for bond release for the stormwater management facilities.

(2) The owner/developer shall submit actual As-Built plans and a certification letter from the design Professional Engineer-of-Record for all Stormwater Management Facilities or practices after final construction is completed. The As-Built plan shall include the final As-Built design specifications for all Stormwater Management Facilities and must be certified by a Professional Engineer or a Professional Land Surveyor.

(a) Submittal shall include the following:

- Two (2) printed sets of plans. The plan shall include final design specifications for all stormwater management facilities and must be certified by a professional engineer.
- Certification letter to the Jefferson County Engineering Department
- Digital specifications for stormwater facilities in a ESRI GIS compatible format synced to the West Virginia State Plane Coordinate System .
- An electronic spreadsheet (Microsoft Excel or equivalent) identifying all BMP facilities with associated coordinates based upon the West Virginia State Plane Coordinate System.

The certification letter shall be signed and sealed by the Design Engineer-of-Record; and the As-Built plans shall be prepared and signed and sealed by a either a Professional Engineer or a Professional Land Surveyor.

(b) The required certification letter must state that the conditions on the site and the As-Built plan are both identical to the stormwater management facilities shown on the final approved Site Plan or Preliminary Plat plan, as may be applicable.

(i) Changes made during the construction process will not be permitted without prior processing of a red-lined revision by the design Professional Engineer-of-Record and written approval from the Jefferson County Engineering Department or agents thereof.

(ii) At a minimum, all As-Built plans and certification letters shall include a red-lined set of drawings that compare the approved Stormwater Management Plan with what was constructed. Final acceptance and approval will not be given until all final inspections, the certification letter, and As-Built plans have been approved.

(c) The following items shall be surveyed to determine actual field conditions, and the approved Site Plans or approved Preliminary Plat Plans, as may be applicable, shall be annotated to reflect such actual field conditions and shall constitute the As-Built plans:

(i) <u>Storm Sewer System</u>

For the storm sewer system, provide the As-Built stormwater inlet invert and top elevations and the size and location, and the storm sewer pipe size and material type. Show the location of the storm sewer system relative to any designated stormwater management easements. Indicate where the storm sewer system is not properly located or constructed. Provide a statement as to whether or not the storm sewer system is properly constructed.

(ii) Storm Drainage System:

For the storm drainage system, provide the As-Built drainage swales grading and location and verify correct swale dimensions and depths; provide storm drainage culvert As-Built locations, length, pipe size, material type, and invert elevations. Show the location of the storm drainage system relative to any designated storm drainage easements. Indicate where the storm drainage system is not properly located or constructed. Provide a statement as to whether or not the stormwater conveyance system is properly constructed.

(iii) Stormwater Management Basins and BMPs

For stormwater quantity and quality control facilities, show the final topography/grading of the pond and embankment and Infiltration basins. Provide As-Built dimensions compared to design dimensions. Verify that the correct type of control structures are installed, including material types, sizes, elevations, and dimensions, etc. Verify that emergency overflow structures are properly constructed, including material types, elevations, and dimensions, etc.

For quality control BMPs, provide the location of each BMP compared to the approved plan location, and indicate whether or not they are properly constructed and located within any designated stormwater management easements. Verify that the BMPs are installed in accordance with the plans, specifications, and details (e.g., elevations, correct type of soils, filter media, and/or vegetation, correct number and type of plants, discharge piping, etc.).

Indicate where stormwater management basins and BMPs are not properly located or constructed. Provide a statement as to whether or not the stormwater management basins and/or BMPs are properly constructed.

(iv) Other Information

Provide any other As-Built information required by the Jefferson County Engineer that is deemed necessary to verify that the stormwater management facilities are properly constructed.

ARTICLE VI POST-CONSTRUCTION MAINTENANCE, INSPECTION, AND REPAIR OF STORMWATER FACILITIES

A. INSPECTION AND MAINTENANCE OF STORMWATER FACILITIES

(1) The Homeowners Association or Lot Owners Association and/or property owner or other entity responsible for the maintenance of the stormwater management facilities constructed pursuant to this Ordinance shall maintain in good condition and promptly repair and restore all grade surfaces, walls, drains, dams and embankments, discharge structures, trash racks, vegetation, erosion and sediment control measures, and other protective devices. Such repairs or restoration and maintenance shall be in accordance with the approved plans and specifications.

(2) Maintenance performed for specific BMPs shall be in accordance with the Maintenance Plan section within individual stormwater BMP specifications in Chapter 4 of the *West Virginia Stormwater Management and Design Guidance Manual.*

(3) The party responsible for the maintenance of the stormwater management facilities shall maintain and provide written records of all maintenance and repairs within 30 days of work completion to the West Virginia Department of Environmental Protection or other local responsible entity. A copy of these records shall also be submitted to the Jefferson County Engineering Department as notification that maintenance work was performed.

(4) The party responsible for maintenance of stormwater management facilities shall perform periodic inspections of all stormwater management facilities in accordance with requirements of the approved plans and specifications and in accordance with the inspection requirements printed on the approved Site Plan or Subdivision Preliminary Plat and Final Plat, as applicable.

(5) Compliance Inspection Report Requirements

(a) Inspection reports shall be written and maintained by the Jefferson County Engineering Department for any stormwater management facility compliance inspections performed by them.

(b) A copy of the inspection report shall be provided to the party responsible for the maintenance of the stormwater management facilities.

(c) Inspection reports for stormwater management facilities shall include the following:

(i) Date of inspection

(ii) Location and address of facility

(iii) Name of inspector and contact information

(iv) Condition of the following:

1. Vegetation or filter media
2. Fences or other safety devices

3. Spillways, valves, or other control structures
4. Embankments, slopes, and safety benches
5. Reservoir or treatment areas
6. Inlet and outlet channels or structures
7. Underground drainage
8. Sediment and debris accumulation in storage and forebay areas
9. Any nonstructural practices to the extent practicable
10. Any other item that could affect the proper function of the stormwater management facilities

(v) Description of any needed maintenance

(vi) Date or number of calendar days that the Stormwater Management Facility shall be required to be brought into compliance if maintenance is needed.

ARTICLE VII ENFORCEMENT AND PENALTIES

A. AUTHORITY

The planning commission, governing body, ordinance compliance officer, or any authorized employee or agent may enforce this Ordinance in the manner provided for in this section and by applicable law.

The ordinance compliance officer or any employee or agent of the Jefferson County Commission shall have the authority, upon presentation of proper credentials, to enter and inspect any land or premises to ensure compliance with this Ordinance.

B. GENERAL PROCEDURES

Any failure to comply with the requirements of this Ordinance or the requirements of a Stormwater Management Plan that is part of an approved Subdivision Plan/Plat, Site Plan, and/or Improvement Location Permit may be subject to the enforcement actions outlined in this section. Any such action or inaction that is continuous with respect to time is deemed to be a public nuisance and may be abated by injunctive or other equitable relief. The imposition of any of the penalties described below shall not prevent such equitable relief.

(1) Upon learning of a potential violation of this Ordinance, the ordinance compliance officer or staff shall investigate to determine whether a violation of this Ordinance has occurred.

(2) When it appears after an investigation that a violation of this Ordinance has occurred, the ordinance compliance officer or staff shall notify the violator by means of a written violation notice. The violation notice shall specify the following:

(a) The name and address of the landowner or the person responsible for the activity

(b) The physical address and location (e.g., street address, tax map and parcel, subdivision name and Lot number, etc.) of the activity

(c) A statement that explains the nature of the violation and the ordinance or regulation being violated

(d) A statement of the action needed to bring the violation into compliance

(e) A written statement requesting that the violation cease within 15 calendar days from the date appearing on the violation notice

(f) A statement that failure to terminate the violation within this time period shall be cause for the planning commission, the governing body, ordinance compliance officer, or other authorized employer or agent to

(i) Seek an injunction in the Circuit Court of Jefferson County to restrain the violator from continuing the violation, including but not limited to requests for removal of structures or land uses involved, and

(ii) Seek a conviction in magistrate court or circuit court

C. Civil and Criminal Penalties

Any person or entity who violates any provision of this Ordinance shall be guilty of a misdemeanor and, upon conviction, shall be fined not less than $50 and not more than $500. Each day during which any violation of this Ordinance occurs shall constitute a separate offense.

D. Disapproval of Subsequent Permits

As long as a violation of this Ordinance continues and remains uncorrected, Jefferson County may withhold or disapprove any request for a permit or Development approval or authorization required by this Ordinance, the Zoning Ordinance, the Subdivision and Land Development Regulations, the Building Code Enforcement Ordinance, or the Improvement Location Permit Ordinance for the land or project on which the violation occurs.

E. Holds on Use and Occupancy Certificates

Jefferson County may refuse to issue a certificate of use and occupancy for the building or other improvements constructed or being constructed on the site and served by the stormwater practices in question until the applicant or other responsible person has taken the remedial measures set forth in the notice of violation or has otherwise cured the violations described therein.

F. Suspension, Revocation, or Modification of Permit

Jefferson County may suspend, revoke, or modify the permit authorizing the land development project. A suspended, revoked, or modified permit may be reinstated after the applicant or other responsible person has taken the remedial measures set forth in the notice of violation or has otherwise cured the violations described therein, provided such permit may be reinstated to enable the applicant or other responsible person to take the necessary remedial measures to cure such violations.

ARTICLE VIII DEFINITIONS

For the purposes of this Ordinance, certain terms and words used herein shall be interpreted as follows:

1. Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.
2. The words "includes" or "including" shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like kind and character.
3. The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.
4. Words defined herein may be listed in a separate ordinance by a different definition. If this occurs, then the word shall be used and interpreted within each code in accordance with the specific definition contained therein.

Agricultural Activity - The occupation, business, or science of cultivating the land, producing crops, and raising livestock.

As-Built - Drawing or certification of conditions as they were actually constructed.

Best Management Practice (BMP) - Structural or nonstructural practice that is designed to minimize the impacts of changes in land use on surface and groundwater systems. Structural BMP refers to basins or facilities engineered for the purpose of reducing the pollutant load in stormwater runoff, such as bioretention, constructed stormwater wetlands, etc. Nonstructural BMP refers to land use or development practices that are determined to be effective in minimizing the impact on receiving stream systems, such as preservation of open space and stream buffers, disconnection of impervious surfaces, etc.

Bioretention Basin - Water quality BMP engineered to filter the water quality volume through an engineered planting bed consisting of a vegetated surface layer (vegetation, mulch, ground cover), planting soil, and sand bed (optional), and into the in-situ material; also called rain gardens.

Common Plan of Development – A contiguous construction project where multiple separate and distinct construction activities may be taking place at different times on different schedules but under one plan. The "plan" is broadly defined as any announcement or piece of documentation or physical demarcation indicating that construction activities may occur on a specific plot; included in this definition are most subdivisions.

Constructed Stormwater Wetlands - Areas intentionally designed and created to emulate the water quality improvement function of wetlands for the primary purpose of removing pollutants from stormwater.

Curve Number (CN) - A numerical representation of a given area's hydrologic soil group, plant cover, impervious cover, interception, and surface storage derived in accordance with Natural Resource Conservation Service methods. This number is used to convert rainfall depth into runoff volume. Sometimes referred to as a runoff CN.

Design Storm - A selected rainfall Hyetograph of specified amount, intensity, duration, and frequency that is used as a basis for design.

Detention - The temporary impoundment or holding of stormwater runoff.

Detention Basin - A stormwater management facility that temporarily impounds runoff and discharges it through a hydraulic outlet structure to a downstream conveyance system. While a certain amount of outflow may also occur via Infiltration through the surrounding soil, such amounts are negligible when compared to the outlet structure discharge rates and therefore are not considered in the facility's design. Since an extended detention basin impounds runoff only temporarily, it is normally dry during non-rainfall periods.

Development - See "Land Development."

Diameter at Breast Height (DBH) - The standard method of expressing the diameter of the trunk of a standing tree.

EPA - U.S. Environmental Protection Agency.

Erosion - The wearing away of the land surface by running water, wind, ice, or other geological agents.

Accelerated Erosion - Erosion in excess of what is presumed or estimated to be naturally occurring levels and is a direct result of human activities.

Gully Erosion - Erosion process whereby water accumulates in narrow channels and removes the soil to depths ranging from a few inches to 1 or 2 feet to as much as 75 to 100 feet.

Rill Erosion - Erosion process in which numerous small channels only several inches deep are formed.

Sheet Erosion - Spattering of small soil particles caused by the impact of raindrops on wet soils. The loosened and spattered particles may subsequently be removed by surface runoff.

Erosion and Sedimentation Control Plan - A site-specific plan identifying BMP's or ways in which accelerated erosion and sediment pollution will be minimized.

Frequency (Design Storm Frequency) - The recurrence interval of storm events having the same duration and volume. The frequency of a specified design storm can be expressed either in terms of Exceedance probability or return period.

Exceedance Probability - The probability that an event having a specified volume and duration will be exceeded in one time period, usually assumed to be 1 year. If a storm has a 1% chance of occurring in any given year, then it has an Exceedance Probability of 0.01.

Return Period - The average period of time expected to elapse between occurrences of events at a certain site. A 10-year event is an event of such size that over a long period, the average time between events of equal or greater magnitude is 10 years.

Homeowner's Association (HOA) or Business Owner's Association (BOA) - An incorporated nonprofit organization operating under a recorded land agreement through which: (a) each lot owner is automatically a member; and (b) each lot is automatically subject to a proportionate share of the expense for the organizations activities, such as, but not limited to maintaining drives, streets, roads, and other common property. Homeowner's Associations and the Uniform Common Interest Ownership Act of West Virginia are interchangeable and reversible terms. The most recent Uniform Common Interest Ownership Act of West Virginia shall prevail.

Impervious Cover - A surface composed of any material that significantly impedes or prevents natural infiltration of water into soil. Impervious surfaces include but are not limited to roofs, buildings, streets, parking areas, managed turf, and any concrete, asphalt, or compacted gravel surface.

Infiltration - The downward entry of water into soil.

Karst Terrain - Regions that are characterized by formations underlain by carbonate rock and typified by the presence of limestone caverns and sinkholes.

Land Development - The development of one or more lots, tracts, or parcels of land by any means and for any purpose, but does not include easements, rights-of-way, or construction of private roads for extraction, harvesting, or transporting of natural resources. This definition includes projects that are part of a larger common plan of development or sale.

Land Development, Major - The development and/or subdivision of more than five Lots, tracts, or parcels or any nonresidential Land Development that disturbs more than 5,000 square feet. Also, any Development and/or subdivision that includes a new street shall be considered a Major Land Development.

Land Development, Minor - The development and/or subdivision that does not require the development of new infrastructure, the extension of existing off-tract infrastructure, or the creation of common areas and result in the creation of five (5) lots or less, including the parent parcel or residue, from contiguously owned parcels of record.

Land Disturbance Activity - Any land change that may result in soil erosion from water or wind or the movement of sediments into state waters or onto lands in the State of West Virginia, including but not limited to clearing, grading, excavating, transporting, and filling of land.

Landscaping - The placement of vegetation in and around stormwater management BMPs.

Low Impact Development (LID) - Hydrologically functional site design, with pollution prevention measures to reduce impacts and compensate for development impacts on hydrology and water quality.

Major Site Plan - A plan that follows the major site development process and proposes one or more of the following:

a. A new public or private street or dedication to public use of an existing street;
b. Building(s), both new and additions to existing, where all structures located on the parcel are equal to or total more than 50,000 square feet or more of GFA on any site;

- except building(s), both new and additions to existing, regardless of size, when located in a business and/or industrial park on a lot within an approved major non-residential subdivision with master planned roads and stormwater;

c. Apartment or multi-family development of ten or more dwelling units; or

d. A heavy industrial use.

Existing single family structures used as single family structures and existing agricultural structures are not included in the square footage computations noted in this definition.

Major Subdivision Plat - A plat that proposes subdivision of land, whether residential or non-residential, that requires the development of streets (public or private) or rights-of-way access to the lots, or common area and/or includes the creation of more than five lots that take access to an existing public street.

Managed Turf - Any of various grasses (such as Kentucky bluegrass or perennial ryegrass) grown to form turf.

Minor Site Plan - A plan that follows the minor site development process and that will not require the development of new infrastructure or the extension of existing off-tract infrastructure that proposes one or more of the following:

a. Building(s), both new and additions to existing, where all structures located on the parcel total less than 5,000 square feet gross floor area (GFA) on any site shall process administratively, and building(s), both new and additions to existing, where all structures located on the parcel total more than 5,000 and less than 50,000 square feet gross floor area (GFA) on any site shall:

    - Process a concept plan with a public workshop and all remaining site plan review processes shall be administratively approved.
    - In the event that any condition(s) placed upon a site plan during the concept plan public workshop that cannot be addressed or resolved administratively, such condition(s) placed upon the concept plan at the public workshop shall return to the Planning Commission for resolution.
    - Building(s), both new and additions to existing that exceed 50,000 square feet gross floor area at the time of this adoption, adopted 01/19/2012, shall be permitted a one-time expansion up to 25,000 square feet gross floor area with a concept plan public workshop.

b. Building(s), both new and additions to existing, regardless of size, when located in a business and/or industrial park on a lot within an approved major non-residential subdivision with master planned roads and stormwater. Sub-Section A of this definition does not apply to this provision;

c. Apartment or multi-family development of nine or less dwelling units.

Minor Site Plans do not include the design, erection or addition to detached single family dwelling units when only one dwelling unit is located on an established lot.

Existing single family structures used as single family structures and existing agricultural structures are not included in the square footage computations noted in this definition.

Minor Subdivision Plat - A plat that will not require the development of new off-tract infrastructure or the extension of existing off-tract infrastructure, that proposes subdivision of land into five or less lots including the parent parcel.

National Pollutant Discharge Elimination System (NPDES) - The national program for issuing, modifying, monitoring, and enforcing permits under Sections 307, 402, 318, and 405 of the Clean Water Act.

Nonpoint Source Pollution - Contaminants such as sediment, nitrogen and phosphorous, hydrocarbons, heavy metals, and toxins whose sources cannot be pinpointed but rather are washed from the land surface in a diffuse manner by stormwater runoff.

Parcel - A portion of a subdivision or any other lot of land intended as a unit for transfer of ownership or for development or both. The word "parcel" includes the word "plot" or "lot."

Peak Discharge - The maximum rate of flow associated with a given rainfall event or channel.

Percolation Rate - The velocity at which water moves through saturated, granular material.

Post-development - Refers to conditions that reasonably may be expected or anticipated to exist after completion of the land development activity on a specific site or tract of land.

Predevelopment - Refers to the conditions that exist at the time that plans for the land development of a tract of land are approved by the plan approval authority. Where phased development or plan approval occurs (preliminary grading, roads and utilities, etc.), the existing conditions at the time prior to the first item being approved or permitted establishes the predevelopment conditions.

Professional Engineer - An engineer who is licensed within a specific jurisdiction to offer professional services directly to the public.

Redevelopment - Any construction, alteration, or improvement on existing development.

Retention - Permanent storage of stormwater.

Retention Basin - A stormwater management facility that includes a permanent impoundment, or normal pool of water, for the purpose of enhancing water quality and therefore is normally wet, even during non-rainfall periods. Storm runoff inflows may be temporarily stored above this permanent impoundment for the purpose of reducing flooding or stream channel erosion.

Riparian - Relating to or inhabiting the banks of a natural course of water.

Runoff - The portion of precipitation, snow melt, or irrigation water that runs off the land into surface waters.

Runoff Coefficient - The fraction of total rainfall that appears as runoff; represented as “C” in the rational method formula.

Runoff Reduction - The runoff reduction approach that seeks to maintain the same predevelopment runoff volume delivered to a body of water after a site is developed.

Sand Filter - A contained bed of sand that acts to filter the first flush of runoff. The runoff is then collected beneath the sand bed and conveyed to an adequate discharge point or infiltrated into the in-situ soils.

Silt Fence - A temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff.

Site - The parcel of land being developed, or a designated planning area in which a land development project is located.

Stormwater Control and Conveyance Plan - The component of the Stormwater Managemnt Plan which contains the details of the stromwater management facilities, Best Management Practices, and Low-Impact Development procedures required to manage stormwater on a development or redevelopment project.

Stormwater Hotspot - An area where the land use or activities are considered to generate Runoff with concentrations of pollutants in excess of those typically found in stormwater (see Table 2).

Stormwater Management Facility - A device that controls stormwater runoff and changes the characteristics of that runoff, including but not limited to the quantity and quality, the period of release, or the velocity of flow.

Stormwater Management Plan - A plan containing 3 components, the Erosion and Sediment Control Plan, Stormwater Control and Conveyance Plan, and Maintenance Plan for the HOA or property owner to follow, which must be submitted with subdivision plat and/or site plans describing the processes and details for managing stormwater and its impact on the built and natural environment. The applicability of this plan is described in the Jefferson County Stormwater Management Ordinance.

Stormwater Pollution Prevention Plan (SWPPP) – The Erosion and Sediment Control Plan and the post-development plan submitted as part of the Site Registration Application form required in the NPDES General Permit.

Stream Buffers - The zones of variable width that are located along both sides of a stream and are designed to provide a protective natural area along a stream corridor.

Total Maximum Daily Load (TMDL) - A calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

Water Quality Standards - State-adopted and EPA-approved ambient standards for water bodies. The standards prescribe the use of the water body and establish the water quality criteria that must be met to protect designated uses.

Watershed - A defined land area drained by a river, stream, or drainage way, or system of connecting rivers, streams, or drainage ways such that all surface water within the area flows through a single outlet.

ATTACHMENTS

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A. STORMWATER FACILITY INSPECTION REPORT

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Stormwater Facility Inspection Report

Address of facility:	Date of Inspection:
Associated Business or Property Owner's Name:	
Company Conducting Inspection:	
Name of Inspector:	

	Condition			
	-Substandard- Requires replacement or significant repairs	-Fair- Minor structural maintenance required	-Satisfactory- Minor debris removal and/or weeding recommended	-Good- No action or considerations to be taken
Vegetation or filter media				
Fences or other safety devices				
Spillways, valves, or other control structures				
Embankments, slopes, and safety benches				
Reservoir or treatment areas				
Inlet and outlet channels or structures				
Underground drainage				
Forebay areas				
Sand Filters				
Swales and conveyance systems				
Permeable pavements				
Signage			NA	
Other				

COUNTY COMMISSION

Jennifer S Mosher
JEFFERSON County 11:23:11 AM
Instrument No 201300261
Date Recorded 11/05/2013
Document Type ORDI*
Pages Recorded 66
Book-Page 1131-525

State of West Virginia, County of Jefferson, Sct.

Clerk's Office of the County Commission
of Jefferson County, at Charles Town,
in said State, exercising Probate
Jurisdiction

I, JENNIFER S. MAGHAN, Clerk of said Commission having by law the custody of the seal, and all papers, books, documents and papers of or pertaining to said Commission, hereby certify the paper hereto annexed to be a true copy appertaining to said Commission and on file and of record in said office, to-wit:

This Stormwater Management Order dated October 31st, 2013. Recorded in Book 1131 Page 525 on November 5th, 2013.

In attestation whereof I have hereunto set my hand and affixed the seal of said Commission this 6th day of November, 2013.

Jennifer S. Maghan

Clerk of said Commission

By: Cherokee

Deputy Clerk