

Chapter 12 - DRAINAGE

ARTICLE 1. - IN GENERAL

Sec. 12.01.001. General.

- A. *Scope.* This Chapter is to protect the public health, safety, and welfare on all existing premises by establishing minimum requirements and standards for adequate stormwater drainage and providing for administration, enforcement, and penalties.
- B. *Intent.* This Chapter shall be liberally construed to secure its expressed intent, which is to ensure the health, safety, and welfare of the public and to ensure the preservation of the land, air, and water resources of the County.
- C. *Liability.* Nothing in this Chapter shall create any liability for loss or damage resulting from the failure of the County to perform any responsibility set forth in this Chapter or obligate the County to make any appropriation or expend any money not appropriated for any purpose set forth in this Chapter.
- D. *Existing remedies.* The provisions in this code shall not be construed to abolish or impair existing remedies of the County or its officers or agencies relating to the remediation of any dangerous, unsafe, or unsanitary condition.

(Ord. No. 98-050, § 1(12-1), 5-26-1998; Ord. No. 22-030, § 1(12-1), 4-23-2022)

Sec. 12.01.002. Validity.

- A. *Validity.* If any section, subsection, paragraph, sentence, clause or phrase of this Chapter shall be declared invalid for any reason whatsoever, such decision shall not affect the remaining portions of this Chapter which shall continue in full force and effect, and to this end, the provisions of this code are hereby declared joint and severable.
- B. *Savings clause.* This Chapter shall not affect violations of any other ordinance, code, or regulation existing prior to the effective date hereof, and any such violation shall be governed and shall continue to be punishable to the full extent of the law under the provisions of those ordinances, codes, or regulations in effect at the time the violation was committed or detected.

(Ord. No. 98-050, § 1(12-2), 5-26-1998)

Sec. 12.01.003. Definitions.

Adequate capacity means the ability to accommodate a specific flow rate as determined by a DelDOT-approved method (typically, but not exclusively, Manning's Equation).

Adverse effect means property damage resulting from flooding and/or erosion that is contrary to the welfare or interest of the general public.

Applicant means a person, firm or governmental agency who executes the necessary forms to obtain approval or a permit for any zoning, subdivision, land development, building, land disturbance, or other activity regulated by this Chapter.

Blockage means impedance of concentrated water flows.

Building means a structure built on a lot, having a roof, and intended to shelter people, animals, property or business activity. Any structure used or intended to be used for supporting or sheltering any use or occupancy. The word “building” shall be construed as if followed by the words “or part or parts thereof and all equipment therein.”

Closed channel means conveyance system not open to the atmosphere (i.e., pipe).

Code Official means the General Manager of the Department of Land Use or his or her designee, the General Manager of the Department of Public Works or his or her designee.

Concentrated flow means an accumulation of runoff within a defined space.

Constriction means a point of reduction in the flow capacity of a channel (i.e., a smaller cross sectional area).

Construction buffer means a specific separation distance that serves to absorb the impact of land disturbing activities and protect a designated resource area.

Contours means lines on a plan or map joining points of the same elevation.

Conveyance mitigation area means a practice to mitigate the flow of stormwater runoff on a residential lot.

Conveyance system means all or part of the physical means of transporting runoff to a specific destination. This includes open channels and closed channels (i.e., pipe).

Culvert means a drainage crossing under an embankment.

Damage means impairment of the usefulness or value of property.

DelDOT means the State of Delaware, Department of Transportation (usually Division of Highways).

Department, when not specified, means the New Castle County Department of Land Use.

Design professional means registered professional in the State of Delaware who signed, dated and sealed the approved construction plans.

Design storm frequency means time interval in years at which a storm occurrence has a chance to exceed or equal the storm of specific duration and intensity used in the design of drainage systems.

Designated resource areas means any portion of a parcel required to remain undisturbed by a jurisdictional authority (i.e., critical resource areas, wetlands, etc.).

Designated watershed means a watershed for which a comprehensive stormwater management plan has been approved, the requirements of which any proposed development within that watershed must conform. See the Delaware Sediment and Stormwater Regulations.

Developer means a person or persons seeking to build or develop as defined in Chapter 40 of the New Castle County Code.

Development means any manmade change to improved or unimproved property, including but not limited to, buildings or other structures, placement of manufactured homes, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials. Development includes any action covered under Section 40.01.110 of the *New Castle County Code*.

Discharge means to dispose, deposit, spill, pour, inject, dump, leak, or place by any means, or that which is disposed, deposited, spilled, poured, injected, dumped, leaked, or placed by any means.

DNREC means the Delaware Department of Natural Resources and Environmental Control.

Drainage areas means the delineated areas that currently contribute or are proposed to contribute runoff to a specific location or point.

Drainage system means the way by which stormwater runoff is directed to a specific destination.

Earthwork means the work of excavating, filling, compacting, hauling, bedding, dredging, grading and stabilizing.

Easement means any portion of a parcel subject to an agreement between the property owner and another party which grants the other party the right to make limited use of that portion of the property for a specified purpose.

Encroach means to advance beyond proper or prescribed limits.

Encumbrance means that which impedes the flow of surface waters in a drainage system or watercourse.

Fill means to deposit material to raise the elevation of the ground.

Flood or flooding means a general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters or the unusual and rapid accumulation of surface runoff from any source.

Freeboard means the vertical elevation between the design high water level and the top of bank or lowest floor.

Frequency (storm). See *design storm frequency*.

Green technology stormwater best management practices (GTBMPs) means a practice that achieves stormwater management objectives by applying the principles of filtration, infiltration and storage most often associated with natural vegetation and undisturbed soils. GTBMPs may also be constructed using imported soil medium and planted vegetation designed to promote the natural hydrologic process. These GTBMPs include vegetative filtration, riparian buffer plantings, bio-retention areas, vegetative flow conveyances, as well as recharge and surface storage in undisturbed natural areas.

Groundwater means water contained in the soil or rocks below the water table.

Hydraulically critical area means a location where the design high water level may exceed the top of the bank or overtop a catch basin or facility causing flooding conditions.

Hydric Soil means soil having characteristics of an abundance of moisture.

Hydrologic characteristics means local atmospheric and land surface characteristics impacting the volume and rates of stormwater runoff.

Impervious means a description of a surface that presents no significant opportunity for precipitation to infiltrate into the ground.

Inactivity means any period where the moving of soil or other earth to achieve compliance with an approved plan has ceased or where the addition or subtraction of material from a stockpile for the use of that material to achieve compliance with an approved plan has ceased.

Industrial activity means activities performed by facilities categorized in 40 CFR 122.26(b)(14)(i) - (xi).

Industrial waste means liquid or other waste resulting from any process of industry, manufacture, trade or business, or from the development of any natural resource.

Inflow hydrograph means the graphical representation of the runoff rate versus time for flow into a stormwater management facility.

Inundated means submerged under water.

Land disturbing activity means a land change or construction activity for residential, commercial, industrial and institutional land development which may result in soil erosion from water or wind or the movement of sediments or pollutants into state waters or onto adjacent lands; or which may result in accelerated stormwater runoff, including, but not limited to, clearing, grading, excavating, transporting and filling of land as defined in Section 2 of the Delaware Sediment and Stormwater Regulations.

Maintenance means to preserve facilities in a safe and workable condition.

Maintenance organization means an organization approved by the County that is legally responsible for owning, maintaining, or managing open space. A maintenance organization may be a condominium association, a third-party conservancy or a maintenance corporation.

NRCS Web Soil Survey means the NRCS Soil Survey, New Castle County, Delaware, as promulgated by the U.S. Department of Agriculture.

NRCS method means the method of estimating runoff and peak discharges in a watershed used by the U.S. Department of Agriculture, including Technical Release 20 and Technical Release 55.

Off-site means not located within the limits of a parcel subject to development.

Open channel means a facility for the conveyance of stormwater which is exposed to the atmosphere (e.g. swales).

Open and free flowing means a condition where a non-tidal stream or watercourse has a natural flow that is free of any objects or material that create a blockage of flow that has the potential to cause serious personal harm or property damage or structural damage.

Open space means parcels of land within a residential subdivision, exclusive of streets and lots, generally preserved in a natural state or improved to provide common amenities for the residents of the subdivision. Open space shall be categorized as either natural resource area or community area. Open space is intended to preserve environmentally sensitive areas and protected resources, provide active and passive recreation facilities, establish greenways, provide wildlife habitats, facilitate stormwater management functions, and landscaped bufferyards. Both natural resource area open space and community area open space can be public or private and would be annotated as such on the development record plan or deed.

Outfall point means a specific location, as defined by local topography, where stormwater runoff exits a specific land area.

Outflow hydrograph means the graphical representation of the runoff rate versus time for flow exiting a stormwater management facility.

Person means an individual, corporation, partnership, or any other group acting as a unit, including, but not limited to, builder(s), developer(s), owner(s), etc.

Pervious means the description of a surface that presents an opportunity for precipitation to infiltrate into the ground.

Postdevelopment means the physical condition of a parcel of land after the completion of land disturbing activities

Predevelopment means the physical condition of a parcel of land prior to the commencement of land disturbing activities.

Rational method means the method of predicting peak runoff rates.

Retaining wall means a structure which holds an earthen embankment in place.

Right-of-way means an area of land dedicated for public or private use to accommodate a transportation system.

Runoff means that portion of precipitation that has not evaporated or infiltrated into the soil, but flows on the land surface.

Sanitary sewage means any liquid discharge from a structure or animal containment area, except roof drains.

Sanitary sewer means the system of underground conduits that collect and deliver sanitary sewage to a wastewater treatment plant.

Sediment and erosion control means the design and implementation of management and conservation practices for land disturbing activities.

Sediment and stormwater management plan means a plan for the control of soil erosion, sedimentation, stormwater quantity, and water quality impact resulting from any land disturbing activity, through both the construction and post construction phases of development.

Slope means the gradient of the land surface. Slope is expressed by the ratio of the change in horizontal distance to the change in vertical elevation.

Stockpiling means the temporary storage of soil, sand, stone, concrete or other aggregate for the purpose using the material for earthwork.

Storm sewer system means the system of catch basins, pipes, gutters, ditches, channels, storm drains, ponds, and other facilities located within New Castle County which are designed or used for collecting, storing, or conveying stormwater, or through which stormwater is collected, stored, or conveyed.

Stormwater means runoff from rain, snow, or other forms of precipitation, and surface runoff and drainage.

Stormwater management means the mitigation of the hydrologic impacts of lost natural runoff storage by the use of man-made storage facilities.

Stormwater management facility means a vegetative system, man-made or natural structure, and any other measure designed or utilized for the purpose of controlling the volume and rate of stormwater runoff, controlling the adverse effects on water quality and/or augmenting groundwater recharge, including but not limited to, stormwater management ponds, groundwater recharge facilities and green technology stormwater best management practices.

Stormwater pollution prevention plan means a plan describing the management practices which reduces and/or eliminates nonstormwater discharges to the storm sewer system.

Structural component means a portion of a stormwater management facility such as an inlet, outfall, pipe, outlet structure, low flow device, orifice, trash rack, or other physical feature of the stormwater management facility.

Sump means a point of comparatively low elevation which cannot be drained by means of surface flow.

Topography means the characteristics of a parcel of land with respect to elevation.

Unlawful act means the violation of any regulation, order, directive, permit condition or provision of this Chapter.

Watercourse means a stream channel (perennial or intermittent, mapped or unmapped) with banks and a bed within which concentrated surface water flows.

Watershed means the region drained by or contributing to a specific outfall point.

Water quality means those characteristics of stormwater runoff that relate to the chemical, physical, biological or radiological integrity of water.

Water table means the level below the surface at which the ground is saturated with water.

(Ord. No. 98-050, § 1(12-3), 5-26-1998; Ord. No. 05-082, § 1, 9-13-2005; Ord. No. 10-113, § 1(Exh. A), 1-18-2011; Ord. No. 11-018, § 1, 3-22-2011; Ord. No. 18-031, § 16, 4-24-2018; Ord. No. 22-030, § 1(12-3), 4-23-2022)

Sec. 12.01.004. Other publications referenced.

- A. Delaware Erosion and Sediment Control Handbook, as amended, and the Delaware Sediment and Stormwater Regulations, as amended, all promulgated by the Delaware Department of Natural Resources and Environmental Control, Division of Soil and Water Conservation. See also 7 *Del. C.* Ch. 40 (Erosion and sediment control).

- B. DelDOT's Development Coordination Manual effective November 2019, as amended, DelDOT's Utilities Design Manual, DelDOT's Standard Construction Details as amended, DelDOT's Standard Specifications, as amended and DelDOT's Road Design Manual, as amended, all promulgated by the Delaware Department of Transportation.
- C. NRCS Web Soil Survey, New Castle County, Delaware ("Web Soil Survey") issued by the U.S. Department of Agriculture, as amended.
- D. New Castle County Code, Chapter 40, Unified Development Code.
- E. New Castle County Code, Chapter 6, Building Code
- F. U.S. Department of Agriculture, NRCS, Pond Code 378

(Ord. No. 98-050, § 1(12-4), 5-26-1998; Ord. No. 10-113, § 1(Exh. A), 1-18-2011; Ord. No. 22-030, § 1(12-4), 4-23-2022)

ARTICLE 2. - STANDARDS OF COMPLIANCE

Sec. 12.02.001. Land disturbing activities.

- A. Prior to commencing any land disturbing activity, a plan must be submitted and approved by the County. Any land disturbing activity conducted in the absence of an approved plan or not in conformance with an approved plan shall be considered in violation of this Chapter. For land disturbing activities not subject to regulation, see Section 1.4 the Delaware Sediment and Stormwater Regulations; however, any structure that is four hundred eighty (480) square feet or greater and where a building permit is required, pursuant to the provisions of Chapter 6 of the New Castle County Code, shall be subject to the regulations herein.
- B. During all phases of construction, the developer shall maintain all drainage systems and watercourses within any subdivision. After obtaining the necessary inspections and approvals from the Department of Land Use and completing developer's warranty obligations, the developer's maintenance responsibilities shall terminate in accordance with the provisions of this Chapter. Maintenance of completed and approved drainage systems shall be by a State agency, the County, or, in the case of community stormwater management facilities and conveyance systems, the maintenance corporation for that specific subdivision, or, in the case of individual lots, by the lot owner.

(Ord. No. 98-050, § 1(12-16), 5-26-1998; Ord. No. 11-019, § 1, 3-22-2011; Ord. No. 22-030, § 2(12-1), 4-23-2022)

Sec. 12.02.002. Industrial activities.

- A. Those conducting industrial activities shall control their contribution of pollutants, discharges associated with industrial activity, and the quality of stormwater discharged from industrial activity sites into the municipal storm sewer system to the maximum extent practicable utilizing best management practices.
- B. The County will require submission, review, and approval of stormwater pollution prevention plans for industrial facilities which discharge into the municipal storm sewer system and are not covered by the applicable state permit. Approval of the stormwater pollution prevention plan by the County does not relieve the applicant of the responsibility to abate stormwater pollution, or comply with any and all other applicable local, state, and federal laws.
- C. Any requirements or parts of a requirement can be waived by the Department of Public Works for a particular submission if sound engineering judgment warrants such a waiver.

(Ord. No. 98-050, § 1(12-17), 5-26-1998; Ord. No. 10-113, § 1(Exh. A), 1-18-2011; Ord. No. 18-031, § 17, 4-24-2018)

Sec. 12.02.003. Third-party plan review.

The County may utilize a third-party professional to review applications for plan approval. When requested by an applicant, the County may allow third-party review of non-residential applications at the applicant's expense. The County may require third-party review of applications that are not approved after the second submission at the applicant's expense.

(Ord. No. 22-030, § 2(12-3), 4-23-2022)

Sec. 12.02.004. Variances.

The Department may grant a variance from the provisions of this Chapter, except that the Department of Public Works may grant a variance for projects where the County is the applicant. The responsible department may grant a variance if it finds that:

- A. The variance sought will not be detrimental to the environment or contrary to law,
- B. Owing to special conditions or an unusual situation, a literal interpretation of the provisions of this Chapter will result in hardship to the owner of the property in question,
- C. If the variance were granted, the goals of this Chapter will be met,
- D. The variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, or create a nuisance, and

E. For residential applications, the variance will not increase the cost of maintenance.

(Ord. No. 22-030, § 2(12-4), 4-23-2022)

ARTICLE 3. - GRADING TO PROMOTE ADEQUATE DRAINAGE

Sec. 12.03.001. Design goals.

The intent of this Article is to:

- A. Provide protection for buildings from stormwater damage by directing stormwater runoff away from the building via land grading adjacent to the building.
- B. Transport stormwater runoff for up to one-hundred (100) year frequency storms by means of adequate conveyance systems.
- C. Maintain or improve the flow characteristics for runoff leaving the site.
- D. Seek to conform post development grading to existing topography and protect designated resource areas on the site to the maximum practical extent.
- E. Delineate the boundaries of the Flood Insurance Rate Maps Zone X (shaded) FEMA five-hundred (500) year, two-tenths (0.2) percent annual chance flood.

(Ord. No. 98-050, § 1(12-26), 5-26-1998; Ord. No. 22-030, § 3(12-1), 4-23-2022)

Sec. 12.03.002. Surface water collection and disposition.

Every person, corporation, or other entity engaged in land disturbing activity shall:

- A. Collect concentrated on-site runoff and convey the runoff from the point of discharge into the common natural watercourse of the drainage area, or to such other point approved by the County.
- B. Handle existing off-site runoff through the development by installing adequate conveyance systems to accommodate the design storms as specified in Article 4.
- C. Ensure that surface water flows which become concentrated occur in a conveyance system of adequate capacity as specified in Article 4.

(Ord. No. 98-050, § 1(12-27), 5-26-1998; Ord. No. 22-030, § 3(12-2), 4-23-2022)

Sec. 12.03.003. Land grading on residential lots.

The ground on which structures are located shall be graded to carry stormwater runoff away from the buildings and dispose of it without causing water to pond on a private lot. Land grading on residential lots shall comply with the following specific standards:

- A. *Minimum protective slopes around a building.* Lots shall be graded to drain surface water away from foundations walls. The grade shall fall a minimum of six (6) inches within the first ten (10) feet consistent with the International Residential Code Chapter 4 §R401.3.
- B. *Maximum protective slopes around a building.* In grading of pervious areas for a minimum of four (4) feet from the foundation of any building the slope shall not be steeper than four (4) feet horizontal to one (1) foot vertical (4:1). The maximum man-made slope at any place on a residential lot shall not be steeper than two (2) feet horizontal to one (1) foot vertical (2:1), and any man-made slope steeper than three (3) feet horizontal to one (1) foot vertical (3:1) shall be designed according to the applicable provisions of the Delaware Erosion and Sediment Control Handbook, to ensure slope stability and minimize maintenance requirements.
- C. *Residential driveways.* The maximum average grade slope shall be fourteen (14) percent, the maximum grade slope within the right-of-way shall be ten (10) percent per DelDOT's Standards and Regulations for Access to State Highways. Driveways sloping toward buildings shall be graded to a low point located at least ten (10) feet from the building with a minimum fifty hundredths (0.50) foot vertical elevation difference between the elevation at the building and the low point. The low point shall be graded to drain away from the building. In subdivisions where roadside swales are employed rather than curb and gutter, a reinforced concrete pipe of adequate size per Article 4, but in no case smaller than fifteen (15) inches in diameter, shall be provided under each driveway.
- D. *Fill slopes.* The toe of slope on any fill steeper than three (3) feet horizontal to one (1) foot vertical (3:1) on any individually developed lot (exclusive of an overall subdivision) must be maintained at a minimum of two (2) feet from the nearest property line.
- E. *Retaining walls.* Retaining walls in excess of four (4) feet exposed height shall be located as far as necessary from the property line to accommodate the maintenance or replacement of structural components. Retaining walls more than four (4) feet exposed height shall be designed according to the International Building Code §1807.2, conform with the latest version of the Department's checklist and be approved by the Department.
- F. *Minimum slopes.* The minimum slope, beyond the protective slope as defined in Subsection A.1, on a residential lot shall be one-half (1/2) percent on impervious surfaces, two (2) percent on all other pervious surfaces. When acceptable to the Department of Land Use, the grade on pervious surfaces may be reduced to one (1) percent, providing soil testing and assessment by a qualified professional are provided to ensure adequate infiltration potential is available through all layers of the soil horizon and that the local water table characteristics are amenable to such practices. It must be demonstrated that the lesser gradient is adequate

to drain the lot without detrimental effect upon buildings or upon essential uses, including an individual sewage disposal system. Graded areas that result in standing water after a rain event in excess of forty-eight (48) hours are not acceptable.

- G. *Vegetative stabilization.* All graded areas must be top-soiled to a minimum depth of four (4) inches. Seeding, soil amendments, and mulching must be applied according to the “Standards and Specifications for Vegetative Stabilization” and “Additional Standard and Specifications for Permanent Stabilization” sections of the Delaware Erosion and Sediment Control Handbook. The certificate of occupancy for a permitted structure shall be withheld pending satisfactory completion of these items. These requirements may be postponed to a specific date by the Code Official.
- H. *Postponement or waiver of final grading and vegetative stabilization requirements.* A postponement or waiver of final grading and vegetative stabilization requirements may be approved by the Code Official, upon presentation of a form prescribed by the Department of Land Use and signed by the builder, the prospective homeowner(s), and the County pursuant to the regulations permitting such postponement or waiver.
- I. *Poor drainage soils.* Buildings and their foundations placed in areas having poor drainage characteristics that result in a seasonal high-water table (SHWT) (within thirty-six (36) inches of the lowest floor elevation) shall be waterproofed. The lowest floor shall be constructed a minimum of twenty-four (24) inches above the SHWT.
- J. *Groundwater.*
 - 1. All buildings requiring foundation drains shall be provided with discharge drain lines which extend beyond the protective slope of the structure in order to avoid recirculation of water back to the foundation. In the event that there is an excess of water (i.e., springs, etc.) the discharge line shall be extended to the street drainage system or to a natural or design drainage system within the development. No subsoil or other drain shall be connected in any way to the sanitary sewer system. The drain shall not adversely affect the maintenance or operation of any stormwater management facility.
 - 2. The location of any groundwater outflows discovered during development of a site must be brought to the attention of the Department of Land Use. The developer must identify the source of the outflow and provide a means of draining these flows around and away from any building to the satisfaction of the Department before release of certificates of occupancy for the affected building.
 - 3. The developer must provide the means to satisfactorily drain any portion of a residential lot observed to have wet conditions that prohibit the growth of stabilizing vegetation or present maintenance difficulties for an extended period due to groundwater outflows.

(Ord. No. 98-050, § 1(12-28), 5-26-1998; Ord. No. 10-113, § 1(Exh. A), 1-18-2011; Ord. No. 22-030, § 3(12-3), 4-23-2022)

Sec. 12.03.004. Grading in residential and nonresidential common areas.

Disturbance of open space recorded on a subdivision or land development plan shall be limited to those activities that are necessary to meet the provisions of this Code. Any area designated by the record subdivision or land development plan to remain undisturbed or any limits of disturbance line depicted on an approved site construction plan shall be clearly and visibly delineated on the site before the commencement of land disturbing activities. The accuracy of the delineation must be certified by a qualified design professional before the commencement of any land disturbing activity. The delineation must remain in place until the surety is released according to the Land Development Improvement Agreement. Land grading on common areas shall comply with the following specific standards:

- A. *Minimum protective slopes around a nonresidential building.* Grading shall be consistent with the International Building Code §1804.4, as amended.
- B. *Maximum open area slope.*
 - 1. Impervious/paved areas: fourteen (14) percent. Streets/accessways must be designed/constructed per DelDOT's Rules and Regulations for Subdivision Streets.
 - 2. Pervious areas: two (2) feet horizontal to one (1) foot vertical (2:1).
- C. *Minimum open area slope.*
 - 1. Impervious/paved areas: five-tenths (5/10) percent. Streets/accessways must be designed and constructed to DelDOT's Rules and Regulations for Subdivision Streets.
 - 2. Pervious areas: two (2) percent.
- D. *Retaining walls.* Retaining walls in excess of four (4) feet exposed height shall be located as far as necessary from the property line to accommodate the maintenance or replacement of structural components. Retaining walls more than four (4) feet exposed height shall be designed according to the International Building Code §1807.2, conform with the latest version of the Department's checklist and be approved by the Department.
- E. *Vegetative Stabilization.* All graded areas must be top-soiled to a minimum depth of four (4) inches. Seeding, soil amendments, and mulching must be applied according to the "Standards and Specifications for Vegetative Stabilization" and "Additional Standard and Specifications for Permanent Stabilization" sections of the Delaware Erosion and Sediment Control Handbook. The certificate of occupancy for a permitted structure associated with land disturbance shall be withheld pending satisfactory completion of these items. These requirements may be postponed to a specific date by the Code Official.

(Ord. No. 98-050, § 1(12-29), 5-26-1998; Ord. No. 10-113, § 1(Exh. A), 1-18-2011; Ord. No. 22-030, § 3(12-4), 4-23-2022)

Sec. 12.03.005. Environmentally sensitive grading.

- A. The amount of cutting or filling required on site shall be minimized to the maximum practical extent by:
 - 1. Honoring natural drainage divides;
 - 2. Placing streets and roads as close to existing grade as possible; and
 - 3. Performing land grading in a way that minimizes adverse impact to existing vegetation.
- B. For the protection of natural resource areas designated to remain undisturbed, not including the riparian buffer area, a minimum ten (10) foot wide buffer must be provided between the sediment control practice and the natural resource area(s).
- C. Improvements to streams and watercourses shall be designed and constructed to preserve and enhance the natural environment to the maximum extent practical.

(Ord. No. 98-050, § 1(12-30), 5-26-1998; Ord. No. 11-018, § 2, 3-22-2011; Ord. No. 22-030, § 3(12-5), 4-23-2022)

Sec. 12.03.006. Review of land grading design.

- A. The Department will review site construction plan submissions required by Appendix 1 of Chapter 40 of the *New Castle County Code* to determine the grading feasibility for recordation purposes.
- B. A grading plan approval is required before a subdivision or land development plan is recommended for recordation. An approved lines and grades plan is required before the issuance of a building permit for new buildings or expansion of existing buildings four hundred eighty (480) square feet or greater, regardless of the amount of land disturbance. The lines and grades plan must demonstrate adequate conveyance in compliance with Section 12.04.001(A). Exception: a lines and grades plan is not required for proposed structures without walls that do not meet the definition of GFA.
- C. The lines and grades plan must conform to the latest version of the Department's plan content checklist.
- D. Before issuance of a certificate of occupancy, the Department must receive a lines and grades as-built plan certifying that the lot was graded according to the approved grading plan.

(Ord. No. 98-050, § 1(12-31), 5-26-1998; Ord. No. 11-019, § 2, 3-22-2011; Ord. No. 22-030, § 3(12-6), 4-23-2022)

ARTICLE 4. - CONVEYANCE SYSTEMS

Sec. 12.04.001. Conveyance system standards.

- A. Any person who engages in land disturbing activity shall control the contribution of off-site runoff through the site by adequately sizing the conveyance system. On-site runoff shall be collected and an adequate conveyance system provided to transport the runoff to an existing watercourse or pipe system of adequate capacity to accommodate the peak rate of stormwater flow for the maximum design storm of the drainage area.
- B. *Open channel.* When open channels with a drainage area greater than 5-acres are proposed, an engineering analysis shall be submitted supporting the proposal with respect to feasibility, capacity design, and soil stabilization within the channel. Where open channels are designed as an integral part of a stormwater management plan, the following requirements may be superseded by approved guidelines for a specific stormwater practice. In all other cases, the engineering analysis shall adhere to the following requirements:
 - 1. Documentation of the seasonal high-water table elevation with respect to the proposed channel depth shall be provided to evaluate the potential of the ditch intersecting the groundwater table causing the channel to receive greater flows than design capacity and the possibility for continually wet surfaces within the channel.
 - 2. Channels shall be trapezoidal or parabolic in shape. In either case, accessibility for maintenance shall be considered in the design.
 - 3. Maximum side slopes: three (3) feet horizontal to one (1) foot vertical (3:1) for unpaved (vegetated side slopes) and two (2) feet horizontal to one (1) foot vertical (2:1) for paved side slopes. Paved side slopes shall only be implemented in locations where the required conveyance capacity requires paved side slopes, or existing conditions physically prohibit the width requirements of three (3) feet horizontal to one (1) foot vertical (3:1) side slopes. Where channels with paved side slopes exceeding three (3) feet horizontal to one (1) foot vertical (3:1) are proposed, adequate additional width and grade access must be provided for maintenance equipment on landlocked channel segments.
 - 4. Minimum bottom width shall be two (2) feet where the depth exceeds one (1) foot.
 - 5. Minimum design velocity shall be two (2) feet per second.
 - 6. The maximum design velocity in a grassed channel shall not exceed the permissible values stated in the "Standards and Specifications for Grassed Waterways" section of the Delaware Erosion and Sediment Control Handbook, except as provided with structural measures as detailed therein. Also, as noted therein, sustained wet conditions in a channel are not amenable to the establishment of adequate vegetative cover;

therefore, where conditions will exist which indicate a base flow in the channel, the channel shall be provided with a stone center according to the specification noted above.

7. If designed with a paved bottom, the bottoms shall be reinforced Portland cement concrete with a minimum six (6) inch thickness.
 8. All other standards and specifications contained in the “Grassed Waterway” and “Lined Waterway or Outlet” sections of the Delaware Erosion and Sediment Control Handbook shall apply.
 9. The maximum flow depth for the design storm event in an open channel on a residential lot or the right-of-way adjacent to a residential lot shall be one (1) foot. The maximum channel depth shall be three (3) feet. The depth at any given cross section shall be measured from the bottom of the channel to the height at which the side slope becomes less than five (5) feet horizontal to one (1) foot vertical.
 10. A backwater analysis may be required by New Castle County to assess the impact of post-development flows if apparent constrictions exist downstream.
- C. *Closed channel (i.e., pipe networks)*. All closed conveyance systems shall be designed and constructed according to this Article and DelDOT’s Development Coordination Manual effective November 2019, as amended.
1. Rock outlet protection, designed per the “Rock Outlet Protection” section of the Delaware Erosion and Sediment Control Handbook, shall be provided at each outfall.
 2. A backwater analysis may be required by New Castle County to assess the impact of post development flows if apparent constrictions or high tailwater conditions exist downstream.
- D. Conveyance systems shall outfall to a stormwater management facility or watercourse capable of accepting the design runoff.
- E. Development sites shall be graded and stormwater management facilities located in a way that ensures that no buildings will be flooded by a one hundred (100) year storm event and that all runoff from areas designed to drain to a stormwater management facility shall reach the facility, even in the event that the runoff rate exceeds the capacity of the conveyance system or the conveyance system fails. The following standards will be used to verify this requirement:
1. For building protection, the overall site drainage system will be evaluated using the NRCS method one hundred (100) year frequency storm. The water surface elevation at catch basin sumps, flat areas, and other hydraulically critical areas will be assessed by a topographic appraisal indicating the maximum limits of flooding. At locations where the topographic appraisal indicates limited conveyance possibilities, the water

surface elevation will be computed by Manning's Equation or backwater analysis as appropriate. A minimum distance of ten (10) feet must be maintained between the computed limits of inundation and any occupiable building. A minimum eighteen (18) inches freeboard must be maintained between the computed water surface elevation and the lowest adjacent grade of any occupiable building.

2. On-site grading shall also be evaluated using the NRCS method one hundred (100) year frequency storm to verify that the runoff from this storm shall properly reach the designated stormwater management facility or point of discharge. The inlet(s) for the closed conveyance system shall be credited with fifty (50) percent of its design storm capacity for the purposes of this analysis to anticipate the possibility of system blockage. The intent is that grading in the form of relief channels/berms and building location or elevation be altered to achieve the desired goal of directing all design runoff to the stormwater management facility or the point of discharge for the one hundred (100) year frequency storm. In circumstances where this requirement creates a hardship, or would result in excessive cutting or filling, the intent of this paragraph may be addressed by providing pipe and inlet grate capacity with one hundred fifty (150) percent of the capacity of the one hundred (100) year storm flow rates.
- F. The drainage system shall be designed so that parcels over which the surface waters are conveyed from the development site to existing watercourses or pipe systems are not adversely affected. The following criteria will be used for verifying that a property is not adversely affected and that the developed property may continue to discharge runoff without off-site modification:
1. The peak runoff flow rate after development does not exceed the predevelopment peak runoff flow rate for the design storm frequencies required by the Delaware Sediment and Stormwater Regulations.
 2. For projects generating a post-development discharge rate of one (1) cubic feet per second, or greater in a one (1) year storm event, the post-development discharge is not concentrated in a location where the predevelopment runoff was not concentrated.
 3. The drainage design shall not adversely impact upstream property by impeding drainage or increasing the water surface elevation upstream of the parcel being developed.
 4. Where a stormwater management facility is proposed to manage the Flooding Event at specific discharge points, the developer must submit, when required by the Department, an analysis that demonstrates no impact (i.e., an increase in velocity that causes an erosive condition, an increase in flood elevation, or an increase in duration of flooding) from the stormwater flow downstream in the watershed for the one hundred (100) year frequency storm event. The analysis shall include hydrological and hydraulic calculations necessary to determine the impact of hydrograph timing modifications of the proposed development, with and without the stormwater management facility, on receiving dams, highways, structures and natural points of

constricted stream flows past which the timing effects would be considered negligible. The results of this analysis will determine the need to modify the design or eliminate the stormwater management facility requirement. The investigation shall incorporate any available studies and their recommendations to the maximum practical extent. Lacking a clearly defined point of constriction, the limit of the analysis for downstream impact, with concurrence of the Department, will terminate at the first downstream tributary whose drainage area meets or exceeds the contributing area to the stormwater management facility or the first downstream tributary whose peak discharge exceeds the design release rate in the one hundred (100) year frequency storm event. As a result of this analysis the developer may be required to:

- a. Provide additional stormwater detention on the project such that the peak rate of runoff from the ten (10) year storm event after development does not exceed that of the two (2) year storm event before development, and the peak rate of runoff from the twenty-five (25) year storm event after development does not exceed that of the ten (10) year storm event before development. For the purpose of this analysis, all existing pervious areas shall be modeled as meadow in good condition.
- b. Obtain drainage easement(s) from the downstream property owner(s) to convey drainage to an acceptable point of discharge and provide access to improve and maintain the receiving conveyance system.

(Ord. No. 98-050, § 1(12-51), 5-26-1998; Ord. No. 22-030, § 4(12-1), 4-23-2022)

Sec. 12.04.002. Estimation of peak flow for conveyance systems.

- A. The design of conveyance systems requires the peak rate of flow for a specified storm frequency. Conveyance systems must be designed starting from the uppermost reaches of the impacted watershed; each subsequent area contributing runoff is included in the downstream calculation.
- B. The components of a successful drainage design are:
 1. Research data.
 - a. Drainage area characteristics:
 - i. Soil types based on NRCS Web Soil Survey (supplemented by site soil inspection, if necessary);
 - ii. Topography; and
 - iii. Existing (and proposed) ground cover.

2. Existing drainage system information.
 3. Watercourse information: flood profiles.
 4. Field review:
 - a. Condition of existing drainage systems;
 - b. Characteristics of proposed site outfalls;
 - c. Impact of existing features (i.e., utilities, vegetation to remain, etc.) on drainage design;
 - d. Identification of natural or man-made downstream constrictions to the extent required in Subsection 12.04.001.F.4.
- C. Drainage area delineation. Drainage areas contributing to a specific point of interest are indicated by existing contours, proposed on-site grading and street grades. In addition, all areas outside the development that contribute runoff shall be delineated and accounted for in the drainage design.
- D. Determination of appropriate equation values. Values of parameters shall conform to figures provided in the DeIDOT Development Coordination Manual effective November 2019, as amended.
- E. The criteria for selecting a storm frequency for conveyance system design is provided below:

Function	Open Channels	Storm Pipes	Culverts
Stormwater that is captured and managed in a facility	25	10*	25
Stormwater that is conveyed through the site without management	25	25	25
Watercourse	100	100	100

* Use twenty-five (25) year frequency for sumps drained by a storm pipe.

(Ord. No. 98-050, § 1(12-52), 5-26-1998; Ord. No. 10-113, § 1(Exh. A), 1-18-2011; Ord. No. 22-030, § 4(12-2), 4-23-2022)

Sec. 12.04.003. Hydraulic design standards.

- A. *Generally.* All drainage systems, including culverts and bridges, shall be designed and constructed in a manner to achieve the following:
1. To account for both on-site and off-site surface runoff;

2. Drainage systems must conform to DelDOT standards; and
3. To retain or improve the character of the surrounding area as much as practical.

B. Closed conveyance systems.

1. Pipe networks shall be designed to accommodate the peak runoff rate according to the standards and methodologies contained in the DelDOT Development Coordination Manual effective November 2019, as amended. The parameters for a successful conveyance system design are as follows:
 - a. Minimum full flow velocity in the pipe shall be three (3) feet per second to prevent deposition of sediment.
 - b. Maximum full flow velocity in the pipe shall be fifteen (15) feet per second.
 - c. Minimum pipe diameter shall be fifteen (15) inches.
 - d. Minimum pipe cover shall be per the manufacturer's specifications for the type of loading proposed; in no case shall the cover be less than one (1) foot.
 - e. Type of material shall conform to DelDOT standards and rated by the manufacturer to have a service life of at least fifty (50) years. Metal pipe is not permitted.
 - f. Storm manholes or junction boxes shall be used for changes in the direction of flow (the deflection shall not be less than ninety (90) degrees).
2. Refer to the DelDOT Road Design Manual, as amended, Chapter Six, Drainage and Stormwater Management for calculation procedures.

C. Gradeline analysis.

1. A hydraulic gradeline analysis of the conveyance systems shall be provided where any of the following conditions are not met:
 - a. The slope and pipe sizes are chosen so that the pipe slope is equal to or greater than the friction slope; or
 - b. The top surfaces of successive pipes are aligned at changes in size (rather than aligning flow lines); or
 - c. The surface elevation of the tailwater at the point of discharge is not above the top elevation of the outlet.

2. The hydraulic gradeline is submitted to check the operation of the system under the design storm frequency by starting from the design tailwater elevation at the outfall and proceeding upstream, considering every pipe unit up to the initial inlet. Calculated water surface elevation in the catch basin must be no higher than one (1) foot below the grate elevation for the design storm.

D. *Culverts.* Design of culverts shall be in conformance with DelDOT standards. Outlet protection, according to the “Rock Outlet Protection Section” of the Delaware Erosion and Sediment Control Handbook, must be provided at all culverts.

(Ord. No. 98-050, § 1(12-53), 5-26-1998; Ord. No. 22-030, § 4(12-3), 4-23-2022)

Sec. 12.04.004. Design for maintenance.

New or improved drainage systems shall be designed and constructed to require economical maintenance. Conveyance systems must be built with materials rated by the manufacturer to have a service life of at least 50 (fifty) years. Adequate easements must be provided for access during construction and afterwards for maintenance.

(Ord. No. 98-050, § 1(12-54), 5-26-1998; Ord. No. 22-030, § 4(12-4), 4-23-2022)

Sec. 12.04.005. Drainage easements.

A. *General.* All drainage easements will be sized and recorded according to the following:

1. For a conveyance system located outside a street right-of-way, a drainage easement must be provided along any watercourse, any closed channel, or any open channel conveying runoff from three or more buildings.
2. All drainage easements shall identify the party responsible for maintenance and be recorded according to the procedures that are established by the Unified Development Code, as amended.
3. The developer shall provide or acquire a permanent recorded access easement to any on-site or off-site drainage easement. This easement shall be at least fifteen (15) feet wide, with no slope greater than four (4) feet horizontal to one (1) foot vertical for vehicular access.
4. No building shall be constructed within a drainage easement nor shall any blockage or encumbrance be placed within the easement.
5. The minimum width of any drainage easement shall be twenty (20) feet. The easement shall have a constant width between drainage structures as determined by the Department.

6. In major residential subdivisions, drainage easements shall only be located in common open space.

B. Open Channels.

1. Open channels that convey runoff from a drainage area greater than five (5) acres must be located within a drainage easement. The width must be constant and accommodate the limits of inundation during a one hundred (100) year storm event plus one (1) foot of freeboard.
2. In major residential subdivisions, surface waters collected from more than two (2) lots shall be located within a drainage easement. The width must accommodate the limits of inundation during a one hundred (100) year storm event.
3. In minor residential subdivisions without common open space, surface waters collected from more than two (2) lots shall only be provided in a drainage easement. The width must accommodate the limits of inundation during a one hundred (100) year storm event. The easement shall have a constant width for its span over a given lot.

C. Closed Channels.

1. In residential subdivisions, the developer must make a suitable allowance for channel grading over the closed system. The easement width must be constant and accommodate the limits of inundation during a one hundred (100) year storm event plus one (1) foot of freeboard.
2. The closed conveyance system must be located in the center of the easement.

D. Watercourse.

1. Watercourses that flow through or along the boundaries of developments shall be located in open space and within a drainage easement of a width not less than the area estimated to be inundated by a one hundred (100) year frequency storm and within the area required for eighteen (18) inches of freeboard after grading. Additionally, the easement must not be less than the width of the course bed and slopes plus a thirty (30) foot strip on each side. If only one (1) strip can be provided, a minimum of forty (40) feet will be required.
2. On watercourses where the above width requirements place a hardship on the landowner(s), the requirements may be varied by the Department of Public Works and an acceptable easement of lesser width shall be provided. The alignment of the easement will generally be governed by the hydraulic characteristics of the stream flow, location of, and relationship to the adjacent properties. The alignment shall follow the natural drainage channel where possible.

- E. *Off-site*. The developer shall be responsible for acquisition of all necessary off-site easements to convey drainage to an acceptable point of discharge. An off-site easement must be depicted on the Record Plan and any separately recorded easement must be referenced by instrument number.

(Ord. No. 98-050, § 1(12-55), 5-26-1998; Ord. No. 22-030, § 4(12-5), 4-23-2022)

Sec. 12.04.006. Review of drainage design.

Plan submissions will be reviewed as required by Chapter 40, as amended, to determine drainage feasibility for recordation purposes. The submission must conform to the latest version of the sediment and stormwater and drainage design checklist.

(Ord. No. 98-050, § 1(12-56), 5-26-1998; Ord. No. 10-113, § 1(Exh. A), 1-18-2011)

Sec. 12.04.007. As-builts.

- A. An as-built must be provided for all stormwater management facilities and contain sufficient information to complete the documentation required by the Delaware Sediment and Stormwater Regulations, and the USDA NRCS Pond Code 378, as amended. Stormwater management facility as-builts shall conform to the latest version of the applicable stormwater as-built checklist.
- B. An as-built must be provided for all conveyance systems (i.e., open and closed channels) located in an easement. Conveyance system as-builts shall conform to the latest version of the conveyance system as-built checklist.
- C. The Code Official may require an as-built survey of any disturbed area to ensure compliance with any plan or code requirement.

(Ord. No. 98-050, § 1(12-57), 5-26-1998; Ord. No. 22-030, § 4(12-7), 4-23-2022)

ARTICLE 5. - SEDIMENT AND STORMWATER MANAGEMENT

Sec. 12.05.001. Adoption of State sediment and stormwater regulations.

Certain documents on file with the Clerk of the County Council, being marked and designated as the Delaware Sediment and Stormwater Regulations, as amended, promulgated by the DNREC, are hereby adopted as the sediment and stormwater regulations of the County. All the sections, penalties, conditions, and terms of the Delaware Sediment and Stormwater Regulations are hereby referred to, adopted, and made part of this Chapter as if fully set out in this Section.

(Ord. No. 98-050, § 1(12-81), 5-26-1998; Ord. No. 22-030, § 5(12-1), 4-23-2022)

Sec. 12.05.002. Sediment and stormwater permit fees.

New Castle County shall collect, at the time a sediment and stormwater management application is submitted, a fee calculated in accordance with Appendix 2 of the Unified Development Code.

(Ord. No. 98-050, § 1(12-82), 5-26-1998; Ord. No. 22-030, § 5(12-2), 4-23-2022)

Sec. 12.05.003. Prohibited land disturbing activities.

Except as provided in the Delaware Sediment and Stormwater Regulations, no person or entity may engage in any land disturbing activity until such person or entity has obtained an approved sediment and stormwater management plan. Lines and grades plans will not be approved for a parcel of land before approval of a sediment and stormwater management plan, except as exempted by the Delaware Sediment and Stormwater Regulations. These requirements are in addition to all other provisions of law relating to the issuance of such permits and are not intended to otherwise affect the requirements for such permits.

(Ord. No. 98-050, § 1(12-83), 5-26-1998; Ord. No. 22-030, § 5(12-3), 4-23-2022)

Sec. 12.05.004. Approved land disturbing activities.

The County shall approve a sediment and stormwater management plan if it determines that the plan meets the applicable standards and if the person responsible for carrying out the plan certifies that the sediment and stormwater control measures included in the plan will be implemented and that the provisions of the Delaware Sediment and Stormwater Regulations and County Code will be followed.

(Ord. No. 98-050, § 1(12-84), 5-26-1998; Ord. No. 22-030, § 5(12-4), 4-23-2022)

Sec. 12.05.005. Regulations governing the use of approved sediment and stormwater management plans.

- A. Implementation of the approved plan may only be altered through a revised plan approved by New Castle County. Such changes may be directed where:
 - 1. Inspection has revealed an inadequacy of field controls to accomplish the sediment and stormwater management objectives; or

2. The person responsible for carrying out the approved plan finds that because of changed circumstances or for other reasons the approved plan cannot be effectively carried out; or
 3. The sequence of construction does not adequately address construction and completion of the project; or
 4. Material standards or construction techniques have changed that would result in a more economical design for construction and maintenance.
- B. No building, grading or other permits for a site shall be issued by New Castle County, where:
1. DNREC considers the applicant to be in violation of *7 Del. C. § 4001 et seq.*; or
 2. The applicant has failed to comply with any directives arising out of a New Castle County referral to DNREC; or
 3. The applicant has failed to comply with the provisions of the New Castle County Code; or
 4. The applicant has not obtained a DelDOT entrance permit, when required.
- C. Approval of a sediment and stormwater management plan by the County does not relieve the applicant of the responsibility to abate sediment pollution, or comply with any and all other applicable local, state and federal laws.
- D. The County may, in its discretion under appropriate circumstances, restrict or prohibit the use of standard plans as defined in the Delaware Sediment and Stormwater Regulations. Such a decision shall result in the applicant being obligated to submit a detailed sediment and stormwater management plan in accordance with this Chapter.
- E. Standard plans are valid for one (1) year from their approval date.

(Ord. No. 98-050, § 1(12-85), 5-26-1998; Ord. No. 22-030, § 5(12-5), 4-23-2022)

Sec. 12.05.006. Sediment and stormwater regulations and design standards.

- A. The following references apply to sediment and stormwater management design, implementation, inspection and review:
1. Delaware Sediment and Stormwater Regulations, as amended;
 2. Delaware Sediment and Erosion Control Handbook;
 3. Unified Development Code, Chapter 40, *New Castle County Code*.

B. The sediment and stormwater submission shall conform to the latest version of the sediment and stormwater checklist. The following design standards apply:

1. Stormwater management systems shall be designed to treat runoff from sources to obtain the greatest water quality benefit. Except for redevelopment of a Brownfield as defined in Chapter 40 of this Code, all non-residential redevelopment projects on parcels three (3) acres or greater and processed as a detailed plan under the Delaware Sediment and Stormwater Regulations shall employ treatment or runoff reduction practices to achieve an equivalent fifty (50) percent reduction in effective imperviousness from existing impervious areas for the Resource Protection Event (RPv).
2. All projects subject to a stormwater management detailed plan shall demonstrate compliance with the TMDL load reduction requirements for total nitrogen, total phosphorous and total suspended solids in the watershed(s) for which the project is located.
3. The design storm must be in accordance with the storm events outlined within the Delaware Sediment and Stormwater Regulations.
4. Stormwater management design.
 - a. The minimum horizontal or vertical dimension of an orifice or weir is one and one-half (1½) inches.
 - b. The design must include adequate pre-treatment measures to minimize the frequency of clogging of any orifice or weir.
 - c. Any orifice or weir within a structure must be provided such that it is accessible for visual inspection and maintenance.
 - d. Large orifices proposed for stormwater quantity control must include trash racks, hoods or other features to avoid clogging. For outlets with openings equivalent to a fifteen (15) inch diameter circular shape or less, the trash rack area shall be at least ten (10) times the outlet area with the spacing between openings of the trash rack smaller than the smallest dimension of the outlet but not larger than four (4) inches. For outlets larger than a fifteen (15) inch diameter circular shape, the area of the trash rack shall be at least four (4) times the outlet area and the spacing between the openings of the rack shall not be larger than four (4) inches.
 - e. In the design of wet ponds, hydrologic and geologic characteristics of the site must be considered to ensure that the following requirements are satisfied:
 - i. An adequate supply of water will be available to maintain the design level of the permanent pool, or a drainage area ten (10) acres or larger.

- ii. The soils are appropriate to maintain the permanent pool as designed.
 - f. The pond must be a minimum of four (4) feet deep to maintain an adequate supply of oxygen in the permanent pool to avoid anaerobic reactions and provide a suitable habitat for predators of mosquito larvae.
 - g. Means to drain the permanent pool for maintenance purposes must be provided.
 - h. Bio-retention facilities must be sized for the maximum ponding depth of the RPv to provide for economical design and maintenance.
 - i. Where space is available, a ten (10) foot-wide native vegetated buffer must be provided along the water's edge of a stormwater practice with a permanent pool.
 - j. Stormwater management facilities that require confined space certification for entry may not be designed for residential communities.
 - k. Residential stormwater management facilities must be designed to allow for economical maintenance.
 - l. Open space may not be transferred or a certificate of occupancy issued in a phase before any stormwater management facility receiving runoff from the phase is inspected and approved.
5. Size of stormwater management area and required easements.
- a. The stormwater management area must include:
 - i. Embankments and their slopes;
 - ii. Area corresponding to water surface elevation for one hundred (100) year frequency storm plus one (1) foot of vertical freeboard;
 - iii. Sediment disposal area, sized in accordance with the Delaware Sediment and Stormwater Regulations. The area must be accessible from a public street or easement and not surrounded by landscaping that restricts access to the area.
 - b. An easement of appropriate width, not less than ten (10) feet on both sides of the centerline of the pipe of the principal spillway, must be provided. The easement must encompass the riprap apron. An easement shall also be provided along the exit swale of the emergency spillway up to a point of positive outfall. The width of this easement shall be from top of bank to top of bank plus fifteen (15) feet on both sides for maintenance access. The Department of Land Use must be provided all necessary information, including proposed grading if required, in order to determine where the positive outfall is located.

- c. Easements of appropriate widths, not less than fifteen (15) feet, must be provided for legal access to the stormwater management area from a public street for maintenance. The longitudinal and transverse slopes of this access strip shall not exceed ten (10) percent. In residential communities, maintenance access must be across common open space and may not occur through private lots.
 - d. If any part of the stormwater management facility is proposed to be located off site, an easement that encompasses that part of the facility off site, in accordance with Subsections B.6.a. and B.6.b. shall be provided. The off-site easement must be depicted on the Record Plan and any separately recorded easement must be referenced by instrument number.
 - e. An easement of appropriate width, but not less than fifteen (15) feet, must be provided for maintenance all around the facility. The longitudinal and transverse slopes of this access strip shall not exceed ten (10) percent. No building shall be constructed within the easement nor shall any blockage or encumbrance be placed within the easement.
6. Landscaping in the stormwater management area.
- a. No trees or woody vegetation shall be permitted on embankments and their slopes.
 - b. Vegetation designed by a landscape architect is permitted within the area inundated by a one (1) year frequency storm.
 - c. A copy of the landscape plan must be provided to the Department of Land Use for review during the construction stage.
7. Maintenance requirements for all stormwater management facilities must be established by the designer and submitted to the Department of Land Use for review and approval.

(Ord. No. 98-050, § 1(12-86), 5-26-1998; Ord. No. 10-113, § 1(Exh. A), 1-18-2011; Ord. No. 22-030, § 5(12-6), 4-23-2022)

Sec. 12.05.007. Construction review and enforcement.

- A. In accordance with the provisions of the Delaware Sediment and Stormwater Regulations, New Castle County, as a delegated agency, will periodically inspect the sites of land disturbing activities for which permits have been issued to determine if the activities are being conducted in accordance with the plan and if the measures required in the plan are effectively controlling erosion and sedimentation.

- B. The County may require a certified construction reviewer to provide on-site construction review according to the Delaware Sediment and Stormwater Regulations.
- C. All easements must be field delineated at the post bulk inspection to verify all stormwater facilities and conveyance systems are constructed within the easements and that access for maintenance is provided.
- D. Prior to the issuance of a nonresidential Certificate of Occupancy or the turnover of community open space, the design professional who prepared the drainage system and stormwater management for the project must provide a certification verifying both are functioning as designed. Upon written request, the Department may approve another professional to provide the certification.

(Ord. No. 98-050, § 1(12-87), 5-26-1998; Ord. No. 22-030, § 5(12-7), 4-23-2022)

ARTICLE 6. - STORMWATER MANAGEMENT FACILITY, WATERCOURSE AND DRAINAGE SYSTEM MAINTENANCE

Sec. 12.06.001. Responsibility.

- A. Except where responsibility is legally transferred, the owner(s) of the property on which a stormwater management facility is located shall keep such facility in good order and repair so that it performs and functions in accordance with its intended purpose, approved design, applicable provisions of the New Castle County Code and the Delaware Sediment and Stormwater Regulations.
- B. Stormwater management facilities shall be inspected and maintained by the property owner(s) on a routine basis and in accordance with the natural resource area open space management plan, open space management plan, landscape plan, sediment and stormwater management plan, and post construction verification documents. Stormwater management facilities shall be maintained pursuant to the general maintenance requirements provided herein to the extent that they do not contradict any other specific plan requirement. If there is any contradiction between the general maintenance requirements and the specific plan requirements, the plan requirements shall govern.
 - 1. General maintenance requirements for stormwater management facilities. Stormwater management facilities shall be maintained in accordance with the Delaware Sediment and Stormwater Program Regulatory Guidance Documents, Post Construction Stormwater BMP Standards and Specifications as well as Standard Guidelines for Operation and Maintenance of Stormwater BMPs. In addition, the following conditions must be met:
 - a. *Grass mowing and trimming.* All grass within the limits of the stormwater management facility that is not under water must be mowed to a minimum height

of four (4) inches and a maximum height of eight (8) inches, unless otherwise provided by a specific plan requirement. Clippings shall be either reduced to a fine mulch and distributed over the grassed area or disposed of in an appropriate location, but never within the vicinity of the stormwater management facility.

- b. *Debris removal.* Debris consisting of leaves, paper, trash, branches, dead vegetation and other material must be removed from the limits of the stormwater management facility and its structural components. The debris shall be disposed of in an appropriate location, but never within the vicinity of the stormwater management facility.
 - c. *Sediment removal.* The outlet structure, low flow channels, headwall aprons, and facility outlet energy dissipator features must be kept clear of sediment. Where a forebay is provided, sediment must be removed when forebay capacity has been reduced to fifty (50) percent. All sediment collected from the stormwater management facility area shall be disposed of in an appropriate location, usually designated on the record plan, but never within the vicinity of the stormwater management facility.
 - d. *Erosion, animal burrows and woody vegetation.* All eroded areas and animal burrows must be filled, compacted and stabilized with reinforcing erosion control products or turf reinforcing mats and reseeded and replanted. Woody vegetation should be removed from all slopes and embankments.
 - e. *Plant materials.* Where other plant materials are used, stalks shall be trimmed to no lower than twelve (12) inches in mid-March before new growth emerges. Appropriate herbicides shall be applied when needed. Any bare areas must be reseeded or replanted as required based upon inspection findings.
 - f. *Dams.* Where check dams are used, materials that collect on the upstream face must be removed quarterly every year and after each rainfall event greater than one (1) inch. All vegetation with roots that extend within the check dam shall be removed and herbicides shall be applied as necessary.
 - g. *Mulch.* Bioretention facilities with mulch as a topdressing, must be maintained to a depth of three (3) inches every spring. Mulch must be triple shredded, non-dyed and aged for a minimum of six (6) months.
2. Inspections.
- a. All stormwater management facilities shall be inspected by the property owner(s) in the spring and fall of every year and after each rainfall event greater than one (1) inch.
 - b. Underground stormwater management facilities must also be inspected annually by a qualified third-party inspector. The third-party inspection must document the condition of the facility, any necessary maintenance, and any repairs made.

3. Maintenance log. A stormwater management facility inspection and maintenance log (“maintenance log”) shall be maintained by the property owner(s) on a form obtainable from the Department of Public Works.
 - a. The property owner(s) must submit the maintenance log and any underground stormwater management facility third-party inspection to the Department of Public Works on an annual basis, no later than January 31 of the following year. The property owner(s) must certify that required maintenance has been performed.
 - b. Maintenance logs and third-party inspections shall be maintained by the property owner(s) for a period of ten (10) years.
- C. It is the responsibility of the County to keep all non-tidal streams in New Castle County, which are not under the jurisdiction of the U.S. Army Corps of Engineers, State of Delaware, DelDOT, a tax ditch organization, municipality, or any maintenance organization, open and free flowing. Unless necessary to maintain an open and free flowing condition, the County is not obligated to perform the following:
 1. Removal of any object or material for aesthetic purposes:
 2. Removal of vegetation, rock, tree debris, sediment or other similar natural source.
 3. Alteration, reduction or enhancement of the rate of flow or water levels.
- D. The County will assume the responsibility for maintaining an open and free flowing condition in which are not already maintained by another public agency, tax ditch association, or maintenance organization if an adequate easement exists or can be acquired. The County will undertake this responsibility provided that such watercourses and drainage systems, newly constructed or approved, meet County design criteria and are affirmatively accepted by the County.
- E. Maintenance of drainage systems or stormwater management facilities for publicly dedicated or owned streets and roads to the point of open discharge is the responsibility of DelDOT once inspected and accepted by that agency. Maintenance of drainage systems or stormwater management facilities for privately-owned streets and roads to the point of open discharge is the responsibility of the owner or maintenance organization. New Castle County is not responsible for drainage systems or stormwater management facilities in private roadways.
- F. Maintenance of drainage systems or watercourses are the responsibility of the property owner(s) to their point of discharge at the property line, unless otherwise designated by a record plan or recorded agreement. Maintenance of private or public property adjacent to watercourses is the responsibility of the property owner.

- G. Resolution of drainage concerns created by a change in grade or through the placement of a blockage or an encumbrance that impacts drainage by a property owner to the detriment of an adjacent property owner is not the responsibility of New Castle County.

(Ord. No. 98-050, § 1(12-111), 5-26-1998; Ord. No. 05-082, § 2, 9-13-2005; Ord. No. 10-113, § 1(Exh. A), 1-18-2011; Ord. No. 18-019, § 1, 3-27-2018; Ord. No. 18-031, § 18, 4-24-2018; Ord. No. 22-030, § 6(12-1), 4-23-2022)

Sec. 12.06.002. Permitting of maintenance activities.

It is the responsibility of any person, corporation, or other entity planning any act on or across a stream, watercourse or right-of-way thereof to acquire the necessary federal, state and local permits.

(Ord. No. 98-050, § 1(12-113), 5-26-1998; Ord. No. 22-030, § 6(12-2), 4-23-2022)

ARTICLE 7. - DRAINAGE IMPROVEMENTS BY NEW CASTLE COUNTY

Sec. 12.07.001. Qualification criteria.

- A. Improvements to watercourses, drainage systems and stormwater management facilities by New Castle County shall only be made:

1. To protect persons and property (specifically buildings) from serious harm and significant damage from flooding caused by storms of up to one hundred (100) year frequency;
2. To protect a dwelling unit(s) or attachment building(s) from structural damage because of flowing water;
3. To eliminate a public health hazard certified as such by the Delaware Division of Public Health, provided other methods are not available or practical to eliminate the health hazard; or
4. To comply with any other obligation of the County mandated by applicable law or permit.

- B. Inundation of yards or periodic basement flooding are not considered significant damage. Ponding or failure of a lot to drain is not the responsibility of the County.

- C. Improvements made with bond revenues must have a useful life of at least ten (10) years.

(Ord. No. 98-050, § 1(12-137), 5-26-1998; Ord. No. 22-030, § 7(12-1), 4-23-2022)

Sec. 12.07.002. Approval procedure.

The following approval procedure will be followed for stream and watercourse improvements; however, every effort should be made with a minimal expenditure, to determine if County Council will support the project, before any further study or expenditure.

- A. A study will be made to establish and map the floodplain and delineate the wetlands along the watercourse.
- B. A typical cross section of the improvements may be developed showing approximate widths, depths and type of construction.
- C. Order of magnitude costs for proposed improvements may be developed.
- D. A public hearing will be held with those property owners adjacent to the watercourse to obtain their comments regarding the drainage study and the proposed improvement(s).
- E. An informal meeting will be held with County Council to provide information, timeline of project development and a recommendation to proceed or abandon the proposed improvement(s).

(Ord. No. 98-050, § 1(12-138), 5-26-1998; Ord. No. 22-030, § 7(12-2), 4-23-2022)

Sec. 12.07.003. Design and construction concerns.

Improvements to streams and watercourses shall be designed and constructed to preserve and enhance the natural environment to the maximum extent practicable. The design shall also conform to the provisions of the New Castle County Code, as amended.

(Ord. No. 98-050, § 1(12-139), 5-26-1998; Ord. No. 22-030, § 7(12-3), 4-23-2022)

ARTICLE 8. - PROHIBITIONS, ENFORCEMENT, AND PENALTIES

Sec. 12.08.001. Prohibitions.

- A. *General prohibition.* Any person who shall violate any provision(s) of this Chapter or shall fail to comply with any of the requirements hereof, or who shall violate an approved plan or directive of the Code Official, or of a permit or a certificate issued under this Chapter, shall be subject to the penalties provided in Section 1.01.009 of the New Castle County Code and/or any applicable equitable remedies.

B. *Specific prohibitions.* It shall be a violation of this Chapter to:

1. Discharge, or cause to allow to be discharged, sanitary sewage, industrial waste, sediment or other wastes into the storm sewer system, or any component thereof, or onto driveways, sidewalks, parking lots, or other areas draining to the storm sewer system; or
2. Connect, or cause or allow to be connected, any sanitary sewer or sump pumps to the storm sewer system, including any sanitary sewer connected to the storm sewer system as of the date of the adoption of this Ordinance; or
3. Discharge stormwater associated with industrial activity into the storm sewer system, or any component thereof, without State or County approval.

C. For a period of one (1) year after the issuance of a certificate of occupancy or release of the performance guarantee for the project, the County may require, subject to the notice requirements in this Article, the person to redress any conditions that arise from any failure to comply with the requirements of this Chapter or an approved plan regardless of whether or not it can be demonstrated that the condition was identified by the County at the time of issuance or release.

D. Subject to the provisions of Subsection E, the following activities shall not be in violation of this Ordinance:

1. Water line flushing;
2. Landscape irrigation;
3. Diverting stream flows or rising groundwater;
4. Infiltration of uncontaminated groundwater;
5. Pumping of uncontaminated groundwater from potable water sources, foundation drains, irrigation waters, springs, or water from crawlspaces or footing drains;
6. Lawn watering;
7. Individual car washing on residential properties;
8. Dechlorinated swimming pool discharges; and
9. Street washing.

E. In the event any of the activities listed in Subsection D are found to cause sanitary sewage, industrial waste, sediment or other waste to be discharged into the storm sewer system, New Castle County shall notify the person performing such activities and shall order such

activities be stopped or conducted in such a manner as to avoid the discharge of sanitary sewage, industrial waste, sediment or other waste into the storm sewer system.

(Ord. No. 98-050, § 1(12-151), 5-26-1998; Ord. No. 22-030, § 8(12-1), 4-23-2022)

Sec. 12.08.002. Notice of violation.

A. At the discretion of the Code Official, whenever the Code Official determines that there has been a violation of this Code or has grounds to believe that a violation has occurred, notice shall be given to the owner or the person(s) responsible for the structure, facility or premises.

1. *Form.* Such notice shall:

- a. Be in writing;
- b. Include the address or tax parcel identification number or a description of the property sufficient for identification;
- c. Include a statement of the violation or violations and why the notice is being issued; and
- d. Include a directive indicating a reasonable time to bring the structure, facility, or premises in compliance with the provisions of this Chapter.

2. *Method of service.* Such notice shall be deemed to be properly served if a copy is:

- a. Delivered personally to the owner; or
- b. Mailed by regular United States mail and addressed to the owner at their last known address as reflected by the County's records; or
- c. Posted in a conspicuous place on the property affected by such notice; or

3. *Method of service exception.* In no case shall the Code Official be required to provide a violation notice to any owner or person responsible who was previously provided notice of the same violation during the course of an application.

(Ord. No. 98-050, § 1(12-152), 5-26-1998; Ord. No. 22-030, § 8(12-2), 4-23-2022)

Sec. 12.08.003. Inspection.

Right of entry. When any Code Official has reasonable cause to believe that a code violation exists or when entry is required for periodic inspections and monitoring to determine compliance, then they are authorized to enter the structure or premises at reasonable times to inspect. Prior to inspection, the Code Official must make reasonable efforts to locate the owner

or other person having charge or control of the structure or premises to request entry. If entry is refused or not obtained, the Code Official is authorized to pursue recourse as provided by law.

(Ord. No. 98-050, § 1(12-153), 5-26-1998; Ord. No. 22-030, § 8(12-3), 4-23-2022)

Sec. 12.08.004. Abatement of violation.

- A. *Stop work orders.* Upon notice from the Code Official that work on any premises is being done contrary to the provisions of this Code or in an unsafe and dangerous manner, such work shall be immediately stopped. The stop work order shall be in writing and shall be given to the owner of the property involved, or the owner's agent, or to the person doing the work, and shall state the conditions under which work will be permitted to resume.
1. *Unlawful Continuance.* Any person who continues any work after having been served with a stop work order, except such work as that person has been directed to perform to remove a violation or unsafe condition, shall be considered to be in violation of this Chapter.
 2. *Removal of Placard.* Any person who defaces or removes a violation notice or stop work order notice or placard shall be considered to be in violation of this Chapter.
- B. *Emergency measures.* When, in the opinion of the Code Official of the Code Official, there is imminent danger of failure or collapse of a structure, facility, or premises, or any part thereof, which endangers life, the Code Official is empowered to order the occupants to vacate the same immediately.
1. *Temporary safeguards.* When, in the opinion of the Code Official, there is imminent danger due to an unsafe condition, the Code Official shall cause the necessary work to be done to render such structure temporarily safe, whether or not the legal proceedings herein described have been instituted.
 2. *Closing streets.* When necessary for the public safety, the Code Official shall temporarily close structures and close, or request the authority having jurisdiction to close, sidewalks, streets, public ways, and places adjacent to unsafe structures, and prohibit the same from being used.
- C. *Costs of emergency repairs.* The County may maintain any action at law or equity against such person to recover the sums of money expended for any remedial work or emergency repairs plus lawful interest and costs. In addition to such remedies, a lien shall be placed on the person's property for monies expended by the County under this Section. Under certification of the lien to the Director of Finance by the Chief Administrative Officer, the amount of such lien may be collected in the same manner as New Castle County real estate taxes. This Section shall not be construed to limit any other actions or remedies in law or equity.

(Ord. No. 98-050, § 1(12-154), 5-26-1998; Ord. No. 22-030, § 8(12-4), 4-23-2022)

Sec. 12.08.005. Enforcement.

- A. *Criminal enforcement.* Any person violating the provisions of this Chapter may be subject to a criminal proceeding instituted by the Code Official or the County Attorney. It is unnecessary to prove the defendant's state of mind with regard to offenses which constitute violations as the legislative purpose is to impose strict liability for such offenses.
1. A violation of the provisions of this Ordinance shall constitute a misdemeanor. If a penalty is not otherwise provided for, violators will be subject to a five hundred (\$500.00) dollar penalty.
 2. Each day any violation of this Chapter is maintained shall constitute a separate offense for which a separate conviction may be obtained and a separate penalty for each day imposed.
- B. *Civil enforcement.* Any person violating the provisions of this Section shall be subject to a civil proceeding instituted by the County Attorney. The County may apply to the Court of Chancery for injunctive relief against the person, to prevent, abate, or enjoin any continuing violation of the provisions of this Article. The violator shall be responsible for any costs incurred in preventing, abating, or enjoining such violations.
- C. *Administrative enforcement.* Any person in violation of this Chapter may be subject to any or all of the enforcement mechanisms listed below:
1. *Show cause hearing; imposition of fines.* The Code Official may conduct a show cause hearing to determine punitive measures to be instituted against the person(s) found to be violating this Chapter. Any person who intentionally commits any of the acts prohibited by this Chapter shall be subject to a civil penalty in an amount not less than five hundred dollars (\$500) and not to exceed five thousand dollars (\$5,000.00) for each day that a violation continues. These fines shall be in addition to any investigation fees.
 2. *Refusal to issue permits to a violator.* If the Code Official finds any person or permit, license or certificate holder in violation of any of the provisions of this Code, or to have multiple expired permits outstanding, the Code Official may refuse to grant any further building permits to such holder and all other legal entities with which said holder is associated until all violations have been corrected.
 3. *Refusal to issue certificates to a violator.* If the Code Official finds any person or permit, license or certificate holder in violation of any of the provisions of this Code, or to have multiple expired permits outstanding, the Code Official may refuse to grant any further certificates of occupancy or completion to such holder and all other legal entities with which said holder is associated until all violations have been corrected.

4. *Stop work orders.* Whenever the Code Official determines that work is being done contrary to this Chapter, or in an unsafe or dangerous manner, jeopardizes the health, safety, or welfare of the public, or is being done in the absence of a necessary approval, inspection, plan, or permit, such work shall be immediately stopped.
5. *Institution of remedial action.* The County may initiate action to remedy the violation. Upon completion of such remedial work, the person shall be provided the opportunity to reimburse the County for the cost incurred. If the violator fails to reimburse the County within the time period specified, the County may:
 - a. Call or collect on any bond or insurance established for this purpose;
 - b. Place a lien on any property within the County held by the person; or
 - c. Institute a civil action for the recovery of such expense, together and with any penalty and/or interest, against the person, and the County shall be awarded reasonable attorney fees.

(Ord. No. 98-050, § 1(12-155), 5-26-1998; Ord. No. 10-113, § 1(Exh. A), 1-18-2011; Ord. No. 22-030, § 8(12-5), 4-23-2022)

Sec. 12.08.006. Means of appeal.

- A. *Administrative decisions.* Any person aggrieved by a decision of the Code Official shall have the right to an appeal to the Board of License, Inspection and Review as prescribed 9 *Del. C.* § 1315.
 1. All appeals shall be filed with the Department of Land Use within twenty (20) business days of the date the written decision is issued by the Code Official. A public hearing will then be afforded to the appellant within forty-five (45) days of the filing of the appeal.
 2. The Board may affirm, modify, reverse, vacate, or revoke the action appealed, provided that such action shall be affirmed by the Board if the action taken was not arbitrary or capricious or was not taken pursuant to law.
- B. *Criminal proceedings.* Justices of the Peace shall have jurisdiction throughout the State to hear, try and finally determine any violation or violations of any ordinance. Only upon conviction does the defendant have the right to appeal to the Court of Common Pleas.

(Ord. No. 98-050, § 1(12-156), 5-26-1998; Ord. No. 10-113, § 1(Exh. A), 1-18-2011; Ord. No. 22-030, § 8(12-6), 4-23-2022)