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Title: Ordinance amending Sections 1003.01 and 1003.04 of Chapter 1003, Title X, of the Code of Ordinances of the City of Pittsburgh of the existing stormwater management requirements to provide more protective stormwater volume reduction standards and Low Impact Development (LID) strategies for planning and construction of Publicly Funded Development and Publicly Funded Redevelopment projects.

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Code sections:

Attachments: 1. 2010-0567.doc, 2. 2010-0567 VERSION 2.doc

Date	Ver.	Action By	Action	Result
8/17/2010	2	Mayor	Returned Unsigned	
7/27/2010	2	City Council	Passed Finally	Pass
7/21/2010	1	Standing Committee	AMENDED BY SUBSTITUTE	Pass
7/21/2010	1	Standing Committee	Affirmatively Recommended as Amended	Pass
7/1/2010	1	Committee on Hearings	Public Hearing Held	
6/9/2010	1	Standing Committee		
6/9/2010	1	Standing Committee		
6/1/2010	1	City Council	Read and referred	

Ordinance amending Sections 1003.01 and 1003.04 of Chapter 1003, Title X, of the Code of Ordinances of the City of Pittsburgh of the existing stormwater management requirements to provide more protective stormwater volume reduction standards and Low Impact Development (LID) strategies for planning and construction of Publicly Funded Development and Publicly Funded Redevelopment projects.

WHEREAS, the City of Pittsburgh has authority to legislate pursuant to its Home Rule Charter and the Home Rule Charter and Optional Plans Law.

WHEREAS, in conformance with Pennsylvania's Stormwater Management Act of 1978 (Act 167), as amended, the City of Pittsburgh is committed to a stormwater management program that protects water quality and addresses water supply by employing watershed-based approaches;

WHEREAS, urbanization has led to increased impervious surface areas which results in increased runoff and the transport of pollutants to downstream receiving waters and less percolation to groundwater aquifers;

WHEREAS, the Congress and the Environmental Protection Agency have already successfully implemented a

stormwater volume reduction standard based on the 95th percentile rainstorm;

WHEREAS, LID is widely recognized as a sensible approach to stormwater management in both quantity and quality that can often produce environmental benefits at lower costs than conventional stormwater management practices;

WHEREAS, LID standards and practices seek to maintain or restore the natural hydrologic character of the site, help reduce off-site runoff, improve water quality, and provide groundwater recharge;

WHEREAS, implementing the 95th percentile stormwater volume reduction standard by utilizing LID is intended to ensure that aquatic biota, stream channel stability, and historical aquifer recharge rates of receiving waters are not negatively impacted by changes in runoff temperature, volumes, durations and rates resulting from Publicly Funded Development and Publicly Funded Redevelopment;

WHEREAS, implementing the 95th percentile stormwater volume reduction standard by utilizing LID provides numerous benefits such as cleaner water, more adequate water supplies, source water protection, cleaner air, reduced urban temperatures, fewer climate change impacts, increased energy efficiency, improved urban aesthetics and community livability;

Be it resolved by the Council of the City of Pittsburgh as follows:

Section 1.

§ 1003.01 DEFINITIONS.

As used in this Chapter, certain terms are defined as follows:

- (a) **95TH PERCENTILE RAINFALL EVENT.** The measured precipitation depth accumulated over a 24-hour period for the period of record that ranks as the 95th percentile rainfall depth based on the range of all daily event occurrences during this period.
- (b) **ACCD.** The Allegheny County Conservation District, which has the authority as an agency of state government to administer and enforce all or a portion of the erosion and sediment control program in Allegheny County.
- (c) **ACT or ACT 167** means the Storm Water Management Act (Act of October 4, 1978, P.L. 864, No. 167; 32 P.S. §§ 680.1-680.17, as amended by Act of May 24, 1984, P.L. 324, No. 63).
- (d) **AGRICULTURAL ACTIVITY.** The work of producing crops including tillage, land clearing, plowing, disking, harrowing, planting, harvesting crops, or pasturing and raising of livestock and installation of conservation measures. Construction of new buildings or impervious area is not considered an Agricultural Activity.
- (e) **APPLICANT.** A landowner, developer or other person who has filed an application for approval to engage in any Regulated Activities.
- (f) **BMP (BEST MANAGEMENT PRACTICE) or SWM BMP.** Activities, facilities, designs, measures or procedures used to manage stormwater impacts from Regulated Activities, to meet State Water Quality Requirements, and to otherwise meet the purposes of this Chapter. BMPs include but are not limited to infiltration (except in the Landslide-Prone Overlay District), filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, forested buffers, sand filters and detention basins. Structural SWM BMPs are permanent appurtenances to the site. BMPs include but are not limited to those described or depicted in the City of Philadelphia Stormwater Management Guidance Manual (2007) and in the DEP Pennsylvania

Stormwater BMP Manual.

- (g) **CHANNEL.** A natural stream that conveys water; a ditch or open channel excavated for the flow of water.
- (h) **CITY.** The City of Pittsburgh, Allegheny County, Pennsylvania, and any related City agency, department, or authority.
- (i) **CODE OFFICIAL.** The executive official in charge of the Department of Building Inspection as defined in the ICC International Building Code, Section 103.1 as amended (Title 10, Chapter 1002, Section 1002.02), or such other officer of the City as may from time to time be designated by the City Council or its designee.
- (j) **DECISION-MAKING BODY.** The entity (City Council, Planning Commission, Zoning Board of Adjustment, Zoning Administrator, Planning Director, department head or Code Official) that is authorized to finally approve or deny an application, plan or permit required under this Chapter.
- (k) **DEP.** The Pennsylvania Department of Environmental Protection.
- (l) **DEPARTMENT.** The Department of City Planning of the City of Pittsburgh.
- (m) **DESIGN STORM.** The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g. a five-year storm) and duration (e.g. twenty-four (24) hours), used in the design and evaluation of stormwater management systems.
- (n) **DETENTION.** Slowing, dampening, or attenuating runoff flows entering the storm drainage system by temporarily holding water in areas such as detention basins, reservoirs, on roof tops, in streets, parking lots, or within the drainage system itself, and releasing the water at a desired rate of discharge.
- (o) **DETENTION BASIN.** The basin designed to retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate.
- (p) **DEVELOPER.** Any landowner, agent of such landowner or tenant with the permission of such landowner, who seeks to make or makes or causes to be made a subdivision or land development or to undertake any Regulated Activities at a site in the City.
- (q) **DEVELOPMENT.** Any activity, construction, alteration, change in land use or similar action that affects stormwater runoff characteristics. The definitions in the "Subdivision Regulations & Standards of the City Planning Commission," the Special Definitions for the Riverfront Overlay District of the Zoning Code, and/or the definition in Chapter 926 of the Zoning Code may apply.
- (r) **DISCHARGE.** Rate of flow, specifically fluid flow. A volume of fluid flowing from a conduit or channel, or being released from detention storage, per unit of time. Commonly expressed as cubic feet per second (cfs), million gallons per day (mgd), gallons per minute (gpm), or cubic meters per second (cms).
- (s) **DISTURBED AREA.** An un-stabilized land area where a land operation is occurring or has occurred.
- (t) **DRAINAGE.** Interception and removal of excess surface water or groundwater from land by artificial or natural means.
- (u) **ENCROACHMENT.** Any structure or activity which in any manner changes, expands or diminishes the course, current or cross section of any watercourse, floodway or body of water.

- (v) **EROSION.** The wearing away of the land surface by running water, wind, ice, other geological agents, or chemical action.
- (w) **EXCAVATION.** The end result of excavating.
- (x) **EXCAVATING.** Any act by which ground components such as earth, sand, gravel, coal or other minerals, rock or similar material are cut into, dug, quarried, uncovered, removed, crushed, displaced or relocated, including conditions resulting therefrom.
- (y) **EXTENDED DETENTION VOLUME (EDV).** Release of run-off - i.e., runoff in excess of Permanently Removed Volume (PRV) - over a period of time not less than twenty-four (24) and not more than seventy-two (72) hours from the start of the design storm.
- (z) **EXISTING CONDITION.** The dominant land cover during the five-year period immediately preceding a proposed Regulated Activity.
- (aa) **EXTRACTING INDUSTRY.** A commercial or industrial or research operation involving the surface removal of natural accumulations of sand, rock, soil, gravel, coal or any mineral.
- (bb) **FILL.** The end result of filling or the material used in filling.
- (cc) **FILLING.** Any act by which material is deposited into a cavity, mounded or banked or added to an existing base, including any conditions resulting therefrom. Stock piling of material, if accepted as such by the Code Official, shall not constitute filling.
- (dd) **FLOODPLAIN.** Any land area susceptible to inundation by water from any natural source or delineated by applicable Federal Emergency Management Agency (FEMA) maps and studies as being a special flood hazard area. Also included are areas that comprise Group 13 Soils, as listed in Appendix A of the Pennsylvania Department of Environmental Protection Technical Manual for Sewage Enforcement Officers.
- (ee) **FLOODWAY.** The channel of the watercourse and those portions of the adjoining floodplains that is reasonably required to carry and discharge the one hundred-year flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the one hundred-year floodway, it is assumed - absent evidence to the contrary - that the floodway extends from the stream to fifty (50) feet from the top of the bank of the stream.
- (ff) **GRADIENT.** The degree of inclination of a slope, expressed in terms of the percentage of the difference in the vertical elevation to the horizontal distance (e.g., a gradient of twenty-five (25) percent means a difference in vertical elevation of twenty-five (25) feet in a horizontal distance of one hundred (100) feet.)
- (gg) **GRADING.** Excavating or filling or any combination thereof.
- (hh) **GREEN INFRASTRUCTURE & LOW IMPACT DEVELOPMENT.** The use of natural systems to help absorb, infiltrate, evaporate or re-use stormwater runoff, including but not limited to rain barrels and cisterns, roofs covered with vegetation and plantings, tree boxes, rain gardens and pocket wetlands.
- (ii) **GROUNDWATER.** That part of the subsurface water which is below the zone of saturation.
- (jj) **IMPERVIOUS SURFACE (IMPERVIOUS AREA).** A surface that prevents the infiltration of water into the ground. Impervious surfaces (or covers) shall include, but not be limited to, roofs, additional indoor living spaces, patios, garages, storage sheds and similar structures, and any new streets or sidewalks. Decks, parking areas, and driveway areas are not counted as impervious areas if they do not prevent infiltration. The

measurement of impervious areas shall include all of the impervious areas in a proposed development even if development is to take place in stages.

(kk) **INFILTRATION.** The penetration and movement of water through the earth's surface.

(ll) **LAND DEVELOPMENT (DEVELOPMENT).** Inclusive of any or all of the following meanings: (i) the improvement of one (1) lot or two (2) or more contiguous lots, tracts, or parcels of land for any purpose involving (a) a group of two (2) or more buildings, or (b) the division or allocation of land or space between or among two (2) or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups, or other features; (ii) any subdivision of land; (iii) development in accordance with the Pittsburgh Zoning Code.

(mm) **LAND OPERATION.** An operation and related activities involving or primarily connected with reshaping of land including, but not limited to, grading; surface mining; removal of trees, vegetation or other natural ground cover; transportation of fill or other material for disposal purposes; clearing and grubbing; excavations; embankments; road maintenance; building construction and the moving, depositing, stockpiling, crushing, or storing of soil, coal, rock or earth materials; and surfacing of land.

(nn) **LAND RECLAMATION PROJECT.** A land reclaiming or conservation undertaking, extending over a site of not less than twenty (20) acres involving a land operation with or without an extracting industry as a continuing activity over an extended period of time, and which will leave the land suitable for re-use, either for new development or in a natural state as usable open space.

(oo) **LANDSLIDE PRONE AREA.** Any area delineated on the City of Pittsburgh Landslide Prone Overlay Zone Map and /or which is determined by a geotechnical study to be landslide prone.

(pp) **MEADOW.** A field of grass or other vegetation excluding shrubs or trees.

(qq) **PEAK DISCHARGE.** The maximum rate of stormwater runoff from a specific storm event.

(rr) **PEAK RATE OF RUNOFF.** The maximum rate of flow of water at a given point and time resulting from a specific storm event.

(ss) **PERMANENTLY REMOVED VOLUME (PRV).** The volume of runoff that is permanently removed from the runoff and not released into surface Waters of this Commonwealth during or after a storm event.

(tt) **PERMIT.** A land operations permit as prescribed in this Chapter.

(uu) **PERVIOUS AREA.** Any area not defined as impervious.

(vv) **PUBLICLY FUNDED DEVELOPMENT.** Any development funded in whole or in part by public monies that are provided by the City or approved by the City pursuant to the Redevelopment Assistance Capital Program, and that are in the form of any grant, loan that is forgiven or discounted below the market rate over the life of the loan, bond financing, infrastructure improvements related to a project, below-market sale or lease of property, or other form of financial assistance with an aggregate value over the life of all planned phases of development of at least one million dollars (\$1,000,000). Public monies provided in the form of educational or training grants shall not count towards the aggregate value. For purposes of determining whether the assistance threshold is met, all affiliates, controlled organizations, controlling organizations, and/or organizations having an identity of interest with the assistance recipient shall be treated as a single entity. Market value shall be determined by a third party that shall not include the City or the City subsidy recipient.

(ww) **PUBLICLY FUNDED REDEVELOPMENT.** Any land-disturbing activity that results in the

creation, addition, or replacement of 500 square feet or more of impervious surface area at a Publicly Funded Development that has already been permitted pursuant to the requirements of section 1003.04A of this Title.

(xx) **REGISTERED PROFESSIONAL.** Any professional person registered with the Commonwealth or otherwise qualified by law in one (1) or more of the design professions, with specialized experience in soil mechanics, foundation investigation or stormwater management, such as a registered professional engineer, a registered architect, a registered landscape architect, or other person qualified to perform the work required by this Chapter whose qualifications are acceptable to the Code Official and/or Zoning Administrator.

(yy) **REGULATED ACTIVITIES.** Any land operations, earth disturbances or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff.

(zz) **RETENTION/REMOVED.** The volume of runoff that is captured and not released directly into the Waters of this Commonwealth during or after a storm event.

(aaa) **RETURN PERIOD.** The average interval, in years, within which a storm event of a given magnitude can be expected to occur one (1) time. For example, the twenty-five-year return period rainfall would be expected to occur on average once every twenty-five (25) years.

(bbb) **REVIEW BODY.** The entity (City Council, Planning Commission, Zoning Board of Adjustment, Zoning Administrator, Planning Director, department head or Code Official) that is authorized to approve or deny or to recommend approval or denial of an application, plan or permit required under this Chapter.

(ccc) **RUNOFF.** Any part of precipitation that flows over the land.

(ddd) **SEDIMENT.** Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site or origin by air, water, gravity, or ice and has come to rest on the earth's surface.

(eee) **SITE.** A lot or parcel of land or a series of lots or parcels of land considered as a single unit upon which a land operation is to be performed or is being performed and/or the specific area of land where any Regulated Activities are planned, conducted or maintained.

(fff) **SITE PLAN.** A drawing or drawings which indicate details of existing and intended development of a particular site in relationship to its surroundings, including details of land use, topography, landscaping and structures.

(ggg) **SPECIAL INSPECTOR.** A special inspector as set forth in the ICC International Building Code, Section 1704.7 as amended (Title 10, Chapter 1002, Section 1002.02).

(hhh) **STATE WATER QUALITY REQUIREMENTS.** The regulatory requirements to protect, maintain, reclaim, and restore water quality under Pennsylvania Code Title 25 and the Pennsylvania Clean Streams Law, 35 P.S. § 691.1 et seq., as amended.

(iii) **STORMWATER.** Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

(jjj) **STORMWATER MANAGEMENT BMPs** is abbreviated as SWM BMPs throughout this Chapter.

(kkk) **STORMWATER MANAGEMENT FACILITY.** Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff. Typical stormwater management facilities include, but are not limited to, detention and retention basins, open channels, storm sewers, pipes, and, except in the Landslide-Prone Overlay District, infiltration structures.

(lll) **STORMWATER MANAGEMENT PLAN.** The plan for managing stormwater runoff approved by the DEP and adopted by the City as required by the Act of October 4, 1978, P.L. 864, (Act 167), as amended, and known as the "Storm Water Management Act."

(mmm) **STORMWATER MANAGEMENT SITE PLAN** or **SWM SITE PLAN.** The plan prepared by the applicant or his representative indicating how stormwater runoff will be managed at the development site in accordance with this Chapter.

(nnn) **TOE OF SLOPE.** The beginning point of any ascending slope, or in the case of excavation fill on a slope, the lowermost point where the excavation or fill joins the exposed slope surface.

(ooo) **TRANSPORTING OPERATION.** The conveyance of material for disposal or fill purposes from one (1) site to another site over any public street.

(ppp) **TRANSPORT ORIGIN POINT.** Any site from which material is conveyed to another site as a transporting operation.

(qqq) **UNDERMINED AREA.** Area where coal or other minerals have been mined, removing the lateral support and leaving underground voids where the accumulation of water can occur and/or can increase acid mine drainage.

(rrr) **VERTICAL HEIGHT.** The vertical distance between the toe of slope and a line level with the top of that slope.

(sss) **WATERS OF THIS COMMONWEALTH.** Rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs and other bodies or channels of conveyance of surface and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

(ttt) **WATERSHED.** Region or area drained by a river, watercourse or other body of water, whether natural or artificial.

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

(vvv) **ZONING ADMINISTRATOR.** The staff member of the Department of City Planning, so designated by the City Planning Commission, who is charged with the administration of the Zoning Ordinance, Subdivision Regulations and Standards of the City Planning Commission, and the zoning, planning and stormwater management provisions of this Chapter or such other officer of the City authorized to act on the Administrator's behalf.(Ord. 19-2007, § 2, eff. 11-19-07)

§ 1003.04 REGULATED ACTIVITIES REQUIRING A PLAN; STORMWATER MANAGEMENT STANDARDS.

(a) *When required.* For all Regulated Activities equal to or greater than 10,000 square feet in area, except for Publicly Funded Development and Publicly Funded Redevelopment that are subject to §1003.04A of this Chapter, implementation of water quality controls, peak rate controls and preparation of a SWM Site Plan are required unless such activities are exempt under subsection (c) hereof.

(b) *What required.* All Regulated Activities shall include such measures as necessary to:

- (1) Protect health, safety, and property;
 - (2) Meet State Water Quality Requirements as defined in Section 1003.01. The Review Body may, after consultation with DEP, approve alternative methods for meeting the State Water Quality Requirements other than those in this Chapter, provided that they meet the minimum requirements of, and do not conflict with, State law, including but not limited to, the Clean Streams Law.
 - (3) Meet the water quality goals of this Chapter by implementing measures to:
 - A. Minimize disturbance to floodplains, wetlands, natural slopes over twenty-five (25) percent, and existing native vegetation.
 - B. Preserve and maintain trees and woodlands. Maintain or extend riparian buffers and protect existing forested buffer. Provide trees and woodlands adjacent to impervious areas whenever feasible.
 - C. Establish and maintain non-erosive flow conditions in natural flow pathways.
 - D. Minimize soil disturbance and soil compaction.
 - E. Disconnect impervious surfaces by directing runoff to pervious areas.
 - (4) Incorporate the techniques described in Appendix A (Low Impact Development Practices) of this Chapter whenever practical. The applicant shall provide the opinion of a qualified professional to substantiate a claim that the Appendix A techniques are not practical.
 - (5) Impervious Areas.
 - A. The measurement of impervious areas shall include all of the impervious areas in the total proposed development even if development is to take place in stages.
 - B. For development taking place in stages, the entire development plan must be used in determining conformance with this Chapter.
 - C. For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Title and of Title Nine, the Zoning Code.
- (c) *Exemptions.*
- (1) Regulated Activities less than ten thousand (10,000) square feet in area are exempt from the requirements of §§ 1003.04, 1003.06 and 1003.29. This exemption does not apply to Publicly Funded Developments or Publicly Funded Redevelopments as defined in section 1003.01 of this Title.
 - (2) Regulated Activities equal to or greater than ten thousand (10,000) square feet in area that create less than five thousand (5,000) square feet of new impervious area and that meet the Area of Influence (A) requirements shown in Table 1A, which may be revised from time to time by the Director of the Department, are exempt from the peak rate control and the SWM Site Plan preparation requirement of this Chapter. This exemption does not apply to Publicly Funded Developments or Publicly Funded Redevelopments as defined in section 1003.01 of this Title.
 - (3) Regulated Activities equal to or greater than ten thousand (10,000) square feet in area that create less than five thousand (5,000) square feet of new impervious area and that meet the Area of Influence (A) requirements shown in Table 1B, which may be revised from time to time by the Director of the Department, are exempt from the rate control requirements of this Chapter. This exemption does not apply to Publicly Funded

Developments or Publicly Funded Redevelopments as defined in section 1003.01 of this Title.

- (4) After the date of the enactment of this Chapter, if a subdivision and land development plan is submitted that addresses peak rate control and includes a SWM Site Plan, then the impervious exemption is calculated from the date of approval of that plan, based upon the impervious area shown on the subdivision and land development plan.
- (5) Agricultural plowing and tilling are exempt from the rate control and SWM Site Plan preparation requirements of this Chapter provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.
- (6) If conditions exist that prevent the reasonable implementation of water quality and/or quantity control practices on site, upon written request by the applicant, the Department may at its sole discretion accept off-site stormwater management practices, retrofitting, stream restorations, or other practices that provide water quality and/or quantity control equal or greater than onsite practices for the volume which the applicant has demonstrated to be infeasible to manage and treat on site.
- (7) The regulations and guidelines of the *City of Philadelphia Stormwater Management Guidance Manual (2007)*, prepared by the Philadelphia Water Department Office of Watersheds, or the Pennsylvania DEP *Stormwater Best Management Practices Manual*, or other DEP accepted methods, practices, calculations, or other commonly accepted methods, practices, and calculations used by stormwater management professionals, subject to the approval of the Zoning Administrator, shall be used to determine if an exemption is applicable for Regulated Activities.
- (8) Exemptions from any provisions of this Chapter, except for section 1003.04(c)(1), shall not relieve the Applicant from the requirements in sections 1003.04(b)(4), 1003.04(b)(5) and 1003.19(a).

TABLE 1A: SWM exemptions from Peak Rate Controls and SWM Site Plan preparation for Area of Influence, A, less than 3 acres

SEE ATTACHMENT

TABLE INSET:

Area of Influence, A (acres)	Total Impervious Area, a, Exempt from Peak Rate Controls and from SWM Site Plan Preparation (sq. ft.)
< 0.125	1,000
0.2	1,400
0.3	1,900
0.4	2,300
0.5	2,700
0.6	3,100
0.7	3,500
0.8	3,900
0.9	4,200
1.0	4,600

1.1	4,900
1.2	5,200
1.3	5,500
1.4	5,900
1.5	6,200
1.6	6,500
1.7	6,800
1.8	7,100
1.9	7,300
2.0	7,600
2.1	7,900
2.2	8,200
2.3	8,400
2.4	8,700
2.5	9,000
2.6	9,200
2.7	9,500
2.8	9,800
2.9	10,000

TABLE 1B: SWM exemptions from peak rate controls (ONLY) for Area of Influence, A, 3.0 acres and greater

TABLE INSET:

Area of Influence, A (acres)	Total Impervious Area a, Exempt from Peak Rate Controls ONLY (sq. ft.)
3	10,300
3.1	10,500
3.2	10,800
3.3	11,000
3.4	11,300
3.5	11,500
3.6	11,700
3.7	12,000
3.8	12,200
3.9	12,500
4	12,700
4.1	12,900
4.2	13,200
4.3	13,400
4.4	13,600

4.5	13,800
4.6	14,100
4.7	14,300
4.8	14,500
4.9	14,700
5	15,000
>5	15,000

(d) *Water Quality.* Low Impact Development Practices (Appendix A) are encouraged for all Regulated Activities. Water quality control shall be implemented using the following methodologies, or as otherwise determined by the Zoning Administrator from time to time:

(1) *The Simplified Method is independent of site conditions.*

A. Retention and detention facilities shall be sized to capture the first one (1) inch of runoff from all impervious surfaces.

B. The first one (1) inch of runoff shall be permanently removed and shall not be released into the surface Waters of this Commonwealth. This is the Permanently Removed Volume ("PRV"). Removal options include reuse, evaporation, transpiration, and, except in the Landslide Overlay District, infiltration.

C. For project that meet the exemption criteria in Table 1A, the subsequent one (1) inch of runoff shall be detained. This is the Extended Detention Volume ("EDV").

D. For projects that do not meet the exemption criteria in Table 1A, the one-year twenty-four-hour runoff volume shall be detained.

E. Infiltration of the first one-half (0.5) inch of the PRV is encouraged, provided that the geological and soil conditions are conducive to infiltration. Infiltration is prohibited in the Landslide-Prone Overlay District. Where infiltration of the first one-half (0.5) inch of the PRV is permitted, this portion of the PRV is the Groundwater Recharge Volume ("GRV").

F. The PRV requirement for land areas with existing cover consisting of meadow, brush, wood-grass combination, or woods proposed for conversion to any other non-equivalent type of pervious cover shall be one-fourth (1/4) inch of runoff.

G. Retention and detention facilities should be designed to drain both the PRV and EDV completely within twenty-four (24) to forty-eight (48) hours from the start of the storm.

H. Retention facilities should be designed to accommodate infiltration of the PRV. Infiltration areas should be spread out and located in the sections of the site that are most suitable for infiltration. Except that there shall be no infiltration in Landslide-Prone Overlay areas.

(2) *The Design Storm Method requires detailed modeling based on site conditions.*

A. Do not increase the post-development total runoff volume for all storms equal to or less than the two-year twenty-four-hour duration rainfall.

B. Do not increase peak rate of runoff for (one-, two-, ten-, twenty-five-, one hundred-year storms (at

minimum), pre-development to post-development; as necessary, provide additional peak rate control as required by Act 167 planning.

C. Existing (pre-development) non-forested pervious areas must be considered meadow or its equivalent.

D. Twenty (20) percent of existing impervious area, when present, shall be considered meadow in the model for existing conditions.

(3) In all cases, retention and detention facilities should be designed to completely drain water quality volumes (in the case of the Simplified Method this includes both the PRV and EDV) over a period of time not less than twenty-four (24) and not more than seventy-two (72) hours from the start of the design storm.

The Pennsylvania Stormwater Best Management Practices Manual (1) provides guidance on selection and application of both water quality control methods. However, water quality control methods that comply with the City of Philadelphia Stormwater Management Guidance Manual (2007) or other stormwater management regulations promulgated within the Commonwealth of Pennsylvania and approved by the DEP may be substituted.

(e) *Rate Controls.*

(1) Areas not covered by a Release Rate Map from an approved Act 167 Stormwater Management Plan:

Post-development discharge rates shall not exceed the predevelopment discharge rates for the two-, five-, ten-, twenty-five-, fifty-, and one hundred-year storms. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the pre-development analysis for two-, five-, ten-, twenty-five-, fifty-, and one hundred-year, twenty-four-hour storms, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

(2) Areas covered by a Release Rate Map from an approved Act 167 Stormwater Management Plan:

For the two-, five-, ten-, twenty-five-, fifty-, and one hundred-year storms, the post-development discharge rates will follow the release rate maps in this Chapter or in the Zoning Code. For any areas not shown on the release rate maps, the post-development discharge rates shall not exceed the predevelopment discharge rates.

(Ord. 19-2007, § 2, eff. 11-19-07)

§ 1003.04A PUBLICLY FUNDED DEVELOPMENT AND PUBLICLY FUNDED REDEVELOPMENT REQUIRING A PLAN; STORMWATER MANAGEMENT STANDARDS.

(a) *When required.* For all Publicly Funded Development and Publicly Funded Redevelopment, implementation of water quality controls contained in section 1003.04A, and peak rate controls and preparation of a SWM Site Plan contained in section 1003.04(d), are required unless such activities are exempt under subsection (c) of this section.

(b) *What required.* All Publicly Funded Development and Publicly Funded Redevelopment shall include such measures as necessary to:

(1) Protect health, safety, and property;

(2) Meet State Water Quality Requirements as defined in Section 1003.01. The Review Body may,

after consultation with DEP, approve alternative methods for meeting the State Water Quality Requirements other than those in this Chapter, provided that they meet the minimum requirements of, and do not conflict with, State law, including but not limited to, the Clean Streams Law.

(3) Meet the water quality goals of this Chapter by implementing measures to:

A. Minimize disturbance to floodplains, wetlands, natural slopes over twenty-five (25) percent, and existing native vegetation.

B. Preserve and maintain trees and woodlands. Maintain or extend riparian buffers and protect existing forested buffer. Provide trees and woodlands adjacent to impervious areas whenever feasible.

C. Establish and maintain non-erosive flow conditions in natural flow pathways.

D. Minimize soil disturbance and soil compaction.

E. Disconnect impervious surfaces by directing runoff to pervious areas.

(4) Incorporate the techniques described in the Green Infrastructure & Low Impact Development provisions from and referenced in section 1003.04A(d)(3) and Appendices A and B of this Chapter to the maximum extent technically feasible to, in priority of order, infiltrate, evapotranspire, and/or harvest for reuse, without allowing any offsite discharge, the precipitation from all rainfall events less than or equal to the 95th Percentile Rainfall Event. The applicant shall provide the opinion of a qualified professional to substantiate a claim that the utilization of Green Infrastructure & Low Impact Development practices is technically infeasible. A demonstration of technical infeasibility, which must include the opinion of a qualified professional, must be incorporated into the SWM Site Plan. Without the Review Body's express, written approval of a demonstration of technical infeasibility, Publicly Funded Developments and Publicly Funded Redevelopments must incorporate Green Infrastructure & Low Impact Development practices to the maximum extent technically feasible without recourse to conventional stormwater management technologies in order to manage onsite the precipitation from all rainfall events less than or equal to the 95th Percentile Rainfall Event.

(c) Exemptions

(1) Agricultural plowing and tilling are exempt from the rate control and SWM Site Plan preparation requirements of this Chapter provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

(2) Demolition of a residential structure by the City or other governmental body.

(3) If conditions exist that prevent the implementation of water quality and/or quantity control practices on site, upon written request by the applicant, the Department may at its sole discretion accept off-site stormwater management practices, retrofitting, stream restorations, or other practices that provide water quality and/or quantity control equal or greater than onsite practices for the volume which the applicant has demonstrated to be infeasible to manage and treat on site.

(4) Exemptions from any provisions of this Chapter shall not relieve the Applicant from the requirements in sections 1003.04(b)(4), 1003.04(b)(5) and 1003.19(a).

(d) Water Quality.

(1) Water quality control shall be implemented in the following manner:

A. The onsite stormwater management techniques and facilities must be properly sized to, in priority of order, infiltrate, evapotranspire, and/or harvest for reuse, without allowing any offsite discharge, and by using Green Infrastructure & Low Impact Development practices to the maximum extent technically feasible, the precipitation from all rainfall events less than or equal to the 95th Percentile Rainfall Event. From the date of enactment of this section to January 1, 2015, the precipitation volume of the 95th Percentile Rainfall Event shall be one and a half (1.5) inches.

B. Beginning on January 1, 2015 and every five (5) years thereafter, the Review Body shall recalculate the volume of the 95th Percentile Rainfall Event. The minimum number of years' worth of precipitation data that must be used for the recalculations is thirty (30) years. For guidance on calculating the 95th Percentile Rainfall Event, please see *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* (2009) (prepared by the United States Environmental Protection Agency).

C. Offsite discharge that results from harvesting and reusing stormwater runoff for grey water plumbing is exempt from the prohibition of offsite discharge in section 1003.04A(d)(1)A.

(2) Demonstration of Technical Infeasibility

A. For projects where technical infeasibility exists, the developer of the relevant Publicly Funded Development or Publicly Funded Redevelopment shall document and quantify that, due to the site conditions enumerated below, it is technically infeasible to manage the total amount of the precipitation from rainfall events less than or equal to the 95th Percentile Rainfall Event by infiltrating, evapotranspiring and harvesting & reusing the precipitation using Green Infrastructure & Low Impact Development practices. Documentation of technical infeasibility shall at least include, but is not limited to, engineering calculations, geologic reports, hydrologic analyses, and site maps. The Review Body or Decision-Making Body may consider the following site conditions that may prevent the utilization of Green Infrastructure & Low Impact Development technologies and stormwater strategies, such as infiltration, evapotranspiration, and harvesting and reuse, to the maximum extent technically feasible:

(i) The conditions on the site preclude the use of infiltration practices due to the presence of shallow bedrock, contaminated soils, landslide prone areas, near surface ground water or other factors such as underground facilities or utilities;

(ii) The design of the site precludes the use of soil amendments, plantings of vegetation or other designs that can be used to infiltrate and evapotranspire runoff;

(iii) Water harvesting and use are not practical or possible because the volume of water used for irrigation, toilet flushing, industrial make-up water, wash-waters, or other is not significant enough to warrant the design and use of water harvesting and use systems;

(iv) Modifications to an existing building to manage stormwater are not feasible due to structural or plumbing constraints or other factors as identified by the facility owner/operator;

- (v) Small project sites where the lot is too small to accommodate infiltration practices adequately sized to infiltrate the volume of runoff from impervious surfaces;
- (vi) Soils that cannot be sufficiently amended to provide for the requisite infiltration rates;
- (vii) Situations where site use is inconsistent with the capture and use of stormwater or other physical conditions on site that preclude the use of plants for evapotranspiration or bioinfiltration;
- (viii) Retention and/or use of stormwater onsite or discharge of stormwater onsite via infiltration has a significant adverse effect on the site or the down gradient water balance of surface waters, ground waters or receiving watershed ecological processes, including areas that may exacerbate acid mine drainage or subsidence;
- (ix) State and local requirements or permit requirements that prohibit water collection or make it technically infeasible to use certain Green Infrastructure & Low Impact Development techniques;
- (x) Compliance with the requirements of this Chapter would result in the retention and/or use of stormwater on the site such that an adverse water balance impact may occur to the receiving surface waterbody or ground water.

B. If, due to the existence of site conditions described in section 1003.04A(d)(2)A(i)-(x), a developer successfully demonstrates to the Review Body that it is technically infeasible to manage the total amount of the precipitation from rainfall events less than or equal to the 95th Percentile Rainfall Event by infiltrating, evapotranspiring and harvesting & reusing the precipitation using Green Infrastructure & Low Impact Development practices, then the developer can manage the remaining percentage of precipitation by using conventional technologies.

For example, if a developer can successfully demonstrate to the Review Body that, due to site conditions, (s)he can manage only 85% of the precipitation from rainfall events less than or equal to the 95th Percentile Rainfall Event by infiltrating, evapotranspiring, and harvesting & reusing the precipitation using Green Infrastructure & Low Impact Development to the maximum extent technically feasible, then the developer can utilize conventional technology to manage the remaining 15%.

C. Where developers use a combination of Green Infrastructure & Low Impact Development and conventional practices in accordance with this section, then developers are not required to manage with conventional technologies the remaining percentage of precipitation onsite so long as they detain and release according to the standards applicable to detention and release set forth in section 1003.04(d). The percentage of precipitation that a developer can, to the maximum extent technically feasible, manage by using Green Infrastructure & Low Impact Development, must be completely managed onsite, subject to the exemption for greywater plumbing.

(3) Green Infrastructure & Low Impact Development Practices Required

A. Publicly Funded Developments and Publicly Funded Redevelopments shall use Green Infrastructure & Low Impact Development practices to the maximum extent technically feasible in order to manage onsite, through infiltration, evapotranspiration, and harvesting & reuse, the precipitation from rainfall events less than or equal to the 95th Percentile Rainfall Event. Examples of Green Infrastructure & Low Impact Development include, *but are not limited to*, the following:

(i) Rain gardens

(ii) Pervious pavements including but not limited to pervious interlocking concrete paving blocks, concrete grid pavers, perforated brick pavers, and compacted gravel

(iii) Vegetated swales

(iv) Green roofs

(v) Pocket wetlands

(vi) Rainwater harvesting

All examples of Green Infrastructure & Low Impact Development from the following documents may be utilized by Publicly Funded Developments and Publicly Funded Redevelopments in their SWM Site Plans: *City of Philadelphia Stormwater Management Guidance Manual* (2007) (prepared by the Philadelphia Water Department Office of Watersheds; *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* (2009) (prepared by the United States Environmental Protection Agency); Pennsylvania DEP Stormwater Best Management Practices Manual; Maryland Department of Environmental Resources, *Low-Impact Development Design Strategies: An Integrated Design Approach*; or other documents that meet the approval of the Review Body or Decision-Making Body.

B. Should the developer want to utilize a Green Infrastructure & Low Impact Development practice that is not listed in section 1003.04A(d)(3)A(i)-(vi) of this Chapter or in the reference manuals listed in the above paragraph, the developer must seek and obtain permission to use such a practice from the Review Body prior to the developer's submission of the SWM Site Plan. The Review Body's approval of unlisted Green Infrastructure or Low Impact Development practices shall be documented in the SWM Site Plan. The Review Body shall have the discretion to determine the form and content of such approval.

(e) Rate Controls.

(1) Areas not covered by a Release Rate Map from an approved Act 167 Stormwater Management Plan:

Post-development discharge rates shall not exceed the predevelopment discharge rates for the two-, five-, ten-, twenty-five-, fifty-, and one hundred-year storms. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated

by the pre-development analysis for two-, five-, ten-, twenty-five-, fifty-, and one hundred-year, twenty-four-hour storms, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

(2) Areas covered by a Release Rate Map from an approved Act 167 Stormwater Management Plan:

For the two-, five-, ten-, twenty-five-, fifty-, and one hundred-year storms, the post-development discharge rates will follow the release rate maps in this Chapter or in the Zoning Code. For any areas not shown on the release rate maps, the post-development discharge rates shall not exceed the predevelopment discharge rates.

(f) Stormwater Management Site Plan Requirements.

(1) Except for Section 1003.06(a)(2)(J), Section 1003.06 applies to all Publicly Funded Development and Publicly Funded Redevelopment. There are no exceptions or exemptions from the SWM Site Plan requirements.

(2) In addition to all other SWM Site Plan requirements that apply to developments that are not Publicly Funded Developments or Publicly Funded Redevelopments, SWM Site Plans for Publicly Funded Developments and Publicly Funded Redevelopments must contain, when applicable, a demonstration of technical infeasibility pursuant to the requirements in section 1003.04A(d)(2). The SWM Site Plans for Publicly Funded Developments and Publicly Funded Redevelopments shall address the applicable requirements from section 1003.04A as well as the following:

A. A list of which Green Infrastructure & Low Impact Development practices the developer plans to utilize and how much precipitation volume each practice will manage;

B. Taking into account the Green Infrastructure & Low Impact Development practices either enumerated in section 1003.04A(d)(3)A(i)-(vi) or contained in the reference manuals named in section 1003.04A(d)(3), a list of which Green Infrastructure & Low Impact Development practices are not being utilized at the site and a description of why not.

C. Pursuant to section 1003.04A(d)(2), documentation and quantification of why, due to the applicable site conditions, it is technically infeasible to manage the total amount of the precipitation from rainfall events less than or equal to the 95th Percentile Rainfall Event by infiltrating, evapotranspiring and harvesting & reusing the precipitation using Green Infrastructure & Low Impact Development practices;

D. If conventional technology will be used to manage any volume, a list and description of conventional technologies the developer plans to utilize and how much precipitation volume those conventional technologies will manage.

(3) The Review Body and Decision-Making Body shall have the authority to require developers to periodically demonstrate compliance throughout the permit period with the Green Infrastructure & Low Impact Development practices contained in the relevant SWM Site Plan. The Review Body and/or Decision-Making Body shall have the discretion to determine the form and content of such demonstration of compliance. The requirement for demonstration of compliance would become a term of the permit subject to all applicable enforcement provisions. Demonstration of compliance could include, but need not be limited to, a demonstration of periodic maintenance of Green Infrastructure & Low Impact Development practices.

I do hereby certify that the foregoing resolution duly engrossed and certified, was delivered by me to the Mayor for his approval or disapproval and that the Mayor failed to approve or disapprove the same, whereupon it became a law without his approval under the provisions of the Act of Assembly in such case made and provided. Linda M. Johnson-Wasler, City Clerk