

Storm Water – the Philadelphia Story

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While Katherine Hepburn's *Philadelphia Story* actually transpired on the upper crust Main Line, ours takes place in the neighborhoods of the City of Philadelphia itself. New residential construction has exploded in Philadelphia's neighborhoods in recent years, filling-in vacant lots and replacing abandoned "rust belt" industrial sites.

For years, many of the regional and national home builders kept their distance from Philadelphia, even with its 10-year real estate tax abatement for new residential construction, because of the bureaucracy, the expectation of being required to "pay to play" and the additional costs and territorial difficulties with the construction trade unions.

To the surprise of many natives, Philadelphia has now become THE place to be for young professionals, even being dubbed "The New Brooklyn."

A number of City policies have been instituted as a part of this rebirth to control the replacement housing now under construction. New construction is rarely approved without the endorsement of a Neighborhood Association, as well as the local elected City Council member.

But the most profound changes have been imposed by virtue of a Consent Agreement entered into with EPA in June of 2011. As a very old town, Philadelphia's stormwater management system contains truly antiquated facilities. In many sections of the City, storm water runoff mixes with sewage to flow intermingled to the water treatment facilities. When storms are too severe, raw sewage dumps with the rain water into the rivers.

Recognizing that urban areas are full of impervious surfaces – roads, parking lots and roofs -- Philadelphia has instituted strict and intricate storm water controls to intercept rain water at the source, allowing it to flow into the ground so that soil and plants recycle it to the atmosphere. In this way, rain water can be diverted from the over-taxed sewer system, helping to avoid overflows that pollute the rivers and other waterways. These methods can take a variety of forms, including vegetated roofs, increased park and open space, porous pavement, and the installation of underground storm water detention facilities, among others.

These new stormwater installations often require complicated zoning solutions, as well as the use of a community association to own and control the modern storm water facilities.

Hercules Grigos, Esq. is one of the attorneys who knows his way around and through the zoning issues. One of these complications is the 15,000 square foot rule, which provides a threshold above which additional storm water solutions are required.

David Plante has developed an expertise in solving land use puzzles every day. David's firm provides storm water designs for residential and commercial uses.

One of the obstacles the Philadelphia Water Department posed was the need for some entity to own and control easements and storm water facilities. The answer is the use of a community association – either condominium or planned community – and that is how I was brought onto the team. There are unique issues in City community associations rarely encountered in the suburbs. We will touch on these in the following pages.

With the proper team in place, the redevelopment process in Philadelphia is alive and thriving, along with the City's reputation for culinary diversity and a wealth of historical and cultural amenities.

The Mini Community Association

The requirement that an association must own and control storm water features in Philadelphia's new residential construction raises issues not necessarily foreseen by the authors of the Pennsylvania Uniform Condominium Act (UCA) or Uniform Planned Community Act (UPCA).

Selecting the appropriate form of community association has been addressed in other PBI courses. In summary, for reasons surrounding obtaining financing for purchasers, the planned community format is preferred for detached, twin and townhouse development. The City refers to a Planned Community as a "PUD," which is old terminology also used by FHA. The PUD or planned community is what used to be known as a homeowners' association – a common law concept created via recording deed restrictions against land.

One often assumes a horizontal regime (apartments or "stacked" units) must be a condominium. In fact, by definition, a planned community can include horizontal units; however, neither the City nor the secondary mortgage market recognize this opportunity. Thus, even if the UPCA is used to avoid the discrimination against condominiums found in many lender regulations, the City and most lenders will likely require condominium rules to apply.

How does one establish a community association for only a handful of homes? How does the drafter ensure the integrity of the association when the builder/developer's sole goal is to "keep the fees low?"

The enabling statutes require that an association have an Executive Board consisting of at least three unit owners, unless there are fewer than three units. We suggest having three members on the Board, but in a five-unit association, keeping that level of interest is difficult, if not impossible. Politics get in the way of solid decision-making in the smaller associations. There is a minimum cost of existence – liability, property and directors' & officers' liability insurance; annual tax return and financial statement preparation; often private trash removal; cleaning and inspection of the storm water features; and inter-personal conflicts that grow out of living in close proximity. The fewer the number of units, the higher the annual association fees for the various fixed costs.

If the owners do not have the time or expertise to run their association, to obtain bids for work and to collect monthly assessments, then a professional property manager is required. Again, this means higher fees with little perceived value in return.

The result is laudable – finding ways to significantly reduce stormwater runoff that overtaxes the City's water treatment plants and to help scrub pollutants from water heading to our natural waterways. Bringing additional green space to the City helps control hot temperatures, provides more recreational space, increases the oxygen levels produced by photosynthesis, and allows additional space for gardeners and home-grown fruits and vegetables. But there are costs in creating and maintaining these facilities, which must come out of the pockets of the private sector – both developers and residents.

Stormwater – the Philadelphia Perspective
David Plante, PE, PP
Ruggiero Plante Land Design

In a natural environment, rain falls to the ground where much of it will either infiltrate into the soil or evaporate before it begins to run off of the ground and into channels and streams. With urbanization the ground is covered with impervious material and virtually all of the rainfall runs off into the street, sewer systems, and ultimately to our streams and rivers, carrying pollutants with it. This is known as stormwater runoff and is a problem that cities like Philadelphia face as land is developed and previously pervious soil is replaced with impervious material. Stormwater runoff has been identified as the cause of many problems such as polluting our rivers, destroying habitats and flooding our neighborhoods.

In Philadelphia, the sewer system is comprised of both separate and combined sewers. Separate sewers carry only untreated stormwater which is discharged directly into our streams. Combined sewers make up nearly two thirds of the Philadelphia sewer system and convey both stormwater and sewage together to one of our three wastewater treatment plants. During major rain events, the additional stormwater runoff exceeds the capacity of the combined sewer system, causing the untreated stormwater and sewage to be discharged directly into our streams and rivers. Likewise, when the capacity of the sewers is exceeded from the additional runoff, local flooding of streets and basements results.

Philadelphia is addressing these issues by implementing stormwater management practices to control both the quality and the quantity of stormwater runoff that enter the sewers and is ultimately discharged to our streams and rivers. Green City, Clean Waters is Philadelphia's plan to manage stormwater with innovative green infrastructure. This is being accomplished through both public and private investment. Philadelphia plans to invest \$2.4 billion over the next 25 years in public infrastructure for treatment plant upgrades and green stormwater infrastructure. Since 2010, the Philadelphia Water Department (PWD) has required property owners to pay the cost of stormwater treatment by including stormwater charges on each water bill.

The City regulates stormwater management on private properties. In 2006, PWD adopted regulations that are triggered by construction and development projects disturbing more than 15,000 square feet of land (approximately 1/3 acre). These projects are required to implement Stormwater Management Practices (SMP's) to reduce the quantity of stormwater runoff released from the site and also to improve the quality of runoff leaving the site. PWD has worked to promote Green Stormwater Initiatives, which are SMP's with a vegetative component. The goal is to manage the stormwater runoff by promoting infiltration into the soil, using the plant material and soil to filter pollutants from the runoff before it enters the sewer system, and increasing the vegetated area of the city to improve the overall quality of the environment.

The specific ways in which these goals are met fall partially on the public and partially on the private sector. The PWD sponsors Green Stormwater Infrastructure within the public streets and on other publicly owned land. These infrastructure improvements include stormwater tree trenches and stormwater "bump outs" within the public streets. Practices such as rain gardens

and infiltration basins are installed on other public lands where more area is available. PWD also sponsors the installation of green stormwater practices on private land by providing grants to landowners who volunteer to install green practices on their property.

Most of the obligation to meet PWD's stormwater goals falls on private property owners who are required to install SMP's in conjunction with building and development projects that exceed the 15,000 square foot threshold. In denser areas of the City, stormwater management obligations are typically met by installing Green (vegetated) Roofs, Stormwater Planters, Porous Pavement, and Subsurface Stormwater Infiltration Beds. In less intensely developed areas of the City, Rain Gardens, Surface Detention and Infiltration Basins and Ponds, are frequently employed where space is available. (A Rain Garden is a depressed area in the landscape which collects and filters stormwater runoff through the selection of specific plants and an engineered soil bed.)

The impact of stormwater management regulations on development in the City has been profound. The cost implications are significant, and often account for more than 50% of the site construction costs. The need for space for affordable SMP's often has a significant influence on site design. Owners also face additional time and costs in obtaining development approvals where SMP's are required, and ongoing maintenance costs are always a concern. Construction staging is frequently problematic, as many SMP's require significant excavation on small and extremely congested urban sites. Of course, owners and developers have adapted, many subsurface SMP's have been installed as well as many green stormwater practices such as rain gardens and green roofs, and that has begun to change the look of some neighborhoods.

To control the long term environmental problem of Combined Sewer Overflows, as well as the high cost of treating large amounts of stormwater that flow to our treatment plants via the combined sewer system, Philadelphia has leapfrogged ahead of many of the surrounding suburban communities by implementing more rigorous Stormwater Management controls, and even more stringent requirements are planned for adoption in July of 2015. Since enactment of the regulations in 2006, hundreds of stormwater management systems have been constructed in the City. Implementation of the publicly sponsored SMP's and installation of the many private SMP's that will be installed as properties are developed and redeveloped will help lead to a sustainable future with reduced flooding, improved water quality and an overall improved quality of life for the residents of Philadelphia.



Example of detention basin installation



Example of Rain Garden

Storm Water Management

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- Governed by Section 14-703 of the Philadelphia Zoning Code:
 - Governed by Subdivision and Land Development Ordinances in most MPC jurisdictions.
 - Storm water management regulations were recently added to the Philadelphia Zoning Code in the latest round of amendments.
 - Applicable in all zoning districts where an earth disturbance poses a significant risk for water pollution.
 - The Philadelphia Water Department sets the base level of earth disturbance that triggers the application of storm water management requirements.

- The current earth disturbance is 15,000 square feet.
 - The Philadelphia Water Department has its own Storm Water Regulations.
- Storm water management requirements do not apply to individual lots in a subdivision with its own storm water management plan that has been approved by the Water Department.
- No building or zoning permit will be issued if the project requires storm water management review until the Water Department has signed off on the storm water management plan.
- Also governed by Philadelphia Water Department Regulations Chapter 6:
 - All earth disturbances must comply with the Erosion and Sediment Control requirements of the Pennsylvania Department of Environmental Protection (PADEP) as specified in 25 Pa. Code § 102.4.
 - Post-Construction Requirements:
 - Water Quality Requirement
 - The Water Quality Requirement is designed to recharge the groundwater table and to provide water quality treatment for stormwater runoff.
 - In order to preserve or restore a more natural water balance on a Development Site, the water quality volume shall be infiltrated on site.
 - Where it has been demonstrated that a portion or all of the water quality volume cannot be infiltrated on site, the water quality volume which cannot be infiltrated on site must be treated for water quality.
 - Channel Protection Requirement
 - The Channel Protection Requirement is designed to minimize accelerated channel erosion resulting from stormwater runoff from Development Sites.
 - Storm water Management Plans shall retain or detain the runoff from all DCIA within the limits of Earth Disturbance from a one-year, 24-hour Natural Resources Conservation Service (NRCS) Type II design storm in the proposed site condition such that the runoff takes a minimum of 24 hours and a maximum of 72 hours to drain from the facility.
 - Flood Control Requirement
 - To prevent flooding caused by extreme events, the City of Philadelphia is divided into Management Districts that require different levels of stormwater attenuation depending on location. Management Districts shall be determined for the Development Site using the maps provided in the Manual.

- All Development shall include the following steps in sequence to comply with water quality requirements:
 - (1) Prepare an Existing Resource and Site Analysis (ERSA) plan and worksheet, showing environmentally sensitive areas including, but not limited to: steep slopes, ponds, lakes, streams, suspected wetlands, hydric soils, vernal pools, land development, any existing recharge areas, and any other requirements of the worksheet available in the Manual;
 - (2) establish the required buffer in accordance with federal, state and/or local law;
 - (3) prepare a Conceptual Stormwater Management Plan avoiding the sensitive areas identified in ERSA;
 - (4) evaluate nonstructural stormwater management alternatives as described in the Manual;
 - (5) minimize Earth Disturbance during the construction phase;
 - (6) use site design techniques described in the Manual to minimize the impervious surfaces within the limits of Earth Disturbance;
 - (7) use techniques in the Manual to minimize DCIA within the limits of Earth Disturbance;
 - (8) design appropriate SMPs according to the Manual;
 - (9) adjust the site design as needed to meet all requirements of these Regulations.
- Variance Standards
 - Since storm water management regulation is governed by the Zoning Code in Philadelphia, there is an argument to be made that an applicant could conceivably request variance relief from the storm water management requirements, as he would any other requirements of the Philadelphia Zoning Code.
 - Due to the fact that storm water management regulations were added to the Philadelphia Zoning Code in the recent overhaul of the Zoning Code, no case has yet been brought addressing this issue.
 - The Philadelphia Zoning Code defines “variance” at Section 14-203(349) as follows:
 - “A relief from the provisions of this Zoning Code that allows use or development of a lot outside the zoning provisions applicable to that lot.”

- As part of the Philadelphia Zoning Code, then, storm water management requirements could potentially be the subject of variance relief.
- The Philadelphia Zoning Code sets forth the standards for variance relief in Section 14-303(8):
 - The denial of the variance would result in an unnecessary hardship that was not created by the applicant;
 - The variance represents the minimum variance that will afford relief and the least modification possible;
 - The grant of the variance is in harmony with the purpose and spirit of this Zoning Code;
 - The grant of the variance will not substantially increase congestion in the public streets, increase the danger of fire, or otherwise endanger the public health, safety, or general welfare;
 - The variance will not substantially or permanently injure the appropriate use of adjacent conforming property or impair an adequate supply of light and air to adjacent conforming property;
 - The grant of the variance will not adversely affect transportation or unduly burden water, sewer, school, park, or other public facilities;
 - The grant of the variance will not adversely and substantially affect the implementation of any adopted plan for the area where the property is located; and
 - The grant of the variance will not create any significant environmental damage, pollution, erosion, or siltation, and will not significantly increase the danger of flooding either during or after construction, and the applicant will take measures to minimize environmental damage during any construction.
- With respect to “use” variances, the Philadelphia Code further sets forth specific requirements at Section 14-303(8)(e)(.2):
 - That there are unique physical circumstances or conditions peculiar to the property, and the unnecessary hardship is due to such conditions and not to conditions generally created by the Zoning Code;
 - There is no possibility that the property can be used in strict conformity with the provisions of this Zoning Code, that the authorization of a variance is therefore necessary to enable the viable economic use of the property; and that the use variance, if authorized, will not alter the essential character of the neighborhood or district in which the property is located, nor substantially or permanently impair the appropriate use or development of adjacent property, nor be detrimental to the public welfare; and

- That the hardship cannot be cured by the grant of a dimensional variance.
- With respect to “dimensional variances,” the additional specific considerations of the Zoning Board in Section 14-303(8)(e)(.3) include:
 - The economic detriment to the applicant if the variance is denied;
 - The financial burden created by any work necessary to bring the building into strict compliance with the zoning requirements; and
 - The characteristics of the surrounding neighborhood.
- The seminal Pennsylvania variance case is Hertzberg v. Zoning Board of Adjustment of City of Pittsburgh, 721 A.2d 43, 47 (Pa. 1998).
 - In Hertzberg, the Pennsylvania Supreme Court stated that where the use of property for any purposes is possible only through extensive reconstruction or demolition of the building, an unnecessary hardship exists.
 - The Court identified the following factors to establish unnecessary hardship:
 - The physical features of the property are such that it cannot be used for a permitted purpose; or
 - The property can be conformed for a permitted use only at a prohibitive expense; or
 - The property is valueless for any purpose permitted by the zoning ordinance.
 - With respect to dimensional variances, in Hertzberg the Pennsylvania Supreme Court further established a lessened unnecessary hardship standard:
 - In cases of dimensional variances, “The owner is asking only for a reasonable adjustment of the zoning regulations in order to utilize the property in a manner consistent with the applicable regulations.”
 - The Supreme Court identified the following factors:
 - Economic detriment to the applicant if the variance is denied; and
 - Financial hardship created by any work necessary to bring the building into strict compliance with the Zoning Code and the surrounding neighborhood.
 - Two recent cases have further expanded the discussion on unnecessary hardship.
 - South of South Neighborhood Ass’n v. Zoning Bd. of Adjustment, 54 A.3d 115; 2012 Pa. Commw. LEXIS 273 (Pa. Cmwlth. 2012).

- In this case, the applicant owned industrially zoned property for which he made numerous applications for permits to use the property in a variety of ways.
 - The ZBA ultimately granted variances permitting the owner to use the property for commercial uses, finding that:
 - Unnecessary hardship was established by showing extensive remodeling would be required to convert the existing building for modern industrial use; and
 - The property owner unsuccessfully attempted to sell the property for industrial use for a period of five (5) years.
 - On appeal, the unnecessary hardship standard relied on by the Court was whether:
 - The physical features of the property are such that it cannot be used for a permitted purpose; or
 - The property can be conformed for a permitted use only at a prohibitive expense; or
 - The property is valueless for any purpose permitted by the zoning ordinance.
 - In affirming the ZBA, the Court held that “a sustained, but unsuccessful, attempt to sell property constitutes evidence that the property lacks value for any permitted use.”
 - In addition to all of the factors presented by the applicant, the Court found that the unnecessary hardship standard had been met.
- Marshall v. City of Philadelphia, 97 A.3d 323 (Pa. 2014).
- In this case, the Archdiocese of Philadelphia sought zoning relief to transform a shuttered nonconforming school building into 63 low income apartments.
 - The Archdiocese received Federal funding from HUD to support this project.
 - The sole objector at the ZBA hearing alleged that the Archdiocese had not established an unnecessary hardship as required for the variance.
 - The ZBA granted the necessary variances after reviewing several other permissible uses in the zoning district which would create more congestion in the neighborhood reasoning that the building was currently vacant and providing no benefit to the community.
 - On appeal, the Court emphatically stated that an applicant for a variance is “not required to show that the property at issue is valueless” without the variance.
 - Further, no property owner can be required to reconstruct a building to a conforming use.

- In affirming the grant of relief by the zoning hearing board, the Court stated that multiple factors, including economic interests, are to be considered in evaluating whether an unnecessary hardship has been established.
 - The Court recognized that the proposed use was actually a benefit to the neighborhood and addressed a need for affordable housing.
 - The Court flatly rejected the trial court's standard that a property owner must demonstrate that the entire building is *functionally obsolete* for any purpose other than the one not permitted under the zoning ordinance.

Philadelphia Code

Title 14- Zoning

Chapter 14-700 Development Standards

Section 14-703. Form and Design

(3) Stormwater Management.

(a) Applicability and Exceptions.

(.1) These standards apply in all zoning districts to earth disturbances that create a significant risk of water pollution from stormwater runoff, erosion, or sedimentation. The Water Department shall establish, by regulation, the threshold of earth disturbance that constitutes a sufficient risk of water pollution requiring Water Department review.

(.2) The standards of this section do not apply to development activities on individual lots that are part of a larger subdivision that has a stormwater management system previously approved by the Water Department, provided that the construction conforms to all of the requirements of the approved system.

(.3) In addition, any development located in the /WWO Overlay district described in § 14-510 must comply with the stormwater management provisions of that overlay district.

(b) Permit Required.

(.1) No zoning or building permits shall be issued unless the Water Department confirms that the proposed activity and related stormwater management plan complies with the regulations of the Water Department designed to reduce the risk of water pollution.

(.2) The proposed stormwater management plan will be deemed to comply if the Water Department fails to approve or disapprove the plan within 45 days after it receives a copy of the application.

(c) Stormwater Management Plan.

A stormwater management plan submitted with a permit application shall comply with the regulations of the Water Department.

Philadelphia Water Department Regulations
CHAPTER 6
STORMWATER

600.0 STORMWATER MANAGEMENT

Water Department review of stormwater management plans is authorized by section 14-704 of the Philadelphia Code.

600.1 Definitions

(a) Applicant: Whenever used in this Chapter 6, a property owner, Developer, or other person who has filed an application to the Department for approval to engage in or be exempt from any Regulated Activity at a Development Site in the City of Philadelphia.

(b) Buffer: The area of land immediately adjacent to any surface water body measured perpendicular to and horizontally from the top-of-bank on both sides of a stream that must remain or be restored to native plants, trees, and shrubs.

(c) Conceptual Stormwater Management Plan: A preliminary stormwater management plan as described in these Regulations and in the Manual.

(d) Demolition: To tear down, raze, or remove an existing structure or impervious surface, whether in whole or in part.

(e) Design Storm: The magnitude and temporal distribution of precipitation from a storm event defined by probability of occurrence (e.g., five-year storm) and duration (e.g., 24-hours), used in the design and evaluation of stormwater management systems.

(f) Developer: Any landowner, agent of such landowner, or tenant with the permission of such landowner, who makes or causes to be made a subdivision of land or land Development project prior to issuance of the Certificate of Occupancy.

(g) Development: Any human-induced change to improved or unimproved real estate, whether public or private. As used in these Regulations, Development encompasses, but is not limited to, New Development, Redevelopment, Demolition, and Stormwater Retrofit. It includes the entire Development Site, even when the project is performed in phases.

(h) Development Site: The specific tract of land where any Development activities are planned, conducted, or maintained. It refers to a contiguous area of disturbance including across streets and other rights of way, regardless of individual parcel ownership, where lots are developed as one common project.

(i) Diffused Drainage Discharge: Drainage discharge not confined to a single point location or channel, such as sheet flow or shallow concentrated flow.

(j) Directly Connected Impervious Area (DCIA): An impervious or impermeable surface that is directly connected to the drainage system as defined in the Manual.

(k) Earth Disturbance: A construction or other human activity which disturbs the surface of land, including, but not limited to, clearing and grubbing, grading, excavation, embankments, land

development, agricultural plowing or tilling, timber harvesting activities, road maintenance activities, mineral extraction, and the moving, depositing, stockpiling, or storing of soil, rock or earth materials or as otherwise defined in the Manual.

(l) Erosion and Sediment Control Plan: A site specific plan consisting of both drawings and a narrative that identifies measures to minimize accelerated erosion and sedimentation before, during and after Earth Disturbance.

(m) Groundwater Recharge: The replenishment of existing natural underground water supplies from precipitation or overland flow without degrading groundwater quality.

(n) Management District: Sub-area delineations that determine peak rate attenuation requirements, as defined in the Manual. A Development Site located in more than one Management District shall conform to the requirements of the district into which the site discharges.

(o) Manual: The most recent version of the Philadelphia Stormwater Management Guidance Manual.

(p) New Development: Development project on an unimproved tract of land where structures or impervious surfaces were removed before January 1, 1970.

(q) Operations & Maintenance Agreement (O & M Agreement): Agreement between the Property Owner and the City which outlines the maintenance requirements associated with the Post Construction Stormwater Management Plan.

(r) Post Construction Stormwater Management Plan (PCSMP): A complete stormwater management plan set as described in these Regulations and in the Manual.

(s) Predevelopment Condition: For New Development and Redevelopment, Predevelopment shall be defined according to the procedures found in the Manual.

(t) Redevelopment: Development on an improved tract of land that includes, but is not limited to, the demolition or removal of existing structures or impervious surfaces and replacement with new impervious surfaces. This includes replacement of impervious surfaces that have been removed on or after January 1, 1970.

(u) Record Drawings: Construction drawings revised to represent the as-built conditions.

(v) Stormwater Management Practice (SMP): Any man-made structure that is designed and constructed to detain, infiltrate, or otherwise control stormwater runoff quality, rate, or quantity.

(w) Stormwater Pretreatment: Techniques employed to remove pollutants before they enter the SMP, including, but not limited to, the techniques defined and listed as pretreatment in the Manual.

(x) Stormwater Retrofit: The voluntary rehabilitation and/or installation of SMPs on a property to better manage stormwater runoff.

600.2 Regulated Activities

- (a) A Regulated Activity under these Regulations is Development that results in an area of Earth Disturbance greater than or equal to 15,000 square feet, or as otherwise required by local, state, and federal requirements. The area of Earth Disturbance during the construction phase determines requirements for the erosion and sediment controls and post-construction stormwater management.
- (b) The applicability of these Regulations is summarized in the Table of Applicable Stormwater Regulations in Philadelphia and in the Manual.
- (c) These Regulations shall apply to the entire Development Site even if Development on that site is to take place in phases.
- (d) Existing SMPs may be used on a Development Site if the SMPs meet all of the requirements of these Regulations.

600.3 Exemptions

- (a) General Exemptions. The following cases are exempt from the specified requirements of these Regulations.

- (1) Redevelopment that results in an area of Earth Disturbance greater than or equal to fifteen thousand (15,000) square feet, but less than one (1) acre, is exempt from the requirements of Section 600.5(b), Channel Protection Requirement.

- (2) Redevelopment that results in an area of Earth Disturbance greater than or equal to fifteen thousand (15,000) square feet that can demonstrate a twenty percent (20%) reduction in DCIA from Predevelopment Conditions as described in the Manual, is exempt from the requirements of Section 600.5(b), Channel Protection Requirement and 600.5(c), Flood Control Requirement.

- (b) Exemption Responsibilities. An exemption shall not relieve the Applicant, Developer or property owner from implementing such measures as are necessary to protect public health, safety, property, water quality, and the environment.

- (c) Emergency Exemption. Emergency maintenance work performed for the protection of public health and safety is exempt from the requirements of these Regulations. A written description of the scope and extent of any emergency work performed shall be submitted to the Department within two (2) calendar days of the commencement of the activity. If the Department finds that the work is not an emergency, then the work shall cease immediately and the requirements of these Regulations shall be addressed as applicable.

- (d) Special Circumstances. If conditions exist that prevent the reasonable implementation of water quality and/or quantity control practices on site, upon written request by the property owner, 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.

Table of Applicable Stormwater Regulations in Philadelphia					
			Earth Disturbance Associated with Development		
			0-14,999 sq. ft.	15,000 sq. ft.-1 acre	> 1 acre
Section 600.5(a) Water Quality Requirement	New Development	N/A**	Yes	Yes	
		Redevelopment	N/A**	Yes	Yes
Section 600.5(b) Channel Protection Requirement	New Development	N/A**	Yes	Yes	
	Redevelopment	N/A**	Exempt	Yes (Alternate Criteria)	
Section 600.5(c) Flood Control Requirement	New Development	N/A**	Yes	Yes	
	Redevelopment	N/A**	Yes (Alternate Criteria)	Yes (Alternate Criteria)	
Section 600.6 Nonstructural Project Design Requirement	New Development	N/A**	Yes	Yes	
	Redevelopment	N/A**	Yes	Yes	
Section 600.8 Post-Construction Stormwater Management Plan Requirement	New Development	N/A**	Yes	Yes	
	Redevelopment	N/A**	Yes	Yes	
<p>Yes (Alternate Criteria) – requirements of section may be waived depending on post-development site conditions (See Sections 600.3(a)(3), 600.5(b) and 600.5(c) for further details).</p> <p>N/A - Not Applicable, development project is not subject to requirements of indicated Regulations section. Voluntary controls are encouraged.</p> <p>Exempt – Development project is not subject to requirements of indicated Regulations section. Any local, state, or federal requirements still apply.</p> <p>**– If the proposed development results in stormwater discharge that exceeds stormwater system capacity, causes a combined sewer overflow, or degrades receiving waters, the design specifications presented in these Regulations may be applied to proposed development activities as warranted to protect public health, safety, or property.</p>					

600.4 Erosion and Sediment Control during Earth Disturbance

- (a) All Earth Disturbance must comply with the Erosion and Sediment Control requirements of the Pennsylvania Department of Environmental Protection (PADEP) as specified in 25 Pa. Code § 102.4.
- (b) No Earth Disturbance greater than or equal to fifteen thousand (15,000) square feet and less than one (1) acre shall commence until the Department approves an Erosion and Sediment Control Plan conforming to the regulations of the PADEP.

600.5 Post-Construction Stormwater Management Criteria

- (a) Water Quality Requirement: The Water Quality Requirement is designed to recharge the groundwater table and to provide water quality treatment for stormwater runoff.

(1) The following formula shall be used to determine the water quality volume (WQv) in cubic feet of storage for the development site:

$$WQv = [P / 12] * (I) \text{ Eqn: 600.1}$$

Where:

WQv = Water Quality Volume (cubic feet)

P = 1.0 inch

I = DCIA within the limits of earth disturbance (square feet)

(2) Groundwater Recharge Requirement: In order to preserve or restore a more natural water balance on a Development Site, the water quality volume shall be infiltrated on site. A list of acceptable practices for infiltration is provided in the Manual.

(A) The infiltration volume shall be equal to one (1) inch of rainfall over all DCIA within the limits of Earth Disturbance.

(B) To determine if infiltration is appropriate on the Development Site, follow the Hotspot Investigation, Subsurface Stability, and Suitability of Infiltration procedures found in the Manual.

(C) If the soil investigation report demonstrates that the soil is unsuitable for infiltration, the Applicant shall follow the Infiltration Waiver Request procedure requirements as defined in the Manual.

(3) Water Quality Treatment Requirement.

(A) Where it has been demonstrated, in accordance with section 600.5(a)(2) of these Regulations, that a portion or all of the water quality volume cannot be infiltrated on site, the water quality volume which cannot be infiltrated on site must be treated for water quality.

(B) Water quality treatment is attained differently in separate sewer areas and in combined sewer areas as specified in the Manual.

(b) Channel Protection Requirement: The Channel Protection Requirement is designed to minimize accelerated channel erosion resulting from stormwater runoff from Development Sites.

(1) To meet the Channel Protection Requirement, SMPs shall retain or detain the runoff from all DCIA within the limits of Earth Disturbance from a one-year, 24-hour Natural Resources Conservation Service (NRCS) Type II design storm in the proposed site condition such that the runoff takes a minimum of 24 hours and a maximum of 72 hours to drain from the facility.

(2) The infiltration and water quality volumes may be incorporated into the channel protection portion of the design provided the design meets all requirements concurrently.

(3) Design criteria and a list of SMPs for channel protection are included in the Manual.

(c) Flood Control Requirement

(1) To prevent flooding caused by extreme events, the City of Philadelphia is divided into Management Districts that require different levels of stormwater attenuation depending on location. Management Districts shall be determined for the Development Site using the maps provided in the Manual.

(A) The Table of Peak Runoff Rates for Management Districts lists the attenuation requirements for each Management District.

(B) A Development Site located in more than one Management District shall conform to the requirements of the district where the discharge point is located.

(2) Predevelopment Conditions for New Development and Redevelopment are specified in the Manual.

Table of Peak Runoff Rates for Management Districts

Column A		Column B	
District	NRCS Type II 24-hour Design Storm applied to Proposed Condition	NRCS Type II 24 -hour Design Storm applied to Predevelopment Condition	Storm
A	2 – year	1 - year	
A	5 – year	5 - year	
A	10 – year	10 - year	
A	25 – year	25 - year	
A	50 – year	50 – year	
A	100-year	100-year	
B	2 – year	1 – year	
B	5 – year	2 – year	
B	10 – year	5 – year	
B	25 – year	10 – year	
B	50 – year	25 – year	
B	100 – year	50 – year	
B-1	2 – year	1- year	
B-1	5 – year	2 – year	
B-1	10 – year	5 – year	
B-1	25 – year	10 - year	
B-1	50- year	25- year	
B-1	100-year	100-year	
B-2	2 – year	1- year	
B-2	5 – year	2 - year	
B-2	25 – year	5 - year	
B-2	50- year	10- year	
B-2	100 – year	100 - year	

C* Conditional Direct Discharge District
C – 1** Conditional Direct Discharge District

SMPs shall be designed such that peak rates from Column A are less than or equal to Peak Rates from Column B.

* In District C, a Development Site that can discharge directly without use of City infrastructure may do so without control of proposed conditions peak rate of runoff.

** In District C-1, a Development Site which can discharge directly to the Tookany/Tacony-Frankford main channel or major tributaries without the use of City infrastructure may do so without the control of proposed conditions peak rate of runoff greater than the 5 – year storm.

For Conditional Direct Discharge Districts, the proposed conditions peak rate of runoff for a Development Site that discharges to City infrastructure must be controlled to the Predevelopment Conditions peak rate as required in

District A provisions for the specified Design Storms. The Predevelopment Condition shall be defined according to the procedures found in the Manual.

600.6 Nonstructural Project Design and Sequencing to Minimize Stormwater Impacts

(a) An Applicant is required to find practicable alternatives to the surface discharge of stormwater, the creation of impervious surfaces, and the degradation of Waters of the Commonwealth.

(b) All Development shall include the following steps in sequence to comply with water quality requirements of these Regulations. The goal of the sequence is to minimize the increases in stormwater runoff and impacts to water quality resulting from the proposed regulated activity.

(1) Prepare an Existing Resource and Site Analysis (ERSA) plan and worksheet, showing environmentally sensitive areas including, but not limited to: steep slopes, ponds, lakes, streams, suspected wetlands, hydric soils, vernal pools, land development, any existing recharge areas, and any other requirements of the worksheet available in the Manual;

(2) establish the required Buffer in accordance with federal, state and/or local law;

(3) prepare a Conceptual Stormwater Management Plan avoiding the sensitive areas identified in ERSA;

(4) evaluate nonstructural stormwater management alternatives as described in the Manual;

(5) minimize Earth Disturbance during the construction phase;

(6) use site design techniques described in the Manual to minimize the impervious surfaces within the limits of Earth Disturbance;

(7) use techniques in the Manual to minimize DCIA within the limits of Earth Disturbance;

(8) design appropriate SMPs according to the Manual;

(A) meet Water Quality Requirement and provide for Stormwater Pretreatment prior to infiltration or water quality treatment in accordance with Section 600.5(a) of these Regulations and the Manual;

(B) meet Channel Protection Requirement in accordance with Section 600.5(b) of these Regulations;

(C) meet Flood Control Requirement for the appropriate Management District in accordance with Section 600.5(c) of these Regulations; and

(9) adjust the site design as needed to meet all requirements of these Regulations.

600.7 Requirements for the Design of SMPs

(a) General Requirements

(1) In order to provide for the protection of public health and safety and to more effectively manage stormwater in Philadelphia, all SMPs shall meet the requirements of these Regulations.

(2) The existing points of concentrated drainage that discharge onto adjacent land shall not be altered in any manner that could cause property damage without written permission of the owner of the adjacent land.

(3) The design of all SMPs shall incorporate sound engineering principles and practices as detailed in the Manual. The Department reserves the right to reject any design that would result in the creation or continuation of a stormwater problem area.

(4) All stormwater runoff in excess of any volume infiltrated on site must be routed through a dedicated stormwater pipe and conveyed to the approved connection or point of discharge.

(5) When the Development Site is located within a combined sewer area and adjacent to a receiving water body, stormwater shall be discharged directly to receiving waters after requirements of these Regulations and any applicable local, state or federal requirements are met.

(6) Areas of existing diffused drainage discharge shall be subject to any applicable discharge criteria in the general direction of existing discharge, whether proposed to be concentrated or maintained as diffused drainage areas, except as otherwise provided by these Regulations. If diffused drainage discharge is proposed to be concentrated and discharged onto adjacent land, the Applicant must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge, or otherwise prove that no erosion, sedimentation, flooding or other impacts will result from the concentrated discharge.

(7) All SMPs shall incorporate maximum ponding and/or draw down requirements consistent with the Manual.

(8) Acceptable calculation methods for the design of SMPs are provided in the Manual.

600.8 PCSMP Requirements

(a) General Requirements. For any activities regulated by these Regulations and the Philadelphia Code Section §14-704(3):

(1) No zoning permit may be issued until the Water Department has approved a Conceptual Stormwater Management Plan.

(2) No Earth Disturbance may commence and no building permit will be issued until the Department has approved a PCSMP.

(b) Conceptual Approval. To obtain conceptual approval from the Department, the Applicant must complete the ERSA worksheet, and prepare an ERSA plan and Conceptual Stormwater Management Plan.

(c) PCSMP Approval.

(1) The PCSMP shall include a general description of the Development project, project sequence, calculations, maps and plans as described in Section 600.6(b) of these Regulations. A list of required contents of the PCSMP is located in the Manual.

(2) For any activities that require state or federal permits, proof of application or approval of those permit(s) shall be included as part of the PCSMP.

(3) All PCSMP materials shall be submitted to the Department in accordance with submittal procedures as outlined in the Manual.

(d) Miscellaneous Stormwater Management Charges. Applicability and requirements for Stormwater Plan Review Fees and Stormwater Management in Lieu are described in Section 308.0 of these Regulations.

(e) Project Expirations Conceptual Stormwater Management Plan and PCSMP approvals and rejections shall be subject to the Department's expiration policy, set forth in the Manual.

600.9 Permit Requirements by Other Government Entities

(a) Other government entities may require permits for certain regulated Earth Disturbance activities.

(b) Requirements for these permits must be met prior to commencement of Earth Disturbance.

600.10 Inspections

(a) The Department or its designee may inspect any phase of the installation of the SMPs.

(b) An onsite meeting between the Department and the Applicant is required prior to the start of construction.

(c) During any stage of the work, if the Department or its designee determines that any component of the PCSMP is not being installed as approved by the Department, the Department shall issue a "Stop Work Order" preventing other on-site construction from proceeding until the deficiencies are corrected.

(d) Record Drawings for all PCSMP components must be submitted to the Department.

(e) A final inspection of all PCSMP components shall be conducted by the Department or its designee to confirm compliance with the approved PCSMP prior to the issuance of Certificate of Occupancy, or other equivalent issuance, or use of the Development Site.

600.11 Construction, Operations and Maintenance of SMPs

(a) No regulated Earth Disturbance activities shall commence until the Department has approved a PCSMP in accordance with the requirements set forth in the Manual.

(b) All SMPs shall be constructed in accordance with the PCSMP.

(c) Operation and Maintenance responsibilities are defined in the O & M Agreement between the property owner and the City and in the Manual. SMPs and other stormwater management controls shall be maintained by the property owner or designee to design function.

(d) There shall be no alteration or removal of any SMP or other stormwater management control required by an approved PCSMP and the O & M Agreement, and the property owner shall not allow the property to remain in a condition which does not conform to an approved PCSMP and O & M Agreement.

(e) The Department reserves the right to accept or reject the operations and maintenance responsibility for any SMPs.

(f) The Department or its designee may inspect the long term operation of the SMPs and other stormwater management controls.

600.12 Stormwater Management Easements

(a) Stormwater management easements or rights of way are required for all areas used for off-site SMPs or stormwater conveyance, unless a waiver is granted by the Department.

(b) Stormwater management easements shall be provided by the property owner if necessary for access for inspections and maintenance, or for the preservation of stormwater runoff conveyance, infiltration, detention areas and/or other stormwater controls and SMPs, by persons other than the property owner.

(c) The stormwater management easement and its purpose shall be specified when recorded in accordance with section 600.13 of these Regulations.

600.13 Recording of O & M Agreement

(a) The owner of any land upon which SMPs will be placed, constructed or implemented as described in the PCSMP shall be responsible for the recording of the following documents with the Philadelphia Department of Records:

(1) The O & M Agreement, which shall be included as part of the PCSMP submitted under Section 600.8, and

(2) Easements under Section 600.12 of these Regulations. Recordings shall be at the property owner's expense.

600.14 Prohibited Discharges

(a) No person shall allow, or cause to allow, a stormwater discharge into the City's separate storm sewer system that is not composed entirely of stormwater.

(b) In the event that the Department determines that any discharge to a storm sewer is not composed entirely of stormwater, the Department will notify the responsible person to immediately cease the discharge.

(c) Nothing in this Section shall affect a discharger's responsibilities under state law.

600.15 Prohibited Connections

(a) The following connections are prohibited, except as otherwise provided:

(1) Any drain or conveyance, whether on the surface or subsurface, which allows any non-stormwater discharge including sewage, groundwater, process wastewater, and wash water, to enter the separate storm sewer system.

(2) Any connections to the storm drain system from indoor drains and sinks.

(3) Any drain or conveyance connected from a commercial or industrial land use to the separate storm sewer system that has not been documented in plans, maps, or equivalent records, and approved by the City.

600.16 Enforcement

(a) Whenever a property owner, Applicant, Developer, or other responsible party has engaged in conduct prohibited by, or failed to meet a requirement of this Chapter 6, the Department may order compliance by notifying the responsible party.

(b) Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of the violation(s).

(c) Failure to comply within the time specified may subject the responsible party to any and all available penalty provisions. Such penalties shall be cumulative and shall not prevent the City from pursuing all remedies available in law or equity.

(d) The Department may suspend or revoke any approvals granted for the Development Site upon discovery of the failure of the property owner, Applicant or Developer to comply with these Regulations.

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