



Chapter 22.5

STORMWATER AND STREET ORDINANCE

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This ordinance was initially issued in June 1997 (Ordinance O-224-97) with further revisions in December 1997 (Ordinance O-666-97), May 1998 (Ordinance O-247-98), May 2003 (Ordinance O-155-03), June 2003 (Ordinance O-264-03), August 2004 (Ordinance O-139-04), January 2005 (Ordinance O-16-05), February 2005 (Ordinance O-45-05), and February 2013 (Ordinance O-26-2013).

ARTICLE I. IN GENERAL

Section 22.5-1. Title of chapter.

This chapter shall be known and may be cited as the "Stormwater and Street Ordinance of the City of Knoxville."

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-2. Purpose.

The purpose of this chapter is to consolidate all regulations pertaining to the stormwater system and the local street system and to accomplish the following:

- (1) Improve stormwater management;
- (2) Control the discharge of pollutants to the stormwater system;
- (3) Improve public safety;
- (4) To comply with the city's NPDES permit;
- (5) Establish procedures to accomplish the above purposes.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-3. Administration of chapter.

The engineering director and the engineering staff under the director's supervision shall administer the provisions of this chapter.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-4. Definitions.

Unless specifically defined in this section, words or phrases used in this chapter shall be interpreted so as to give them the meaning they have in common usage, and to give this chapter its most reasonable application.

One-year frequency storm. A storm event defined to be two and one-half (2.5) inches in twenty-four (24) hours or other such magnitude the engineering director shall establish based upon scientific and engineering information.

Two-year frequency storm. A storm event with a fifty (50) percent chance of being equaled or exceeded in a given year. Defined to be three (3.0) inches in twenty-four (24) hours or other such magnitude the engineering director shall establish based upon scientific and engineering information.

Five-year frequency storm. A storm event with a twenty (20) percent chance of being equaled or exceeded in any given year. Defined to be three and seven-tenths (3.7) inches in twenty-four (24) hours or other such magnitude the engineering director shall establish based upon scientific and engineering information.

Ten-year frequency storm. A storm event with a ten (10) percent chance of being equaled or exceeded in any given year. Defined to be four and three-tenths (4.3) inches in twenty-four (24) hours or other such magnitude the engineering director shall establish based upon scientific and engineering information.

Twenty-five-year frequency storm. A storm event with a four (4) percent chance of being equaled or exceeded in any given year. Defined to be five (5.0) inches in twenty-four (24) hours or other such magnitude the engineering director shall establish based upon scientific and engineering information.

Fifty-year frequency storm. A storm event with a two (2) percent chance of being equaled or exceeded in any given year. Defined to be five and seven-tenths (5.7) inches in twenty-four (24) hours or other such magnitude the engineering director shall establish based upon scientific and engineering information.

One hundred-year frequency storm. A storm event with a one (1) percent chance of being equaled or exceeded in any given year. Defined to be six and three-tenths (6.3) inches in twenty-four (24) hours or other such magnitude the engineering director shall establish based upon scientific and engineering information.

Five hundred-year frequency storm. A storm event with a one-fifth (1/5) of one (1) percent chance of being equaled or exceeded in any given year. Defined to be eight (8.0) inches in twenty-four (24) hours or other such magnitude the engineering director shall establish based upon scientific and engineering information.

Administrative plat. A plat prepared and certified by a registered land surveyor and approved or denied for recording by the metropolitan planning commission (MPC) through staff administrative procedures. A plat shall be classified as an administrative plat when it meets one (1) or more of the following criteria:

- (1) It divides one (1) tract into no more than two (2) lots;
- (2) It combines existing lots into no more than two (2) lots;
- (3) It adjusts the common lot line(s) between two (2) existing recorded lots;
- (4) It is for the purpose of recording an easement or other new information and no subdivision of land is involved; or
- (5) It qualifies as an exempt or corrected plat as defined by the city-county minimum subdivision regulations.

Best management practices manual (BMP manual). A manual produced by the city containing best management practices for use on site development plans and construction projects.

Blue-line stream. Any stream shown on the 7.5 minute USGS quad maps.

Board of environmental appeals. Appointed by the mayor and confirmed by council to hear appeals filed by any person incurring a civil penalty or damage assessment imposed pursuant to section 22.5-8 of this chapter.

Condominium (condo) development. A development of attached or detached units where the individual units take access from a private drive that is neither a joint permanent easement nor city right-of-way.

Covenants by lessee for maintenance of stormwater facilities on leased property. A legal document executed by a lessee and recorded with the county register of deeds guaranteeing proper maintenance of stormwater facilities during the term of the lessee's lease and the proper removal of the water quality facilities at the end of the term of the lessee's lease.

Covenants by property owner for permanent maintenance of stormwater facilities. A legal document executed by the property owner and recorded with the county register of deeds guaranteeing perpetual and proper maintenance of stormwater facilities.

Detention. A practice to store stormwater runoff by collection as a temporary pool of water and provide for its gradual (attenuated) release and thereby control peak discharge rates.

Development certification. As-built, field-verified plans signed and sealed by a registered professional engineer and a registered land surveyor, both licensed to practice in the state, showing contours, elevations, grades, locations, drainage and hydraulic structures, and detention basin volumes.

Development, large residential and commercial. Any development, commercial, office, industrial, multiple single family lots, any nonresidential use, or any development of a single residential lot with a disturbed area of ten thousand (10,000) square feet, etc.

Development, small single family residential. Development of a single recorded residential lot with less than ten thousand (10,000) square feet of disturbed area.

Development, utilities. Physical alteration of any location for the purpose of installing utilities. This includes, but is not limited to, providing access to a site, clearing of vegetation, grading, earth moving, providing utilities, other services such as parking, altering land forms, and installing erosion control systems.

Downstream. Downgradient from the lowest point of each subwatershed in a development.

Discharge. Dispose, deposit, spill, pour, inject, seep, dump, leak or place by any means, or that which is disposed, deposited, spilled, poured, injected, seeped, dumped, leaked, or placed by any means including any direct or indirect entry of any solid or liquid matter into the stormwater system by any means intentional or otherwise.

Disturbed area. Portion of any site that has been altered from existing conditions, including but not limited to the following: providing access to a site, clearing of vegetation, grading, earth moving, providing utilities and other services such as parking facilities, stormwater management and erosion control systems, potable water and wastewater systems, altering land forms, or construction or demolition of a structure on the land.

Erosion. The removal of soil particles by the action of water, wind, ice or other geological agents, whether naturally occurring or acting in conjunction with or promoted by anthropogenic activities or effects.

Extended detention. A practice to store stormwater runoff by collection as a temporary pool of water and provide for its gradual (attenuated) release over a minimum of twenty-four (24) hours and no more than seventy-two (72) hours and thereby control peak discharge rates and allow for gravity-driven settling of some types of pollutants. A practice which is used to control peak discharge rates, and which provides gravity settling of pollutants.

First flush. The initial or early stages of stormwater runoff from a storm event which commonly delivers a disproportionately large amount of previously accumulated pollutants due to the rapid rate of runoff. The first flush is defined as the first one-half (½) inch of direct runoff from the contributing drainage basin.

Floodplain. For a given flood event, that area of land temporarily covered by water which adjoins a watercourse.

Hydraulic. Pertaining to, involving, moved or operated by a fluid, especially water, under pressure or under a gravity-driving force.

Hydrologic. Pertaining to the scientific study of the properties, distribution, and effects of water on the earth's surface, in the soil and underlying rocks, and in the atmosphere.

Illicit discharge. Any discharge to the stormwater system that is not composed entirely of stormwater and not specifically exempted in article III.

Impervious area. Impermeable surfaces, such as pavement or rooftops, which prevent the percolation of water into the soil.

Infiltration. A practice designed to promote the recharge of groundwater by containment and concentration of stormwater in porous soils.

Infiltration basin. An impoundment made by excavation or embankment construction to contain and infiltrate runoff into the soil layer.

Land development manual (LDM). Manual produced by the city that provides additional information about the specifics of this chapter.

Lessee. A lessee occupying real property pursuant to a lease agreement entered into prior to February 4, 1987, which contains no contractual provisions requiring the landlord to execute property owner's covenants, whose site development plan is five (5) acres or less, and whose use of the real property will not create environmental hazards.

Main stream. A stream on which floods are controlled by the Tennessee Valley Authority reservoir system, i.e., the Tennessee and Holston Rivers.

Major storm. A one hundred-year design storm or a storm that has a probability of one (1) percent chance in any given year.

Mitigation. The restoration, enhancement, or preservation of a stream and adjacent land which offsets expected adverse impacts of development.

Natural resources conservation service (NRCS). An organization within the U.S. Department of Agriculture that has published standard drainage procedures in the form of Technical Release No. 55. Formerly known as the soil conservation service (SCS).

Outfall. The terminus of a stormwater system where the contents are released.

Parking area. The off-street facility including parking spaces along with adequate provision for drivers and aisles for maneuvering and giving access, and for entrance and exit, designed to be usable for the parking of vehicles.

Partial plat. A survey plat prepared and certified by a registered land surveyor for recording as an exhibit to a written legal document that describes and establishes property easements and access for stormwater facilities. Only that portion of the total property necessary to show new easements relative to the property boundaries and all other conflicting property rights or uses must be included.

Peak flow. The maximum instantaneous rate of flow of water at a particular point resulting from a storm event.

Peak flow attenuation. The reduction of the peak discharge of a storm.

Performance and indemnity agreement. A contract between the property owner, lessee or developer and the city that assures construction and compliance as per site development plans approved by the department of engineering and in the case of a lessee, assures the lessee's proper maintenance of stormwater facilities during the term of its lease, and the proper removal of water quality facilities by the lessee at the end of the term of its lease.

Person. Any individual, firm, corporation, partnership, association, organization or entity, including governmental entities, or any combination thereof.

Redevelopment. The improvement of fifty (50) percent of the assessed value of the lot, building, or lot use.

Regulated waters. Any Stream, wetland or other waterbody specified by the engineering director, where protections are imposed for adjacent land use, development or vegetative cover.

Restaurant. An establishment or facility where food is prepared and sold.

Retention. A practice designed to store stormwater runoff by collection as a permanent pool of water without release except by means of evaporation, infiltration, or attenuated release when runoff volume exceeds storage capacity of the permanent pool.

Riparian buffer zone. A naturally undisturbed, vegetated and pervious streamside zone that is protected from clearing, grading, filling, paving, building, or other destruction of the naturally vegetated state. Riprap. A combination of large stone, cobbles and boulders used to line channels, stabilize stream banks, and reduce runoff velocities.

Runoff. The water resulting from precipitation that is not absorbed by the soil.

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

Sanitary wastewater. Wastewater from toilets, sinks and other plumbing fixtures.

Sewage. Human wastes carried by water from residences, buildings, industrial establishments or other places, together with such industrial wastes, stormwater or other water as may be present; or any substance discharged from a sanitary sewer collection system.

Sinkhole.

- (1) A naturally occurring depression where drainage collects in the earth's surface that is a minimum of two (2) feet deep. These depressions are typically denoted as closed contours and are shown as hachured contours on the city's geographic information system, or
- (2) A hole, fissure or other opening in the ground, often underlain with limestone, dolomite or other rock formation that provides for and is being designated as a natural conduit for the passage of stormwater.

For both (1) and (2) above, the extent of the area considered to be a sinkhole is at a minimum the limits determined by the one hundred-year water surface elevation, assuming plugged conditions (zero (0) cfs outflow).

Site development. To physically alter a site. Site development includes, but is not limited to, providing access to a site, clearing of vegetation, grading, earth moving, providing utilities and other services such as parking facilities, stormwater management and erosion control systems, potable water and wastewater systems, altering land forms, or construction or demolition of a structure on the land.

Stormwater. Runoff from rain, snow or other forms of precipitation, resulting in surface runoff and drainage.

Stormwater system. The system of roadside drainage, roadside curbs and gutters, curb inlets, swales, catch basins, manholes, gutters, ditches, pipes, lakes, ponds, sinkholes, channels, creeks, streams, storm drains, and similar conveyances and facilities, both natural and manmade, located within the city which are designated or used for collecting, storing, or conveying stormwater, or through which stormwater is collected, stored or conveyed, whether owned or operated by the city or other person.

Stream. Includes any linear surface water conveyance recognized by TDEC as Waters of the State, any blue-line shown on the 7.5 min USGS Quad map or any waterbody determined to be a stream by a Tennessee Qualified Hydraulic Professional (TN-QHP).

Swale. A natural or manmade depression or wide shallow ditch used to route or filter runoff.

Upstream. Upgradient of the lowest point of each subwatershed of a development.

Utility, public or private. Any agency which under public franchise or ownership, or under certification of convenience and necessity provides the public with electricity, natural gas, steam, communication, rail transportation, water, sewage collection, or other similar service.

Vegetation. Collection of plant life, including trees, shrubs, bushes, and grass.

Wastes, industrial/commercial. Liquid or other wastes resulting from any process of industry, manufacture, trade or business, or from the development of any natural resources.

Wastes, other. Decayed wood; sawdust; shavings; fallen bark; fallen leaves; lawn clippings; animal wastes; used or previously applied lime; garbage; trash; refuse, loose used paper, paper products, plastic containers, or metal containers; ashes, offal, discarded tar; discarded paint; discarded or uncontained solvents; used, discarded, or spilled petroleum products, antifreeze, motor vehicle fluids; used or discarded tires, gas tanks, or chemicals; or any other used, uncontained, or unpackaged, or disposed of materials which may discharge to or otherwise enter the stormwater system.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-16-05, § 1, 1-18-05; Ord. No. O-26-2013, § 1, 2-5-13)

Section 22.5-5. Performance and Indemnity Agreement.

In order to ensure that any site development complies with the requirements of this chapter, the engineering director shall have the authority to require a performance and indemnity agreement, together with a letter of credit, a cashier's check, or a surety bond from an approved financial institution or insurance carrier which guarantees satisfactory completion of the project and names the city as beneficiary, and in the case of a lessee, assures the lessee's proper maintenance of stormwater facilities during the term of its lease and the proper removal of water quality facilities by the lessee at the end of the term of its lease. The security shall be provided by the property owner, lessee or

developer in a form and in an amount to be determined by the department of engineering based on submission of plans and actual construction or potential remediation expenses. In addition, a lessee shall pay the city an amount determined by the engineering director, that in no event shall be less than five thousand dollars (\$5,000.00), to compensate the city for any perpetual maintenance that may be required after the expiration of the lessee's lease.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-6. Right of entry.

The engineering director or his designated representatives may enter upon any property which discharges or contributes, or is believed to discharge or contribute, to stormwater runoff or the stormwater system; stream; natural drainage way; or other stormwater system during all reasonable hours to monitor, remove foreign objects or blockages, and to inspect for compliance with the provisions of this chapter.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-7. Notice of Violation.

Whenever the engineering director or his representative determines that a violation of any provision of this chapter has occurred, or that work does not have a required plan or permit, or that work does not comply with an approved plan or permit, the representative may issue a notice of violation to the property owner, utility, facility operator, lessee, tenant, contractor, permittee, the equipment operator and/or any other person or entity doing work on the site. The notice of violation shall:

- (1) Be in writing;
- (2) Include a description of the property sufficient for identification of where violation has occurred;
- (3) List the violation;
- (4) State the action required;
- (5) Provide a deadline for compliance or to stop work.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-8. Penalties.

- (a) Any person violating the provisions of this chapter shall be guilty of a misdemeanor and punished as provided in the general provisions of the City Code. Each day that a continuing violation of this chapter is maintained or permitted to remain shall constitute a separate offense.
- (b) Any person violating the provisions of this chapter may be assessed a civil penalty by the city of not less than fifty dollars (\$50.00) or more than five thousand dollars (\$5,000.00) per day for each day of violation. Each day of violation shall constitute a separate violation. The city may also recover all damages proximately caused to the city by such violations. All penalties collected under the provisions of this section shall inure exclusively to the use and benefit of the Engineering Department for remediation projects and educational endeavors associated with stormwater activities.
- (c) In assessing a civil penalty, the city may consider:
 - (1) The harm done to the public health or the environment;
 - (2) Whether the civil penalty imposed will be a substantial economic deterrent to the illegal activity;
 - (3) The economic benefit gained by the violator;
 - (4) The amount of effort put forth by the violator to remedy this violation;
 - (5) Any unusual or extraordinary enforcement costs incurred by the city;
 - (6) The amount of penalty established by ordinance or resolution for specific categories of violations; and
 - (7) Any equities of the situation that outweigh the benefit of imposing any penalty or damage assessment.

- (d) In addition to the civil penalty in subsection (b) above, the city may recover all damages proximately caused by the violator to the city, which may include any reasonable expenses and attorney's fees incurred in investigating, enforcing and/or correcting violations of this chapter.
- (e) An expedited order for partial civil penalty assessment may be issued at the time of violation. The amount of the expedited order shall be set by policy for specific categories of violations.
- (f) The city may bring legal action to enjoin the continuing violation of this chapter, and the existence of any other remedy, at law or in equity, shall be no defense to any such actions.
- (g) The remedies set forth in this section shall be cumulative, not exclusive, and it shall not be a defense to any action, civil or criminal, that one (1) or more of the remedies set forth herein has been sought or granted.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-166-2011, § 1, 11-29-11; Ord. No. O-26-2013, § 2, 2-5-13)

Section 22.5-9. Board of Environmental Appeals.

- (a) There is created a board of environmental appeals (BEA) to hear appeals filed by any person incurring a civil penalty or damage assessment imposed pursuant to this chapter.
- (b) The BEA may issue subpoenas requiring attendance of witnesses and production of such evidence as requested, administer oaths, and take testimony as the BEA deems necessary to fulfill its purpose.
- (c) The BEA shall be composed of five (5) members appointed by the mayor and confirmed by council.
 - (1) The mayor shall select appointees so that the BEA will consist of individuals with an expertise as follows:
 - a. One (1) licensed professional engineer with three (3) years of engineering experience as a professional engineer;
 - b. One (1) architect, engineer, landscape architect or surveyor with three (3) years of experience;
 - c. One (1) representative of the development or industrial community;
 - d. One (1) neighborhood representative;
 - e. One (1) member at large.
 - (2) In addition to the above qualifications a. through e., one (1) of the five (5) members must have at least three (3) years civil engineering experience and a second member must have at least three (3) years civil or environmental engineering experience.
 - (3) BEA members shall serve for a term of five (5) years. A BEA member shall continue to serve, however, until a successor has been appointed, or until the BEA member has been reappointed, as the case may be. The terms of the original BEA members shall be staggered so that the term of one (1) member shall expire each year.
 - (4) An appointment to succeed a BEA member who is unable to serve said member's full term shall be for the remainder of said member's term.
 - (5) BEA members may be reappointed, but they do not succeed themselves automatically.
 - (6) BEA members shall serve without compensation.
- (d) The BEA shall annually select one (1) of its members to serve as chair and another member to serve as vice-chair of the BEA by a majority vote of all members.
- (e) The BEA shall keep complete and accurate records of the proceedings of all their meetings. The department of engineering shall designate a person to serve as secretary to the BEA.
- (f) No BEA member shall participate in the appeal of any matter in which the member has a direct personal or financial interest.
- (g) Three (3) members of the BEA shall constitute a quorum, and the concurrence of a majority of the BEA present and voting in any matter shall be required for a determination of any matter within its jurisdiction.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-10. Appeals.

Any person aggrieved by the imposition of a civil penalty or damage assessment as provided by this chapter may appeal said penalty or damage assessment to the board of environmental appeals (BEA).

- (1) The appeal shall be in writing and filed with the law department within thirty (30) days after the damage assessment or civil penalty is served in any manner authorized by law.
- (2) Upon receipt of an appeal, the BEA shall hold a public hearing within sixty (60) days, or a later date mutually agreed upon by the parties. Ten (10) days prior notice of the time, date, and location of said hearing shall be published in a daily paper of general circulation. Ten (10) days notice shall be provided to the aggrieved party at the address provided at the time of appeal.
- (3) Any alleged violator may appeal a decision of the BEA pursuant to the provisions of title 27, chapter 8 of Tennessee Code Annotated.
- (4) If a petition for review of such damage assessment or civil penalty is not filed within thirty (30) days after the damage assessment or civil penalty is served in any manner authorized by law, the violator shall be deemed to have consented to the damage assessment or civil penalty, and it shall become final.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-11. Severability.

Each separate provision of this chapter is deemed independent of all other provisions herein so that if any provision or provisions of this chapter shall be declared invalid, all other provisions thereof shall remain enforceable.

(Ord. No. O-139-04, § 1, 8-17-04)

Sections 22.5-12-17. Reserved.

ARTICLE II. SITE DEVELOPMENT CRITERIA

Section 22.5-18. Purpose.

This article is adopted to improve public safety, to control the rate of flow of stormwater, to minimize increases in the peak flow rates of stormwater runoff caused by site development within the city, to control new site development, to minimize any detrimental effect on water quality by the completed facility, and to avoid such effects during construction.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-19. Approval of plan required prior to issuance of a building permit.

No building permit shall be issued until the required site development plan and stormwater facilities are approved by the department of engineering, and the portion of the property required for stormwater facilities is recorded as a permanent drainage, water quality, and/or access easement, except that a lessee shall be required to record a drainage, water quality and/or access easement running only through the term of its lease.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-20. Partial plat process.

- (a) In limited situations, the partial plat process may be used to establish easements for stormwater facilities, such as detention and retention basins, water quality devices, access from a public road, storm drain pipes, and open drainage ditches, as an alternative to dedicating easements by recording a subdivision plat.
- (b) The partial plat process allows (1) a property owner to create permanent easements, and (2) a lessee to create easements running through the term of its lease, by recording a written legal

document in which the easements are shown and defined on attached survey plat and written property description exhibits. All exhibits shall be prepared on letter or legal-sized paper, certified by a registered land surveyor, and recorded with the county register of deeds. At the discretion of the law director, the written document may be a form document provided by the department of law or may be a document prepared by the property owner's or lessee's attorney and approved by the department of law. Survey plat and property description exhibits shall be approved by the department of engineering.

- (c) The partial plat process is not an option in the following situations:
 - (1) When any portion of a pre-existing easement would be relocated or abandoned.
 - (2) If the law director or engineering director decides, in unforeseen or unusual circumstances, that this process shall not be an option.
- (d) The partial plat process is an option for those sites with the following:
 - (1) An existing survey plat of the entire property recorded with the county register of deeds.
 - (2) A site development plan approved by the department of engineering and showing the proposed easements.
 - (3) A legal document, "Covenants by Property Owner for the Permanent Maintenance of Stormwater Facilities" in the case of a property owner, or "Covenants by Lessee for the Maintenance of Stormwater Facilities on Leased Property" in the case of a lessee, approved by the department of engineering and recorded with the county register of deeds.
 - (4) A special pollution abatement permit (SPAP) approved by the department of engineering, if one was required.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-16-05, § 1, 1-18-05)

Section 22.5-21. General design criteria.

- (a) The engineering director or his representative has the authority to adopt site development design criteria.
- (b) The standard method of drainage computation shall be as set forth in article II, hydrologic and hydraulic computations.
- (c) The stormwater system, excluding stormwater detention ponds, water quality control facilities and sinkholes, shall be designed to accommodate a ten-year return frequency twenty-four-hour duration storm, except for those facilities which would flood public roads classified as locals, collectors or arterials. A twenty-five-year storm runoff prevention plan shall be used to prevent flooding of local roads and collectors, and a fifty-year storm runoff prevention plan shall be used to prevent flooding of arterial streets. A one hundred-year design storm shall be used to prevent flooding of all new structures and have no additional adverse impact on existing structures. For site development on blue-line streams included in the flood insurance study, the flood damage protection ordinance O-347-90 (chapter 12 of the City Code) shall govern. All stormwater systems shall be designed to have no additional adverse impact on upstream and adjacent property in the fifty-year storm, unless an adequate permanent drainage easement is obtained.
- (d) For drainage generated by areas greater than two hundred (200) acres, the flow for a one hundred-year storm shall be computed. Such flow may exceed the capacity of facilities designed to comply with the requirements of lesser floods as noted in paragraph (c) above, and shall be contained in the public right-of-way or a permanent drainage easement on the property being improved or developed. Pipes and culverts designed for a one hundred-year storm shall be constructed of reinforced concrete if such pipes or culverts lie in public lands or easements.
- (e) Material for pipes used for conveyance of stormwater within the city shall be in accordance with the following:
 - (1) Cross drains and any other pipe under the pavement surfaces shall be reinforced concrete pipe (RCP). Storm drains within the roadway prism, but not under the pavement, shall also be RCP.

- (2) Any pipe, culvert, or drainage system dedicated to the city, whether inside or outside the right-of-way, shall be constructed of RCP.
 - (3) RCP is required if the failure of the pipe would cause flooding or potential property damage on adjacent properties. RCP is required for all storm pipes and culverts that carry through water from adjacent properties ("off-site water").
 - (4) RCP is required for all detention basin outlet structures.
 - (5) Material for driveway pipes may be RCP, corrugated metal pipe (CMP), or double-walled high-density-polyethylene-pipe (HDPE) as desired by the responsible agency, corporation, or individual. RCP is required underneath any driveways or entrances that are heavily traveled or which would have the potential to flood areas within the public right-of-way or any structure.
 - (6) Double-walled HDPE pipe and CMP may be used to convey stormwater generated on the particular property ("on-site drainage"), such as parking lots, buildings, etc. Both pipe materials (HDPE and CMP) may be used to convey water under driveways in locations where a pipe is outside of the roadway prism, has adequate cover, and would not cause flooding of adjacent properties or rights-of-way in the event of pipe failure. Installation of all pipe must be done with adequate pipe bedding, backfill material, and coupling bands as recommended by the pipe manufacturer.
- (f) Construction fill that alters the conveyance and/or storage capacity of the regulated floodplain is prohibited in the flood fringe in an area bounded by the floodway line and a line defined as one-half (0.5) the linear distance between the floodway line and the one hundred-year floodplain line. This requirement may be waived if a development occurs on a lake/river where regulated by Tennessee Valley Authority and a TVA flowage easement exists or if a drainage study prepared by a registered professional engineer licensed to practice in the state shows a rise of less than one-tenth (0.1) foot on existing properties within one-half (0.5) mile (upstream or downstream) of the proposed development using a method widely accepted among engineering professionals.
- (g) When existing or documented flooding problems are present, the engineering director has authority to condition the approval of a permit upon the compliance with additional requirements, including but not limited to detention, conveyance facilities, or other stormwater management solutions required to reduce the adverse impact of the proposed development on other properties or on the subject development.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-16-05, § 1, 1-18-05; Ord. No. O-26-2013, § 3, 2-5-13)

Section 22.5-22. Site development design manuals.

The Department of Engineering is authorized to adopt additional policies, criteria, specifications, and standards, for the proper implementation of the requirements of this chapter in a Land Development Manual (LDM) and a Best Management Practices (BMP) Manual. The policy, criteria, and requirements of the Land Development Manual dated February 2002, and the Best Management Practices Manual dated March 2001, as amended by the city's department of engineering, shall be enforceable consistent with other provisions of this chapter.

The Department of Engineering is also authorized to adopt the City of Knoxville Qualified Local Program Construction General Permit policy.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-26-2013, § 4, 2-5-13)

Section 22.5-23. Stormwater detention.

- (a) The requirement for stormwater detention ponds shall apply to the following:
- (1) All road construction exceeding one-half (½) acre of impervious area;
 - (2) All commercial, industrial, educational, institutional and recreational developments of one (1) acre or more of disturbed area;
 - (3) Large single-family or duplex residential developments of five (5) acres or more of disturbed area or five (5) lots or more;

- (4) Any site development which contains one-half (1/2) acre or more of additional impervious area.
- (5) Any redevelopment that meets any of the four (4) criteria above.
- (b) For areas of redevelopment, if the downstream system (to the second existing road crossing or blue-line stream) is examined and found to be adequate to carry the two- and ten-year twenty-four-hour storms, the requirement for detention for areas of redevelopment may be waived. However, if the examination finds inadequate conveyance for the two- and ten-year twenty-four-hour storms, the engineering director has authority to condition the approval of a permit upon compliance with additional requirements, including but not limited to detention, conveyance facilities, or other stormwater management solutions required to reduce the adverse impact of the proposed development on other properties or on the subject development. The engineer is charged with determining the predeveloped (before any site development had occurred) conditions, including the curve number. If the engineer cannot determine the predeveloped conditions, then a maximum predeveloped curve number of seventy (70) may be used to compute the predeveloped flow and satisfy the requirement. In areas of redevelopment, detention or retention is required for the entire developed site, not just the portion of the site being redeveloped. This does not exempt the developer from providing the first flush and/or water quality requirements.
- (c) If in the developer's judgment, stormwater detention is either unwarranted or impractical, hydrologic and hydraulic computations to support such a conclusion and demonstrate that stormwater runoff shall not be increased in peak rate for storm events identified in the design standards for detention ponds in this chapter shall be furnished to the department of engineering for review. This does not exempt the developer from providing the first flush and/or water quality requirements.
- (d) Where the development's stormwater discharges directly into a main stream, detention for peak flow attenuations is not required unless deemed necessary by the department of engineering. This does not exempt the developer from providing the first flush and/or water quality requirements.
- (e) When existing or documented flooding problems are present, the engineering director has authority to condition the approval of a permit upon the compliance with additional requirements, including but not limited to detention, conveyance facilities, or other stormwater management solutions required to reduce the adverse impact of the proposed development on other properties or on the subject development.
- (f) Detention basins located in subdivisions must be located on two (2) or more buildable lots or in a common area with a legally established property owners' organization with responsibility for maintenance and repair of the detention basin.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-24. Erosion and sediment control.

- (a) To comply with state, federal, and local regulations, erosion and sediment control shall be regulated by this article because of the following water quality impacts:
 - (1) Stormwater runoff can carry pollutants into receiving water bodies, thereby degrading water quality;
 - (2) The increase in nutrients in stormwater runoff such as phosphorus and nitrogen accelerates eutrophication of receiving waters;
 - (3) Construction requiring land clearing and the alteration of natural topography tend to increase erosion;
 - (4) Siltation of water bodies resulting from increased erosion decreases their capacity to hold and transport water, interferes with navigation, and harms flora and fauna;
 - (5) Substantial economic losses can result from these adverse impacts on community waters.
- (b) When site development occurs, the following actions are required:
 - (1) Install, inspect, repair, and maintain all erosion prevention and sediment controls for any site development;

- (2) Install, inspect, repair, and maintain all erosion prevention and sediment controls per the requirements of the approved permits and plans.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-26-2013, § 5, 2-5-13)

Section 22.5-25. Objectives of erosion and sediment control.

In order to protect, maintain and enhance the immediate and long-term health, safety and general welfare of the citizens of the city, this article has the following objectives:

- (1) Control erosion and sedimentation to limit deposition in streams and other water bodies;
- (2) Facilitate the removal of pollutants in stormwater runoff to perpetuate the natural biological functions of streams.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-26. Site development permit required before site development.

No person shall:

- (1) Grade, dump, alter natural or existing topography, move or place fill material, excavate, remove any vegetation not exempted by the tree protection ordinance, or begin any site development activities without first obtaining a site development permit from the department of engineering.
- (2) Alter any natural or manmade drainage system so as to divert, constrict, increase or change in any manner the natural or existing flow of any stream, or natural or existing drainage of any area without obtaining a site development permit from the department of engineering.
- (3) Commence site development and/or construction of any building or structure without obtaining a site development permit from the department of engineering.
- (4) Clear any site by means that causes disturbance of soil without first obtaining a site development permit from the department of engineering.
- (5) Begin site development on sites equal to or greater than one (1) acre without first obtaining a City of Knoxville Qualified Local Program Construction General Permit.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-26-2013, § 6, 2-5-13)

Section 22.5-27. Site development permit requirements.

- (a) A site development plan shall be required for any site development except when:
 - (1) The developed area is used for gardening or agricultural purposes;
 - (2) The proposed work does not, in the opinion of the department of engineering, affect the drainage on the site or the quality of stormwater runoff from the site.
- (b) Before any residential lot(s) in a platted subdivision may be transferred, the engineer of record must sign and seal a letter stating that all supporting stormwater and street infrastructure and grading has been completed for the subject lot(s), or the development certification may be submitted to and approved by the department of engineering. Failure to comply with this requirement may result in the revocation of the surety bond, cashiers check, or letter of credit and implementation of all available legal remedies. A site development plan shall contain the following:
 - (1) The name, address, and telephone number of all persons having a legal interest in the property;
 - (2) The tax map number, group, and parcel number of the property or properties affected;
 - (3) Information that complies with the requirements of the tree protection ordinance and the city arborist.
- (c) Additional information is required for site development plans based on the type of development.
 - (1) Small single-family residential development—Requires a topographic map showing the proposed area of land disturbance, the layout of the structure(s), identification of all areas

of depression, blue-line streams, easements, and stormwater system, and other information as required by the engineering director.

- (2) Large residential and commercial development—Requires plans showing existing and proposed two-foot contours as they relate to the roadway, parking lot, drainage facilities, cut and fill slopes, all stormwater pipe size, material and location, identification of all areas of depression, blue-line streams, easements, erosion and sediment control measures, detention pond data including size, location, slope of bottom, outlet, invert, top elevations, spillway size and elevation, and the detention easement and an adequately sized traversable access easement. Also, catch basin location, elevation, slope, swales, ditches, and their stabilization treatment. Building pad contours and building pad elevations are also required when existing elevations are altered by more than four (4) feet. When this site development plan includes a street to be dedicated to the city, a complete set of roadway plans must be submitted including profiles, grades, and cross sections showing cross slope, limits of construction, clear zone, utility strip, greenway/pedestrian space, signage plan, and a street-lighting fixture type and any above ground fixed objects on the right-of-way. All large residential and commercial development plans that are submitted to the department of engineering must meet the following minimum standards:

- a. Stamp and signature from appropriate design professional;
- b. Legible (for micro-filming and reproducing);
- c. Constructible plans;
- d. All required hydraulic and hydrologic calculations with reasonable assumptions (including downstream calculations with descriptive numbers, time of concentration, pre- and post-development delineated watersheds, and the city's detention pond design sheet completed);
- e. Pre- and post-developed contours;
- f. Erosion and sediment control plan;
- g. Required retaining wall calculations;
- h. Owner's, and, if applicable, lessee's name, address, and phone number;
- i. Vicinity map;
- j. City block number;
- k. CLT number (including map, insert, group and parcel);
- l. Certified address from the metropolitan planning commission.

Plans that do not meet these minimum standards will be rejected, and will not be reviewed further until submission standards are met:

- (3) Utilities development.
- a. Except as provided below in subsection b., requires plans showing the following: The names and addresses of all property owners; the name, address and contact person of the utility; the name, address and contact person of the engineering firm; a vicinity map; a graphical scale; the stamp and signature of a registered professional engineer licensed to practice in the state; total project length in feet; all property lines; existing easements; existing and proposed contours; all water features; all topographic features such as sinkholes; appropriate delineations such as no fill, buffer, floodway and F-1 zone; appropriate construction details and an effective erosion and sediment control plan with details adequate for installation and inspection that complies with the TDEC "Erosion and Sediment Control Handbook," Second Edition dated March 2002, and all subsequent updates thereto, or the city's Best Management Practices Manual (BMP), current as of the date of the submission of the plans.
 - b. The site development permit requirements for any utility entity currently subject to a court order or decree shall be determined by the department of engineering.

- (d) Plans shall be prepared and stamped by an engineer, landscape architect, or architect competent in civil and site design and licensed to practice in the state with the following conditions:
 - (1) Portions of the site development plan that require hydraulic or hydrology calculations and design must be prepared and stamped by a professional engineer competent in civil and site design and licensed to practice in the state.
 - (2) All roads and joint permanent easements that are required to be designed and built to public road standards shall be designed and stamped by a professional engineer competent in civil and site design and licensed to practice in the state.
- (e) Prior to the release of a bond, a development certification must be completed showing that all roadway lines, grades, cross slopes, locations, contours, elevations, drainage structures or facilities, and detention basin volumes, size, slopes, locations, elevations, and hydraulic structures have been field verified, represent the as-built field conditions, and comply with the approved plans. This certification must be stamped by the appropriate design professional required to stamp the original site development permit as stated in section 22.5-28(d)(3) as well as a registered land surveyor licensed to practice in the state.
- (f) When the department of engineering has determined the site development plan is approvable, it will send a letter authorizing the installation of the erosion and sediment control measures. When the erosion and sediment control plan has been implemented on site, the appropriate design professional required to stamp the erosion and sediment control portion of the site development permit will provide a letter to the department of engineering stating that he has inspected the site and the erosion control has been implemented as shown on the approved erosion and sediment control plan. This letter must be signed and sealed by the appropriate design professional. Once this letter is received by the department of engineering, the site development permit can be issued.
- (g) The city arborist and the zoning inspector must approve all plans prior to the issuance of a site development permit. The metropolitan planning commission must approve all plans in a planned zone and overlays prior to the issuance of a site development permit.
- (h) A registered land surveyor licensed to practice in the state shall prepare and submit a plat for all plans that propose stormwater facilities. The plat shall locate, establish, and define an easement around each facility and traversable access to it. The plat must be approved and recorded with the county register of deeds before a building permit can be issued.
- (i) When existing or documented flooding problems are present, the engineering director has authority to condition the approval of a permit upon the compliance with additional requirements, including but not limited to detention, conveyance facilities, or other stormwater management solutions required to reduce the adverse impact of the proposed development on other properties or on the subject development.
- (j) An erosion and sediment control plan must be provided as follows:
 - (1) Small single-family residential development—Requires no erosion and sediment control plan except if the residential development, exclusive of agricultural, gardening, farming, and similar areas of activity, results in disturbance of more than ten thousand (10,000) square feet or except as deemed necessary by the engineering director. When a plan is deemed necessary, the erosion and sediment control must comply with the TDEC Erosion and Sediment Control Handbook, Second Edition, dated March 2002 and all subsequent updates, or the city's Best Management Practices (BMP) Manual current as of the date of the submission of the plans, whichever is more restrictive.
 - (2) Large residential and commercial development—Requires an erosion and sediment control plan that is stamped by a competent registered professional engineer, architect, or landscape architect licensed to practice in the state and complies with the TDEC Erosion and Sediment Control Handbook, Second Edition, dated March 2002 and all subsequent updates, or the city's Best Management Practices (BMP) Manual current as of the date of the submission of the plans, whichever is more restrictive.

- (3) Portions of the erosion and sediment control plan that require hydrology or hydraulic calculations and design shall be prepared and stamped by a competent licensed professional engineer registered in the state.
- (k) A surety bond, cashier's check, or letter of credit must be provided as follows:
- (1) A performance and indemnity agreement is required prior to the issuance of a site development permit for rough grading or site development when there is a potential for runoff to adversely impact city rights-of-way and other property, when sites drain into sinkholes, or when the site is used for a borrow pit. The performance and indemnity agreement shall be guaranteed in the form of a cashier's check, a letter of credit, or a surety bond.
 - (2) A performance and indemnity agreement is required for large residential development when there is a potential for runoff to adversely impact city rights-of-way and other property, when sites drain into sinkholes, when the site is used for a borrow pit, a detention pond is required, or there is construction of a joint permanent easement or public road. The performance and indemnity agreement shall be guaranteed in the form of a cashier's check, a letter of credit, or a surety bond. The actual amount is based on a remediation and completion estimate as determined by the department of engineering, with a minimum amount of fifty thousand dollars (\$50,000.00).
 - (3) A performance and indemnity agreement is required for commercial development when there is a potential for runoff to adversely impact city rights-of-way and other property, when sites drain into sinkholes, when the site is used for a borrow pit, a detention pond is required, or there is construction of a joint permanent easement or public road. The amount is based on the project cost estimate that includes roadway facilities, drainage facilities, and erosion and sediment control remediation. The performance and indemnity agreement shall be guaranteed in the form of a cashier's check, a letter of credit, or a surety bond. The actual amount is based on a remediation and completion estimate as determined by the department of engineering, with a minimum amount of ten thousand dollars (\$10,000.00).
 - (4) A surety bond, cashier's check, or letter of credit is not required for small single-family residential development except when deemed necessary by the engineering director based on site conditions and the adverse impact on downstream conditions or other properties.
 - (5) The engineering director may refuse brokers or financial institutions the right to provide a surety bond, letter of credit, etc. based on past performance, ratings of the financial institution, or other appropriate sources of reference information.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-16-05, § 1, 1-18-05; Ord. No. O-045-05, § 1, 2-15-05)

Section 22.5-28. Temporary emergency exemption.

In extreme circumstances when a delay in construction may cause significant property damage or loss of life, the engineering director may grant a temporary exemption from a site development permit. Specific instances may include a sinkhole opening up which threatens homes or personal safety, a failure of a storm system where the flooding could cause property damage or loss of life, etc. This exemption is limited to work specific to resolving the dangerous situation(s). Any approval for work granted under this emergency exemption must be issued in writing and approved by the engineering director. After the emergency has been resolved, a site development permit must be obtained for the emergency work and any additional proposed work. This should be accomplished through the standard review process. This temporary emergency exemption does not provide immunity from any of the design criteria of this ordinance.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-29. Fees.

- (a) The following fees shall be charged for reviewing site development plans and will be required upon the submittal of the plans.
- (1) Site development plans for an administrative plat:
 - (A) Small single-family residential \$ 0.00
 - (B) Less than one (1) acre: \$ 150.00
 - (C) One (1) acre to five (5) acres: \$ 150.00 + \$ 20.00/acre (acres 1—5)
 - (D) More than five (5) acres: \$ 250.00 + \$ 10.00/acre (acres 6+)
 - (E) Condominium/apartment developments: \$ 150.00 + \$ 5.00/unit
 - (2) Subdivisions:
 - (A) One (1) to fifty (50) lots: \$ 150.00 + \$12.00/lot (lots 1—50)
 - (B) Fifty-one (51) lots or more: \$ 750.00 + \$8.00/lot (lots 51+)
- (b) The following fees shall be charged for site development permits and will be required before the issuance of the permit.
- (1) Site development plans for an administrative plat without a bond:
 - (A) Small single-family residential: \$ 10.00
 - (B) All other projects: \$ 50.00
 - (2) Site development plans for an administrative plat with a bond:
 - (A) Projects of less than one (1) acre: \$ 350.00
 - (B) Projects of one (1) acre or more: \$ 350.00 + \$15.00/acre
 - (C) Condominium/apartment developments: \$ 350.00 + \$5.00/unit
 - (3) Subdivisions:
 - (A) One (1) to four (4) lots: \$ 150.00 + \$10.00/lot (lots 1—4)
 - (B) Five (5) to fifty (50) lots: \$ 350.00 + \$20.00/lot (lots 1—50)
 - (C) Fifty-one (51) lots or more: \$ 1,350.00 + \$5.00/lot (lots 51+)
 - (4) Utilities (except for utility entities currently subject to a court order or decree, the fees for which shall be determined by the Department of Engineering):
 - (A) Maintenance: \$15.00 per 20 square yards plus \$0.50 per each additional square yard.
 - (B) Construction: \$1.00 per linear foot of conduit (pipe, cable, wire, fiber optics, etc.) with a \$200.00 minimum.
- (c) The fee for a site development permit issued after site development has begun without a permit shall be ten (10) times the standard fee.
- (d) A site development permit is valid for one (1) year. A permit may be renewed before it expires at no additional cost. Once a permit expires, the appropriate permitting fee shall be charged for the renewal.
- (e) If an individual permit for grading, erosion control, or drainage is requested, the appropriate permitting and review fee will be charged for each permit.
- (f) The cost of each special pollution abatement permit shall be one hundred dollars (\$100.00), which will cover the entire period of the permit.
- (g) The following fees shall be charged for reviewing final plats and will be required before approval of plat:
- (1) Administrative plat \$80.00
 - (2) Exempt subdivision and corrected plats 70.00
 - (3) All other plats:
 - (A) One (1) to fifty (50) lots 100 + \$10.00/lot
 - (B) Fifty-one (51) or more lots 600 + \$6.00/lot (lots 51+)
 - (4) Partial plat \$150.00
- (h) Whenever a construction general permit is required, the following fee schedule applies:
- (1) Equal to or greater than one (1) acre but less than five (5) acres, two hundred fifty dollars (\$250.00).

- (2) Equal to or greater than five (5) acres but less than fifty (50) acres, one thousand dollars (\$1,000.00).
 - (3) Equal to or greater than fifty (50) acres but less than one hundred fifty (150) acres, four thousand dollars (\$4,000.00).
 - (4) Equal to or greater than one hundred fifty (150) acres, seven thousand five hundred dollars (\$7,500.00).
- (i) All fees and charges collected under the provisions of this section shall inure exclusively to the use and benefit of the engineering department for operations associated with stormwater related activities. The excess of revenues less operating costs may be transferred to the general fund for general operations.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-16-05, § 1, 1-18-05; Ord. No. O-166-2011, § 2, 11-29-11; Ord. No. O-26-2013, § 7, 2-5-13)

Section 22.5-30. Violation of a site development permit.

No person shall perform site development work that does not conform to an approved site development plan.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-31. Design standard for detention and/or retention ponds.

- (a) The calculated peak flow rate of stormwater runoff resulting from a one-year, two-year, five-year, ten-year, twenty-five-year and one hundred-year return frequency twenty-four-hour duration storm shall be no greater after site development of the site than that which would result from a one-year, two-year, five-year, ten-year, twenty-five-year and one hundred-year return frequency twenty-four-hour duration storm on the same site prior to site development.
- (b) Adequate attention must be given to safety and sanitation in the design of any detention facility. This includes, but is not limited to, a minimum of two (2) percent slope in the bottom of all detention ponds, a minimum of 3:1 (H:V) side slopes or with traversable access to the pond's vegetated bottom and side slopes for maintenance, proposed contours should reflect fifteen (15) percent additional area for each two-foot contour of the detention or retention pond based on the appropriately sized pond for the one-, two-, five-, ten-, twenty-five- and one hundred-year storms, a minimum of four thousand five hundred (4,500) cubic feet of storage volume, and a minimum of one (1) foot of freeboard from the highest water surface elevation for the largest required design storm to the top of the berm before the fifteen (15) percent additional volume is added. An exception can be made to the minimum slope requirement in the bottom of the pond if the first flush requirement is not managed in the quantity detention pond and the pond invert is finished in concrete.
- (c) The plans shall include sufficient design information to show that the facility will operate as required. This shall include the existing (or before site development) peak flow discharges, the after site development peak flow discharges, and/or volumes of stormwater runoff based on the proposed site development, as well as all necessary computations used to determine the reduced peak flow rates for the design storms. The capacity of the facility shall be sufficient to control the volume of stormwater runoff resulting from one-year, two-year, five-year, ten-year, twenty-five-year and one hundred-year frequency twenty-four-hour duration storms within the peak rate of flow requirements stated in the subsection.
- (d) Discharge from the stormwater detention pond shall be routed to a ditch, channel, or stormwater facility of adequate capacity. Calculations showing the capacity of the receiving stormwater facility and its capability to convey a ten-year frequency storm shall be provided. If the receiving stormwater facility is incapable of conveying a ten-year frequency storm, calculations showing the capacity of the receiving stormwater facility and its capability to convey a two-year frequency storm shall also be provided. The above calculations will be routed to the closer of the second existing street crossing or blue-line stream. The engineering director has authority to condition

the approval of a permit upon the compliance with additional requirements, including but not limited to correctly sizing and installing offsite conveyance facilities or other stormwater management solutions required to reduce the adverse impact of the proposed development on other properties or the development.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-16-05, § 1, 1-18-05)

Section 22.5-32. Requirements for developments draining to a sinkhole.

- (a) Site development on property that includes a sinkhole will require copies of the appropriate permits from the state department of environment and conservation (TDEC) prior to site development approval. After review of the state permit, the engineering director may require additional information related to structural integrity and flood protection. If the proposed development does not require TDEC approval, a letter from TDEC shall be submitted prior to the issuing of a site development permit, stating that a TDEC permit is not required.
- (b) For site development or redevelopment projects requiring attenuation or retention of the one-year, two-year, five-year, ten-year, twenty-five-year and a one hundred-year frequency twenty-four-hour duration storms with sinkholes entirely on site, calculations shall be provided showing that one hundred-year twenty-four-hour design storm will not flood any structures assuming plugged conditions (zero (0) cfs outflow) for the sinkhole. These calculations must include the entire contributing watershed for the sinkhole. An easement is required around the sinkhole to include an area that is a minimum of five (5) feet horizontally outside the highest closed contour.
- (c) For site development or redevelopment projects requiring attenuation or retention of the one-year, two-year, five-year, ten-year, twenty-five-year and one hundred-year frequency twenty-four-hour duration storms with sinkholes partially on site, calculations must be provided showing that there will not be a rise in water surface elevations between the one hundred-year predeveloped and the one hundred-year postdeveloped twenty-four-hour design storm assuming plugged conditions (zero (0) cfs outflow) for the sinkhole. An easement is required at a minimum of five (5) feet horizontally outside the highest closed contour on the section of the sinkhole located on the developed property. A rise in the one hundred-year water surface elevation is allowable when no structures will be flooded and all parties with ownership of the sinkhole agree in writing to allow the rise. In this case, an easement is required around the sinkhole to include an area that is a minimum of five (5) feet horizontally outside the highest closed contour.
- (d) Stormwater retention is required for site developments that meet the requirements for stormwater attenuation and are located in one of the following critical watersheds:
 - (1) Ten Mile Creek;
 - (2) Sinking Creek;
 - (3) Emily Ave. and Timothy Ave. area;
 - (4) Harrell Hills watershed (near Cranberry Dr., Clairmont Dr., and Gaines Rd.);
 - (5) Prosser Road #1 (immediately between north of the railroad crossing and Cherry St.);
 - (6) Prosser Road #2 (approximately halfway between Knoxville Zoo Dr. and Magnolia Ave.);
 - (7) Pamela Ln.;
 - (8) All areas draining to a sinkhole;
 - (9) Any area of known flooding where deemed necessary by the engineering director.

The retention pond shall be designed so that the overflow in the one-year, two-year, five-year, ten-year, twenty-five-year and one hundred-year design storms must meet the predeveloped discharges in addition to retaining the difference in the predeveloped and postdeveloped one hundred-year design storm. In basins or sub-basins where there is a documented historical draw down time for the sinkhole or region being drained to, it may be acceptable for a detention pond to be used instead of retention. For detention to be approvable, the draw down time of the detention pond must be a minimum of one and one-half (1½) times the draw down time for the region.

- (e) When existing or documented flooding problems are present, the engineering director has authority to condition the approval of a permit upon the compliance with additional requirements, including but not limited to detention, conveyance facilities, or other stormwater management solutions required to reduce the adverse impact of the proposed development on other properties or on the subject development.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-33. Hydrologic and hydraulic computations.

- (a) All hydrologic and hydraulic computations utilized in the design of stormwater detention facilities must be prepared by a registered engineer proficient in the field of hydrology and hydraulics and licensed to practice engineering in the state.
- (b) The required hydrologic and hydraulic computations shall be in accordance with NRCS (formerly known as the SCS) unit hydrograph procedures using AMC II curve numbers and type II rainfall distribution, or other criteria that the engineering director shall establish based on scientific and engineering information. All post developed conditions must be routed at appropriately small time intervals through the detention pond using either hand calculations or computer models that are widely accepted among engineering professionals. The BMP manual contains accepted methods and procedures. Other methods may be approved by the Engineering Director in the design of curb inlets and small pipe systems when the final result is verified by a SCS method.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-16-05, § 1, 1-18-05)

Section 22.5-34. Maintenance of stormwater facilities.

- (a) Property owners and lessees are responsible for maintaining stormwater and/or water quality facilities located on their property. Prior to the issuance of a site development permit, the property owner shall execute a legal document entitled "Covenants for Permanent Maintenance of Stormwater Facilities," or the lessee shall execute a legal document entitled "Covenants for Maintenance of Stormwater Facilities on Leased Property" ("the Covenants"). The property owner or the lessee, as the case may be, shall record the covenants in the office of the county register of deeds. The location of the facility, the recorded location of the covenants document, and a note stating the property owner's or lessee's responsibility shall be shown on a plat, or in the case of a lessee, as an exhibit attached to the lessee's covenants, that is also recorded in the office of the county register of deeds.
- (b) The covenants shall specify minimum maintenance requirements to be performed at necessary intervals by the property owner or lessee, as the case may be.
- (c) In order to provide access to stormwater and/or water quality facilities by personnel, vehicles and equipment, the property owner or lessee, as the case may be, will provide a traversable twenty-foot wide access within an easement from a public street in strict accord with the plan and any conditions required by the department of engineering.
- (d) The covenants shall grant the city permission to enter the property to inspect any stormwater facility for proper functioning and maintenance. If the facility is not being maintained as required, the city will notify the property owner or lessee, as the case may be, in writing. If property owner or lessee, as the case may be, fails to repair or maintain the facility within the allotted time, the engineering director may authorize the work to be performed by the city or others. In such cases, property owner or lessee, as the case may be, shall reimburse the city for double its direct and related expenses. If the property owner or lessee, as the case may be, fails to reimburse the city, the city is authorized to file a lien for said costs against the property or the lessee's leasehold interest, as the case may be, and to enforce the lien by judicial foreclosure proceedings.
- (e) Sediment removal and disposal shall be performed in accordance with all local, state, and federal laws. Guidelines for sediment removal and disposal are given in the city's LDM. The engineering director may stipulate additional guidelines if deemed necessary for public safety.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-16-05, § 1, 1-18-05)

Section 22.5-35. Acceptance of streets and stormwater systems within public rights-of-way.

No street or stormwater system shall be dedicated to the city for public use or maintained by the city as a public street, until said street and stormwater facility have been accepted in writing by the engineering director. The engineering director shall only approve streets constructed according to the current version of "A Policy on Geometric Design of Highways and Streets," published by the American Association of State Highway and Transportation Officials, and designed by a registered professional engineer licensed to practice in the state. The design speed for local streets in residential subdivisions shall be a minimum of thirty (30) miles per hour, unless the engineering director deems a different design speed appropriate. Additionally, stormwater systems and streets must conform to the city standard specifications and the city construction standards.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-36. First flush requirements for detention ponds.

- (a) The requirements of this article shall not apply to those developments built or approved before the passage of this article.
- (b) All requirements of sections 22.5-20 through 22.5-35 shall apply to this article.
- (c) All stormwater detention ponds that are required under section 22.5-23 and which are approved after the adoption of this article shall be built to improve first flush water quality by using the best management practices outlined in this section. The standard management method shall be to collect the first flush or the first four thousand five hundred (4,500) cubic feet, whichever is greater, of stormwater runoff in a pond and release that runoff over a minimum twenty-four-hour and a maximum of a seventy-two-hour period. The engineering director may approve other methods of improving first flush water quality if valid documentation from full-scale testing by an independent third party is provided indicating that a higher or equal level of water quality will result from the alternate method.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-37. Technical requirements for special pollution abatement permits.

Technical requirements for the permit shall be based on the current Best Management Practices Manual subject to the approval of the department of engineering.

- (1) Specific land uses are known to produce pollutants that are detrimental to water quality and would not be corrected by the standard methods outlined in the preceding section. A special pollution abatement permit is required to ensure that structural and management best management practices are used to control water quality for these uses. Before the approval of structural stormwater treatment devices, the engineering director may require valid documentation from full-scale testing by an independent third party to verify that the pollutants of concern will be properly controlled. A special pollution abatement permit will be valid for a period of five (5) years, at which point it must be renewed. At the time of renewal, any deficiency in the management method must be corrected. Any development that occurs without a required permit shall be a violation of this chapter of the code.
- (2) A special pollution abatement permit shall be required for the following land uses:
 - a. Vehicle, truck or equipment maintenance, fueling, washing or storage areas including but not limited to: automotive dealerships, automotive repair shops, and car wash facilities;
 - b. Any property containing more than four hundred (400) parking spaces, or one hundred twenty thousand (120,000) square feet of impervious parking area;
 - c. Recycling and/or salvage yard facilities;
 - d. Restaurants, grocery stores, and other food service facilities;
 - e. Commercial facilities with outside animal housing areas including animal shelters, fish hatcheries, kennels, livestock stables, veterinary clinics, or zoos;

- f. Other producers of pollutants identified by the engineering director by information provided to or collected by him or his representatives, or reasonably deduced or estimated by him or his representatives from engineering or scientific study.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-38. Additional permits required.

- (a) Where a national pollutant discharge elimination system (NPDES) permit has been issued for NPDES regulated stormwater discharges from a facility, no local permit will be required for those NPDES regulated stormwater discharges from the facility for which such permit has been issued and remains in effect. For site development, both a TDEC construction site NPDES permit and a city site development permit are required.
- (b) Additional permits may be required from various state and federal agencies before a site development permit will be issued by the city.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-39. NPDES permits.

- (a) Any person who holds an individual national pollutant discharge elimination system (NPDES) permit shall provide a copy of such permit to the engineering director no later than sixty (60) calendar days after issuance or renewal of the permit. The permit holder shall also provide copies of all discharge monitoring reports required by the permit for any discharge to the stormwater system.
- (b) Any person who holds an NPDES general permit and/or multi-sector permit (as distinct and different from an individual permit) shall provide either a copy of such permit or the permit number assigned to them by the state department of environment and conservation to the engineering director no later than sixty (60) calendar days after issuance of the permit.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-40 Riparian buffer zone.

- (a) Definition; purpose. Riparian buffer zones (RBZ) exist within and adjacent to regulated waters (waters). The city regulates the RBZ to comply with federal mandates, protect stream water quality, and to reduce flood insurance rates.
- (b) Delineation. The RBZ is measured from the top of bank, extending perpendicular from each bank for the length of the water body. The top of bank is the uppermost limit of the active channel, typically indicated by a change in bank slope from steep to gentle slope. If the top of bank cannot be determined from the above indicator or if there is a dispute in the determination, the top of bank can be determined by submitting approved engineering calculations that determine the width of the stream resulting from the two-year frequency storm. The width of the RBZ will vary, depending on all of the following criteria:
 - (1) If a floodway profile, as part of the flood insurance study, has been adopted for the waters, the RBZ width must be equal to or greater than the width of the floodway at all points.
 - (2) Waters with a drainage area of less than one (1) square mile will require a minimum RBZ width of thirty (30) feet.
 - (3) Waters with a drainage area of one (1) square mile or more will require a minimum RBZ width of sixty (60) feet. The sixty-foot width of the RBZ can be established on an average width basis for a project, as long as the minimum width of the RBZ is more than thirty (30) feet at any measured location. If RBZ averaging is used, a plat must be recorded showing the limits of the RBZ.
 - (4) Waters that are contained within a culvert do not require an RBZ. This exception does not apply to proposed roadway or proposed driveway crossing waters.
 - (5) RBZ widths apply where culverts are removed from waters.

- (6) The engineering director may approve alternate RBZ widths for special circumstances (e.g., existing land uses or existing physical conditions) that preclude the above requirements.
- (7) If mitigating an RBZ off-site, the RBZ must be shown on a recorded plat.
- (c) Use of RBZ areas.
 - (1) Acceptable uses of the RBZ may include: yards, picnic areas, walking trails, greenways, landscaped areas, wildlife habitat, primitive areas, roadway and sidewalk stream crossings, or other similar uses approved by the director.
 - (2) Specifically prohibited uses include, but are not limited to: parking lots, dumpster storage, material storage, grease-bin storage, vehicle storage/maintenance, animal lots or kennels, or other uses known to contribute pollutants to waterways.
- (d) Protection during site development.
 - (1) It is prohibited to disturb an RBZ except when restoring the stream or stream banks, creating or restoring the RBZ or when removing/eradicating invasive vegetation or replanting with native vegetation.
 - (2) All slopes adjacent to waters shall be left in a stabilized condition upon completion of the project. No actively eroding, bare or unstable banks shall remain unless TDEC has determined there is no better alternative (e.g. detrimental to endangered species). Placement of riprap and other hard armor is only allowed when bioengineering alternatives are not technologically feasible.
- (e) Allowable disturbances.
 - (1) The engineering director may allow new driveways, road crossings, or foundations and columns across or through an RBZ on a case-by-case basis. It must be demonstrated that the encroachment is necessary, and that the RBZ will not be impacted excessively. In these cases, the driveway, road crossing, or foundation and columns shall be constructed with careful attention to protecting trees and vegetation, and minimizing site grading.
 - (2) Approved mitigation is required for removal, encroachment or disturbances to the RBZ.
 - (3) Utility crossings.
 - a. Utilities within the RBZ are not exempt from RBZ requirements or mitigation.
 - b. All utilities within the RBZ must be subsurface or overhead.
 - c. Planting plans must be consistent with guidelines in the land development manual.
 - (4) Installing a new or replacing an existing culvert, pipe or bridge across waters.
 - a. Maintain a natural stream bottom to the maximum extent practicable.
 - b. Culverts, pipes and bridges must span the baseflow channel.
 - c. Minimize the length of culverts, pipes and bridges.
 - d. All crossings must be as close to perpendicular to the flow path as possible.
- (f) Enhancements. RBZ enhancement may be required when an RBZ has excessive invasive vegetation and/or if it contains significant areas of unhealthy, diseased or dead vegetation. Information on RBZ enhancements can be found in the land development manual.

(Ord. No. O-26-2013, § 8, 2-5-13)

Sections 22.5-41-49. Reserved.

ARTICLE III. Illicit Connections and Illegal Dumping

Section 22.5-50. Findings of fact.

The city council finds that the uncontrolled discharge of pollutants to the stormwater system has an adverse impact upon the water quality of the receiving waters.

- (1) The 1987 amendments to the Federal Water Pollution Control Act, commonly known as the Clean Water Act, established the national pollutant discharge elimination system (NPDES) program, which requires permits for discharges from stormwater systems into waters of the United States. The environmental protection agency has promulgated regulations implementing the NPDES program.
- (2) The NPDES regulations for stormwater discharges require certain municipalities, including the city, to:
 - a. Control through ordinance, permit, contract, order or similar means, the contribution of pollutants to municipal stormwater systems by stormwater discharges associated with industrial activity and the quality of stormwater discharged from sites of industrial activity;
 - b. Prohibit through ordinance, order or similar means, illicit discharges to the stormwater system;
 - c. Control through ordinance, order or similar means, discharges to the stormwater system of spills, dumping or disposal of materials other than stormwater;
 - d. Require compliance with conditions in ordinances, permits, contracts or orders; and
 - e. Carry out all inspections, surveillance, and monitoring procedures necessary to determine compliance and noncompliance with permit conditions, including the prohibition of illicit discharges to the stormwater system.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-51. Objectives.

This chapter is adopted as part of the city stormwater management program in order to prevent certain non-stormwater discharges to, and improper disposal of substances in, the stormwater system, as to reduce, to the maximum extent practicable, pollutants that may be present in discharges from the stormwater system.

(Ord. No. O-139-04, § 1, 8-17-04)

Section 22.5-52. Prohibitions.

- (a) No person shall:
 - (1) Connect, or allow to be connected, any sanitary sewer to the stormwater system, including any sanitary sewer connected to the stormwater system as of the date of adoption of this chapter.
 - (2) Cause or allow an illicit discharge to the stormwater system, or any component thereof, or onto driveways, sidewalks, parking lots, sinkholes, creek banks, or other areas draining to the stormwater system. Illicit discharges include, but are not limited to:
 - a. Sewage discharges or overflows, including sanitary sewer overflows (SSOs);
 - b. Discharges of wash water resulting from the hosing or cleaning of gas stations, auto repair garages, or other types of automotive services facilities;
 - c. Discharges resulting from the cleaning, repair, or maintenance of any type of equipment, machinery, or facility including motor vehicles, cement-related equipment, and port-a-potty servicing, etc.;
 - d. Discharges of wash water from mobile operations such as mobile automobile washing, steam cleaning, power washing, and carpet cleaning, etc.;
 - e. Discharges of wash water from the cleaning or hosing of impervious surfaces in industrial and commercial areas including parking lots, streets, sidewalks, driveways, patios, plazas, work yards, and outdoor eating or drinking areas, etc.;
 - f. Discharges of runoff from material storage areas containing chemicals, fuels, grease, oil, or other hazardous materials;
 - g. Discharges of pool or fountain water containing chlorine, biocides, or other chemicals; discharges of pool or fountain filter backwash water;

- h. Discharges of sediment, or construction-related wastes, etc.;
 - i. Discharges of food-related wastes (e.g., grease, fish processing, and restaurant kitchen mat and trash bin wash water, etc.).
- (b) Subject to the provisions of subsection (c), the following discharges shall not be in violation of this chapter:
- (1) Water line flushing;
 - (2) Landscape irrigation;
 - (3) Diverted stream flows or rising groundwater;
 - (4) Infiltration of uncontaminated groundwater (as defined at 40 CFR 35.2005(20)) to separate storm drains;
 - (5) Pumping of uncontaminated groundwater;
 - (6) Discharges from potable water sources, foundation drains, uncontaminated air conditioning condensation, irrigation waters, springs, water from crawl space pumps, or footing drains;
 - (7) Lawn watering;
 - (8) Individual noncommercial car washing on residential properties; or car washing of less than two (2) consecutive days in duration for a charity, nonprofit fund raising, or similar noncommercial purpose;
 - (9) Flows from riparian habitats and wetlands;
 - (10) Dechlorinated swimming pool discharges;
 - (11) Incidental street wash water from street cleaning equipment designed for cleaning paved surfaces and limiting waste discharges;
 - (12) Street deicing for public safety;
 - (13) Any activity authorized by a valid NPDES permit; and
 - (14) Any flows resulting from firefighting.
- (c) If the engineering director finds that any activity, including but not limited to any of the activities listed in subsection (b) above, are found to cause or may cause sewage, industrial wastes or other wastes to be discharged into the stormwater system, the engineering director shall so notify the person performing such activities, and shall order that such activities be stopped or conducted in such a manner as to avoid the discharge of sewage, industrial wastes or other wastes into the stormwater system. The engineering director may require a stormwater pollution prevention plan to insure that the activity can be conducted without causing further discharge of pollution to the stormwater system.

(Ord. No. O-139-04, § 1, 8-17-04; Ord. No. O-16-05, § 1, 1-18-05)

Section 22.5-53. Notification of spills and illicit discharges.

As soon as any person has knowledge of any illicit spills or discharges to the stormwater system in violation of this chapter, such person shall immediately notify the engineering director by telephone of this discharge. If such person is directly or indirectly responsible for such discharge or responsible for the operation of the system or business, then such person shall also take immediate action to ensure the containment and cleanup of such discharge and shall confirm such telephone notification with a written report to the engineering director within three (3) calendar days. At a minimum, the written report for any illicit discharge shall include:

- (1) Date and time of the discharge;
- (2) Location of the discharge;
- (3) Material or substance discharged;
- (4) Duration and rate of flow;
- (5) Total volume discharged;
- (6) Total volume recovered;
- (7) Cause or reason for the discharge;
- (8) Remediation and containment action taken;

- (9) Material Safety Data Sheets (MSDS) for the discharged material;
 - (10) Action taken to prevent further discharges;
 - (11) Description of any environmental impact;
- (Ord. No. O-139-04, § 1, 8-17-04)*

Section 22.5-54. Requirements for monitoring.

The engineering director may require any person engaging in any activity or owning any property, building or facility (including but not limited to a site of industrial activity) to undertake such reasonable monitoring of any discharge(s) to the stormwater system operated by the city and to furnish periodic detailed reports of such discharges.

(Ord. No. O-139-04, § 1, 8-17-04)

Sections 22.5-55-60. Reserved.