# ARTICLE IV. STORMWATER MANAGEMENT

**Reason 1 - Changes of this color were made to incorporate the recommendations of the focus group at the direction of the City Council.**

**Reason 2 - Changes of this color were made to move items from the Stormwater Ordinance to the Stormwater Design Manual.**

**Reason 3 - Changes of this color were made to eliminate repetitiveness and redundancy and for general cleanup.**

**Reason 4 - Changes of this color are required due to the revised Texas Commission on Environmental Quality (TCEQ) Small Municipal Separate Storm Sewer System (MS4) Permit issued December 2013.**

**Reason 5 - Changes of this color were made to add definitions required by FEMA resulting from a Community Assistance Visit in April 2013.**

**Reason 6 – Changes of this color were made to clean up the Erosion Control section.**

# DIVISION 1. GENERALLY

## Sec. 130-176. Title.

This article shall be known as the official stormwater management ordinance of the city.

*(Code 1982, § 37-101; Ord. No. 99-04-39, art. 1, § A, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-177. Statutory authorization.

The legislature of the State of Texas has in the Flood Control Insurance Act, Texas Water Code, § 16.315, delegated the responsibility of local governmental units to adopt regulations designed to minimize flood losses. Therefore, the city does ordain this article as follows.

*(Code 1982, § 37-102; Ord. No. 99-04-39, art. 1, § B, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-038, § 2, 5-19-09)*

## Sec. 130-178. Findings of fact.

(a) The drainageways, creeks and flood hazard areas of the city are subject to periodic inundation, which may result in the loss of life and property, health and safety hazards, disruption of commerce and governmental services and extraordinary public expenditures for flood protection and relief, all of which adversely affects the public health, safety and general welfare.

(b) These flood losses are created by the cumulative effect of obstructions in floodplains that increase flood heights and velocities and by placing structures and other improvements vulnerable to floods in flood hazard areas.

(c) The development of land causes large quantities of soil to be displaced and transported to downstream locations. This soil displacement can create significant soil erosion and sedimentation problems. Erosion is a dangerous activity in that it contaminates water supplies and water resources. A buildup of sediment degrades water quality, destroys valuable environmental resources and clogs watercourses and storm drains, which can cause flooding, thereby damaging public and private lands and property. These problems result in a serious threat to the health, safety and general welfare of the city.

(d) Creek and floodplain areas in the city are valuable resources to the citizens of the city in that they provide recreational opportunities, improve the aesthetics of the community, convey stormwater runoff and filter out water quality pollutants. As valuable resources, creeks and floodplains warrant protection.

(e) The development of land can cause significant changes in the manner, quality, frequency, rate and volume of stormwater runoff entering a stream or lake. Changes in

stormwater runoff can upset the natural balance of erosion and deposition in lakes and streams resulting in increased flooding and loss of bank stability thus endangering adjacent public and private improvements and causing impacts to lake and stream characteristics that are generally viewed as negative.

*(Code 1982, § 37-103; Ord. No. 99-04-39, art. 1, § C, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-179. Statement of purpose.

This article sets forth the minimum requirements necessary to provide and maintain a safe, efficient and effective drainage system within the city and to establish the various public and private responsibilities for the provision thereof. Further, it is the purpose of this article to:

(1) Protect human life, health and property;

(2) Minimize the expenditure of public money for building and maintaining flood control and storm drainage projects and cleaning sediment out of storm drains, streets, sidewalks and watercourses;

(3) Minimize damage due to drainage and erosion to public facilities and utilities, such as water and gas mains, electric service, telephone and sewer lines, streets and bridges;

(4) Help maintain a stable tax base and preserve land values;

(5) Ensure that potential buyers are notified that property is in an area of special flood hazard;

(6) Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions;

(7) Preserve the natural beauty and aesthetics of the community;

(8) Control and manage stormwater runoff, the sediment load in that runoff, from points and surfaces within subdivisions;

(9) Establish a reasonable standard of design for development that prevents potential flood and erosion damage; and

(10) Reduce the pollutant loading to streams, ponds and other watercourses.

*(Code 1982, § 37-104; Ord. No. 99-04-39, art. 1, § D, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-180. Stormwater management policy.

~~*(a) General.*~~

(a) *Purpose*. Stormwater management policies shall govern the planning, design, construction, operation and maintenance of storm drainage and erosion control facilities within the city. This stormwater management policy is written for purposes of instruction to city staff to give guidance to draft changes to our current stormwater ordinance. For this policy to be enforceable, the ordinance must be amended to reflect this policy and approved by the city council through a public hearing process.

(b) *Design standards*. It is the policy of the city to adopt and maintain design standards that protect and provide for the safety and general welfare of the community.

(c) *Drainage and erosion control standards*. It is the policy of the city to implement drainage and erosion control standards to minimize flood damage and soil erosion to private and public facilities within the community and to protect water quality.

(d) *Review and permit process*. The review and permit process established under Article 4 of the stormwater management ordinance shall be utilized by the City to provide control of development activities related to erosion control and stormwater runoff through natural and constructed facilities.

~~(d)~~(e) *Implementation*. These stormwater management policies are defined by Stormwater Management Ordinance No. 1773, adopted on February 16, 1988, and amendments thereto. All amendments, additions or modifications to this article are considered effective upon the date of acceptance, in whole or in part by the city. These stormwater management policies shall apply to any stormwater management system improvement not having plans released for construction on or before the date of city council approval of revised ordinance provisions.

~~(e)~~(f) *Stormwater management ordinance and ~~stormwater manual~~Stormwater Design Manual*. The stormwater management ordinance and ~~stormwater manual~~Stormwater Design Manual, whether adopted in part or in whole, shall become part of the official stormwater management plan for streams, channels, NRCS dams and lakes and pipe drainage systems to the limits shown in the ~~stormwater manual~~Stormwater Design Manual. Deviations will not be permitted unless the following criteria are met:

(1) It can be clearly shown by approved procedures that the deviation will not adversely affect conditions either upstream or downstream of the point of deviation;

(2) The owners directly affected by the deviation are in agreement; and

(3) The deviation is not in conflict with any other plans adopted by the city.

(4) Request for deviation shall be approved by the director of engineering.

~~(f) *Planning*.~~

~~(1) *Utilization of natural floodplains*. Utilization of natural floodplains shall be the preferred consideration in providing stormwater management control within the city. Where maintaining natural floodplains is deemed impractical by the city, structural improvements and drainage systems will be designed and constructed to minimize adverse impact on the floodplain.~~

~~(2) *Review and permit process*. The review and permit process established under article 4 of the stormwater management ordinance shall be utilized by the city to provide control of development activities related to erosion control and stormwater runoff through natural and constructed facilities.~~

(g) *Relocation and reclamation*. To implement stormwater control measures in existing areas of private ownership, the city may consider the acquisitions of private land or the relocation and reclamation of existing developed areas.

~~(1) *Development around Natural Resources Conservation Service lakes*. The city shall control future development upstream, downstream and adjacent to all NRCS lakes. Planning for future development that impacts on, or is impacted by, NRCS lakes shall require that a detailed engineering study be performed to provide a technical basis for development and that the dam be upgraded as follows:~~

~~a. Provide principal spillway capacity adequate to discharge the 100-year flood event based on fully developed watershed conditions;~~

~~b. Provide total capacity of the dam structure, including principal and emergency spillways to accommodate the probable maximum flood (PMF);~~

~~c. Maintain existing flood storage capacity;~~

~~d. Prohibit upstream development within the contour line determined by the emergency spillway crest elevation plus two feet, or the routed 100-year flood elevation (based on fully developed watershed conditions) plus two feet, whichever is greater; and~~

~~e. Restrict development and improvements within the floodplain established by a breach flow analysis from the dam to the downstream limit of the dam breach impact. A reduced breach area may be allowed below NRCS dams that have been rehabilitated to safely pass the PMF if conditions warrant and with approval of the director of engineering.~~

~~(2) *Drainage of residential lots*. Existing drainage between developed lots will remain the responsibility of the affected property owners. Future developments will be required to drain surface runoff from an individual lot to a public right-of-way or to an underground drainage system contained in a public easement and will not be allowed to surface drain onto another lot. The director of engineering shall have the discretion to allow modifications to the lot-to-lot drainage requirements where adherence to these requirements would be in conflict with the tree preservation ordinance.~~

~~(3) *Dedication of drainage easements*. Public drainage systems designed to convey the design storm runoff shall be contained within a drainage easement or a floodplain/floodway easement.~~

~~(4) *Platting of property along drainage channels*. Future platting along streams and drainage channels within the 100-year floodplain, based on fully developed watershed conditions, will require compliance with one of the following:~~

~~a. Dedication of a floodplain easement;~~

~~b. Dedication of a floodway easement if floodplain reclamation is approved; or~~

c. Dedication of floodplain land for use as a park, common open space or environmental preservation area as mutually agreed upon by the developer and the city.

(5) *Erosion hazard setbacks*. Erosion hazard setback determinations will be made for every stream in which natural channels are to be preserved or a manmade channel is created. Natural channel banks will be protected by use of the determined setbacks unless a plan to stabilize and protect stream banks is approved by the director of engineering. Where setbacks are used for erosion protection, no building, fence, wall, deck, swimming pool or other structure shall be located, constructed or maintained within the area encompassing the setback.

(h) *Engineering/design*.

(1) *Design of drainage systems*. Stormwater runoff determinations for drainage facilities will be based on the designation of the design storm frequency. The design storm frequencies for drainage structures for the city are provided in the stormwater management ordinance.

(2) *Fully developed watershed conditions*. All drainage systems, whether upstream, downstream or on site, shall be designed for fully developed watershed conditions as defined in the stormwater management ordinance. Variances will only be allowed based on engineering analysis and approval by the director of engineering.

(3) *Limitation of runoff*. Stormwater runoff, based on fully developed watershed conditions, will be allowed from all future developments; provided that the receiving drainage facilities and/or natural channels can adequately convey the design storm runoff. Calculations to verify downstream adequacy shall be performed to the nearest major receiving stream and shall include evaluation of the impacts of development on channel stability. If the receiving drainage facilities and/or natural channels cannot adequately convey stormwater runoff based on fully developed conditions, runoff from the site will be limited to the flow that can adequately be conveyed relative to capacity and erosion conditions in downstream drainage facilities and/or natural channels.

(4) *Erosion and sediment control during construction*. Guidelines for controlling erosion resulting from development or construction activities shall be identified in this article and the stormwater manual. Developers and/or builders must provide a detailed erosion control plan incorporating current best management practices appropriate for the area for approval by the director of engineering prior to the start of construction activities for entire developments and individual lots. The director of engineering may direct that a preconstruction sediment survey of an NRCS lake be performed prior to development and/or construction activities adjacent to an NRCS lake, or significant grading within the watershed of the NRCS lake. If a pre-development survey is required, a post-construction survey shall be performed upon completion of the development or construction activity. These surveys will be conducted by the city at the developer's expense. If these surveys indicate significant sediment losses from the site and subsequent

deposition in the lake, the developer shall remove the additional sediment or reimburse the city for this action.

(5) *Stream bank erosion*. Erosion control methods identified in the stream bank stabilization manual will be utilized for erosion control along streams and drainage channels. On-site, upstream and downstream erosion control impacts will be evaluated during design. Erosion hazard setbacks and/or channel stabilization mitigation measures, including on-site detention ponding, may be required to protect structures and lot improvements from erosion hazards. If mitigation is required on upstream or downstream property not controlled by the developer, the developer may be required to provide funding to the city for the cost of those measures.

(6) *Natural Resources Conservation Service lakes*. The Natural Resources Conservation Service lakes shall maintain their original design to collect silt from stormwater runoff and to provide regional flood control. Detailed engineering and technical analysis will be performed for each watershed containing an existing NRCS lake prior to development activities. No construction will be allowed within the downstream flood area determined by a breach flow analysis. Design for upgrading dams shall comply with section 3-D and the stormwater manual.

(7) *Structured and nonstructural improvements*. Stormwater control may be achieved by structured (physical) improvements, nonstructural (natural/regulatory) means or a combination of both. Design of improvements shall comply with the stormwater manual guidelines.

(8) *Regional detention/retention of stormwater runoff*. Existing NRCS lakes provide stormwater retention and water quality enhancement as a design feature. This retention volume was considered in the design of the structure and shall be maintained. Natural floodplains for major streams will be maintained to provide regional flood control measures, enhance water quality and mitigate regional erosion. Major streams for the city are Wilson Creek, Franklin Branch, Stover Creek, Honey Creek, Rowlett Creek, Cottonwood Creek and the East Fork Trinity River.

(9) *Reclamation of floodplains*. Portions of the 100-year floodplain, based on fully developed conditions, may be reclaimed; provided that there is no increase in the water surface elevation and channel stability is restored or maintained. In addition, for Wilson Creek, Franklin Branch, Stover Creek, Honey Creek, Rowlett Creek, Cottonwood Creek and East Fork Trinity River or any mapped floodplain, an equivalent volume of valley storage must be provided within the floodplain.

(i) *Financing*.

(1) On-site drainage systems required by the proposed development shall be financed by the developer.

(2) The developer shall be responsible for constructing or financing improvements to off-site drainage systems including channel stability measures that are not adequate to convey the design runoff from the proposed development.

(3) Where the city is requested to participate in the construction of storm sewers, stream bank protection, bridges and culverts, the city council may participate in the cost of such drainage improvements in an amount not to exceed that portion of cost not paid by the developer as specified in this article.

(4) Where the city agrees to participate in the construction of storm sewers, stream bank protection, bridges and culverts, and city funds are not available, the developer may, at his option, construct or provide for initial financing of improvements and recover the portion attributable to the city upon availability of those funds and execution of an agreement for reimbursement by the city.

(5) Drainage system improvements proposed by a developer that exceed requirements of the stormwater manual, shall be financed in whole by the developer.

(6) Minor drainage system improvements such as storm drain inlets, pipes, headwalls, manholes, and associated appurtenances shall be financed in whole by the developer.

(7) Required engineering analysis for control of development upstream and downstream of NRCS lakes will be financed by the city to provide the basis for appropriate floodplain management decisions. The city may require reimbursement of these costs from developers on a pro-rata basis.

(8) A stormwater utility fee may be established to provide funding for maintenance of stormwater facilities.

(9) A stormwater reimbursement fee may be established for downstream improvements including stream bank stabilization required to discharge increased runoff from upstream development. Use of a reimbursement fee allows a developer to offset the impact of increased runoff when actual construction of downstream improvements may be impractical or untimely.

(10) The city may establish a drainage impact fee for an entire watershed to finance the cost of upgrading an NRCS lake and/or to stabilize stream reaches adversely impacted by the proposed development.

(11) The city shall require that developers and/or builders establish and maintain an erosion control deposit account to implement and provide for continued maintenance of the city approved on-site erosion control plan.

(j) *Construction.*

(1) Erosion control. The present erosion control section of the article will be enhanced to help enforce federal guidelines and city-specific requirements. Development activities shall comply with erosion control guidelines, which are to be developed and added into this article.

(2) Stream bank erosion. Stream bank erosion shall be minimized by utilizing procedures, guidelines and mitigation measures provided in the stormwater manual and the stream bank stabilization manual.

~~(3) Protection/replacement of trees. The protection of trees and vegetation shall be maximized during and after all development activities. Replacement of trees along natural channels destroyed by stormwater improvements is encouraged.~~

~~(k) *Operation and maintenance.*~~

~~(1) Public drainage improvements dedicated to and accepted by the city shall be maintained and operated by the city as required to maintain channel stability and flow capacity in the system.~~

~~(2) Floodplain and drainage easements shall be maintained by the property owner except where city owned parks or open space is provided.~~

~~(3) Operation and maintenance of NRCS dams shall be in accordance with the operations and maintenance agreements pertaining to each dam. The city will coordinate and cooperate with these entities to provide maximum protection for the citizens of the city.~~

*(Code 1982, § 37-105; Ord. No. 99-04-39, art. 1, § E, 4-20-1999; Ord. No. 2001-04-040, § 2, 4-3-2001; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-181. Scope of authority.

Except as exempted by section 130-412, any person, firm, public utility, corporation or business proposing to develop land or improve property within the jurisdiction of the city is subject to the provisions of this article. This article shall also applyies to individual building structures, subdivisions, excavation and fill operations and similar activities.

*(Code 1982, § 37-106; Ord. No. 99-04-39, art. 1, § F, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-182. Lands to which this article applies.

This article shall apply to all areas of land within the incorporated limits and extraterritorial subdivision jurisdiction of the city. Certain provisions of this article apply only to special flood hazard areas within the jurisdiction of the city, while other provisions exempt certain other tracts. These limited areas of application are explained in section 130-381 and section 130-412. The erosion control provisions of this article do not apply to land under active agricultural use. As soon as construction or modification to the lands under active agricultural use is proposed so that the use of land will change from agriculture to any other use, then the provisions of this article shall be applicable to the once-exempted land.

*(Code 1982, § 37-121; Ord. No. 99-04-39, art. 3, § A, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-1832. Definitions.

The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

(1) *10% Rule* means the basis for establishing the downstream limits of the influence that a proposed development has on the downstream drainage system as defined in the integrated Stormwater Management (iSWM) Manual published by the North Central Texas Council of Governments (NCTCOG). The 10% rule is also described in the Stormwater Design Manual.

~~(4)~~(2) *Active agricultural use* means the raising of crops for harvest that requires the cultivation of soil using appropriate soil conservation procedures.

(3) *Adverse impact* means any negative impact including, but not limited to, any of the following associated with the 100-year storm event:

a. Any increase in peak discharge beyond the capacity of the affected system;

b. Any increase in the flood level; or

c. Any increase in the floodplain boundary.

~~(5)~~(4) *Angle of flare* means the angle between the direction of a wingwall and the centerline of a culvert or storm drainage outlet or inlet.

~~(6)~~(5) *Appeal* means a request for review or interpretation of any provision of this article or a request for a variance.

~~(7)~~(6) *Applicant* means any firm, entity, partnership, company, public utility company or individuals, who plan to clear, grub, fill, excavate, grade or otherwise remove the vegetative cover of land, or who plan to either subdivide land and install the appropriate infrastructure or renovate existing structures, shall become applicants for a development permit upon submission of the appropriate application materials.

~~(8)~~(7) *Apron* means a floor or lining to protect a surface from erosion, for example, the pavement below chutes or spillways or at the toes of dams.

~~(9)~~(8) *Area of shallow flooding* means a designated AO or AH zone on the flood insurance rate map. The base flood depths range from one to three feet, a clearly defined channel does not exist, and the path of flooding is unpredictable and indeterminate.

~~(10)~~(9) *Area of special flood hazard* means the land in the floodplain within a community subject to a one percent or greater chance of flooding in any given year.

~~(11)~~(10) *Base flood* means the flood having a one percent chance of being equaled or exceeded in any given year, determined based upon the FEMA guidelines and as shown in the current effective flood insurance study. This 100-year mean recurrence interval storm event is based on existing watershed conditions (differs from "Design flood").

~~(12)~~(11) *Base flood elevation* means the elevation shown on the Flood Insurance Rate Map (FIRM) and found in the accompanying Flood Insurance Study (FIS) for Zones A, AE, AH, A1-A30, AR, V1-V30, or V that indicates the water surface elevation resulting from the flood that has a 1% chance of equaling or exceeding that level in any given year - also called the base flood.

~~(13)~~(12) *Builder* means a person, partnership or corporation engaged in clearing, grubbing, filling, excavating, grading, constructing a pad, installing service utility lines and/or constructing or placing a building or other structure on a lot or other type of tract of land that is owned by the person, partnership or corporation, and that will not be further subdivided into other lots.

~~(14)~~(13) *Channel* means a natural or artificial stream that conveys water. Channels are often further classified by their size and purpose. For example, there are primary and secondary channels based on size, but diversions, waterways and chutes are also channels.

~~(15)~~(14) *Channel improvement* means the improvement of the flow characteristics of a channel by clearing, excavating, realigning, lining or other means in order to increase or maintain its capacity. The term may also be used to mean channel stabilization.

~~(16)~~(15) *Channel stabilization* means erosion prevention and stabilization of a channel using various rigid and flexible linings, jetties, grade controls, revetments, vegetation and other measures.

~~(17)~~(16) *Check dam* means a small dam constructed in a gulley or other small watercourse to decrease the stream flow velocity, minimize channel scour and promote deposition of sediment.

~~(18)~~(17) *City-maintained land* means any land in actual ownership of the city; it does not include any type of easements that remain in private ownership.

~~(19)~~(18) *Conduit* means any closed device for conveying flowing water.

~~(20)~~(19) *Cover, vegetative,* means all plants of all sizes and species found on an area, irrespective of whether they have forage or other value, but especially used to refer to vegetation producing a mat on or immediately above the soil surface. Temporary vegetative cover refers to the use of annual plants for the cover, while permanent vegetative cover refers to the use of perennial plants.

~~(21)~~(20) *Crest* means the top of a dam, dike, spillway or weir, frequently restricted to the overflow portion.

~~(22)~~(21) *Critical feature* means an integral and readily identifiable part of a flood-protection system, without which the flood protection provided by the entire system would be compromised.

~~(23)~~(22) *Dam* means any barrier or barriers, with any appurtenant structures, constructed for the purpose of either permanently or temporarily impounding water, or for the purpose of diverting water.

~~(24)~~(23) *Design flood* means, when in the context of floods, floodplains or flood hazards, that flood having a one percent chance of being equaled or exceeded in any given year, based upon fully developed watershed conditions (differs from "Base flood").

~~(25)~~(24) *Detention basin* means a dry basin or depression constructed for the purpose of temporarily storing stormwater runoff and discharging all of that water

over time at a rate reduced from the rate that would have otherwise occurred, but over a longer time period.

~~(26)~~(25) *Developer* means a person, partnership or corporation who owns a tract of land and who is engaged in clearing, grubbing, filling, mining, excavating, grading, installing streets and utilities to be dedicated to or accepted by the city and/or otherwise preparing that tract of land for the eventual article of the tract into one or more lots on which buildings or other structures will be constructed or placed.

~~(27)~~(26) *Development* means any manmade change to improved or unimproved real estate, including, but not limited to, adding buildings or other structures, mining, dredging, filling, grading, paving, excavation, drilling operations, grading, clearing or removing the vegetative cover.

~~(28)~~(27) *Discharge (hydraulics)* means:

a. The rate of flow; specifically, fluid flow; and

b. A volume of fluid passing a point per unit time, commonly expressed as cubic feet per second.

~~(29)~~(28) *Disturbance* means any operation or activity, such as clearing, grubbing, filling, excavating, mining, cutting, grading, or removing channel linings, which results in the removal or destruction of the protective cover of soil, including vegetative cover, channel linings, retaining walls, and slope protection.

~~(30)~~(29) *Disturbed areas* means any area or tract of land in which a disturbance is occurring or has occurred but that has not been stabilized.

~~(31)~~(30) *Drainage area* means the land area from which water drains to a given point ~~for a given storm frequency~~.

~~(32)~~(31) *Elevated building* means a building elevated by means of fill, so that the lowest finished floor of the building is at least two feet above the water surface elevation of the base flood or design flood, whichever is higher.

~~(33)~~(32) *Emergency spillway* means a spillway built to carry runoff in excess of that carried by the principal spillway. Sometimes referred to as "auxiliary spillway."

~~(34)~~(33) *Entrance head* means the head required to cause flow into a conduit or other structure; it includes both entrance loss and velocity head.

~~(35)~~(34) *Entrance loss* means the head lost in eddies or friction at the inlet to a conduit, headwall or structure.

~~(36)~~(35) *Equal conveyance* means the principle of reducing stream conveyance for a proposed alteration with a corresponding reduction in conveyance to the opposite bank of the stream. The right of equal conveyance applies to all owners and uses and may be relinquished only by written agreement.

~~(37)~~(36) *Erosion* means the wearing away of land by action of wind and water.

~~(38)~~(37) *Existing construction* means, for the purposes of determining rates, structures for which the start of construction commenced before January 1, 1975. The term "existing construction" may also be referred to as "existing structures."

(38) *Existing manufactured home park or subdivision* means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before the effective date of the floodplain management regulations adopted by a community.

(39) *Expansion to an existing manufactured home park or subdivision* means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

~~(39)~~(40) *Federal Emergency Management Agency (FEMA)* means the federal agency that administers the National Flood Insurance Program.

~~(40)~~(41) *Flood or flooding* means a general and temporary condition of partial or complete inundation of normally dry land areas from:

a. The overflow of inland waters; and/or

b. The unusual and rapid accumulation or runoff of surface waters from any source.

~~(41)~~(42) *Flood insurance rate map (FIRM)* means the official map on which the Federal Emergency Management Agency has delineated both the areas of special flood hazard and the risk premium zones applicable to the community.

~~(42)~~(43) *Flood insurance study* means the official report in which the Federal Emergency Management Agency has provided flood profiles, as well as the flood boundary/floodway map and the water surface elevation of the base flood.

~~(43)~~(44) *Flood protection system* means those physical structural works for which funds have been authorized, appropriated and expended and which have been constructed specifically to modify flooding in order to reduce the extent of the areas within a community subject to a special flood hazard and the extent of the depths of associated flooding. Such a system typically includes dams, reservoirs, levees, channel improvements or dikes. These specialized flood-modifying works are those constructed in conformance with sound engineering standards.

~~(44)~~(45) *Floodplain or flood-prone area* means any land area susceptible to being inundated by water from any source (see definition of "Flooding").

(46) *Floodproofing* means any combination of structural and nonstructural additions, changes, or adjustments to structures, which reduce or eliminate risk of flood damage to real estate or improved real property, water, and sanitation facilities, or structures with their contents.

(47) *Floodway* - see definition below for Regulatory Floodway.

~~(45)~~(48) *Flume* means any open conduit on a prepared grade, trestle or bridge.

~~(46)~~(49) *Freeboard* means the distance between the design flood elevation and the top of an open channel, dam, levee or detention basin to allow for wave action, floating debris or any other condition or emergency without overflowing the structure.

~~(47)~~(50) *Fully developed flow* means the flow from a fully urbanized drainage area ~~generated by a 100-year rainfall event~~.

~~(48)~~(51) *Functionally dependent use* means a use that cannot perform its intended purpose unless it is located or carried out in proximity to water. The term includes only docking facilities.

~~(49)~~(52) *Gabion* means a coated~~galvanized~~ wire basket filled with stone for structural purposes. When fastened together, they may be used as retaining walls, revetments, slope protection and similar structures.

~~(50)~~(53) *Grading* means any stripping, cutting, filling, stockpiling or combination thereof that modifies the existing land surface contour.

~~(51)~~(54) *Grass* means any member of the botanical family Gramineae, herbaceous plants with bladelike leaves arranged in two ranks on a round to flattened stem. Common examples are fescue, Bermuda grass and Bahia grass. The term "grass" is sometimes used to indicate a combination of grass and legumes grown for forage or turf purposes.

~~(52)~~(55) *Highest adjacent grade* means the highest natural elevation of the ground surface prior to construction next to the proposed walls of a structure.

~~(53)~~(56) *Historic structure* means any structure that is:

a. Listed individually in the National Register of Historic Places (a listing maintained by the department of interior) or preliminarily determined by the secretary of the interior (the "secretary") as meeting the requirements for individual listing on the National Register;

b. Certified or preliminarily determined by the secretary as contributing to the historical significance of a registered historic district or a district preliminarily determined by the secretary to qualify as a registered historic district;

c. Individually listed on a state inventory of historic places in states with historic preservation programs that have been approved by the secretary; or

d. Individually listed on a local inventory of historic places in communities with historic preservation programs that have been certified either:

1. By an approved state program as determined by the secretary; or

2. Directly by the secretary in states without approved programs.

~~(54)~~(57) *Hydraulic gradient* means a line representing the pressure head available at any given point within the drainage system.

~~(55)~~(58) *Hydrograph* means a graph showing, for a given point on a stream or drainage system, the discharge, stage, velocity or other property of water with respect to time.

~~(56)~~(59) *Inlet (hydraulics)* means:

a. A surface connection to a closed drain;

b. A structure at the diversion end of a conduit; or

c. The upstream end of any structure through which water may flow.

~~(57)~~(60) *Levee* means a manmade structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control or divert the flow of water so as to provide protection from temporary flooding.

(61) *Illicit connection* means:

a. Any drain or conveyance, whether on the surface or subsurface, that allows an illegal discharge to enter the storm drain system. Illicit connections include, but are not limited to, conveyances that allow any non-storm water discharge including sewage, process wastewater, and wash water to enter the storm drain system and any connections to the storm drain system from indoor drains and sinks, regardless of whether said drain or connection had been previously allowed, permitted, or approved by an authorized enforcement agency; or

b. Any drain or conveyance connected from a commercial or industrial land use to the storm drain system that has not been documented in plans, maps, or equivalent records and approved by an authorized enforcement agency.

~~(58)~~(62) *Levee system* means a flood protection system, which consists of a levee or levees and associated structures, such as closure and drainage devices, which are constructed and operated in accordance with sound engineering practices.

~~(59)~~(63) *Lowest floor* means the lowest floor of the lowest enclosed area (including basement). An unfinished or flood-resistant enclosure, usable solely for the parking of vehicles, building access or storage in an area other than a basement area is not considered a building's lowest floor, provided that such enclosure is not built so as to render the structure in violation of the applicable non-elevation design requirements of FEMA 60.3.

~~(60)~~(64) *Major receiving streams* includes, for the city, Wilson Creek, Franklin Branch, Stover Creek, Honey Creek, Rowlett Creek, Cottonwood Creek and the East Fork Trinity River at the point each stream's drainage area reaches 1,000 acres.

~~(61)~~(65) *Manning equation* means the uniform flow equation used to relate velocity, hydraulic radius and energy gradient slope and roughness characteristics of the flow path.

~~(62)~~(66) *Manufactured home* means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. For floodplain management purposes, the term "manufactured home" also includes park trailers, travel trailers and other similar vehicles placed on a site for greater than 180 consecutive days. For insurance purposes, the term "manufactured home" does not include park trailers, travel trailers and other similar vehicles.

~~(63)~~(67) *Manufactured home park or subdivision* means a parcel or contiguous parcels of land divided into two or more manufactured home lots for rent or sale.

~~(64)~~(68) *Mean sea level* means, for the purposes of the National Flood Insurance Program, the North American Vertical Datum (NAVD) of 1988 or other datum to which base flood elevations shown on a community's flood insurance rate map are referenced.

~~(65)~~(69) *Mulching* means the application of plant or other suitable materials on the soil surface to conserve moisture, reduce erosion and aid in establishing plant cover.

~~(66)~~(70) *Natural drainage* means the dispersal of surface waters through ground absorption and by drainage channels formed by the existing surface topography which exists at the time of adoption of the ordinance from which this article is derived or formed by any manmade change in the surface topography.

~~(67) *Natural floodway* means the effective area of a channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the design flood without cumulatively increasing the water surface elevation. This floodway differs from the regulatory floodway.~~

~~(68)~~(71) *New construction* for all purposes except the National Flood Insurance Program portion of this article means structures for which the start of construction commenced on or after February 16, 1988. For the purposes of the National Flood Insurance Program portion of this ordinance, "new construction" means structures for which the start of construction commenced on or after December 31, 1974.

(72) *New manufactured home park or subdivision* means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after the effective date of the floodplain management regulations adopted by a community.

~~(69)~~(73) *Open channel* means a channel in which water flows with a free surface.

~~(70)~~(74) *Other municipal ordinances* means ordinances such as, but not limited to, zoning, subdivision and construction specifications.

~~(71)~~(75) *Outfall* means the point where water flows from a stream, river, lake or artificial drain.

~~(72)~~(76) *Peak discharge* means the maximum instantaneous flow from a given storm condition at a specific location.

(77) *Permanent (post-construction) erosion controls* means the stabilization of erosive or sediment-producing areas by the use of means or techniques that will provide protection against erosion losses for an indefinite time period. Such controls or techniques may include, but shall not be limited to, permanent seeding, sod, storm drain channels, channel linings, storm drain pipes, storm sewer inlet/outlet structures, storm sewer outlet velocity control structures, and storm water detention or retention structures.

(78) *Permanent ground cover* means uniform (that is, evenly distributed, without large bare areas) perennial vegetative cover with a density of at least 70% of the native background vegetative cover.

~~(73)~~(79) *Permissible velocity (hydraulics)* means the highest velocity at which water may be carried safely and in a non-erosive manner in a channel or other conduit (see sections 8 and 9 of the ~~stormwater manual~~Stormwater Design Manual).

~~(74)~~(80) *Positive overflow* means a route that stormwater will follow in the event the capacity of the primary system is exceeded. A special positive overflow easement must exist where this flow is intended to go on private property to reach an appropriate drainage facility. The route must provide capacity within a dedicated drainage, positive overflow, or floodplain easement such that the water depth does not cause injury or damage to property or vehicles.

~~(75)~~(81) *Principal spillway* means constructed of permanent material and designed to regulate the normal water level, provide flood protection and reduce the frequency of operation of the emergency (auxiliary) spillway.

~~(76)~~(82) *Probable maximum flood* means the upper limit of a flood likely to occur as determined by the U.S. Army Corps of Engineers' criteria.

~~(77)~~(83) *Public erosion nuisance* means a situation in which erosion of or sediment from one location is causing a bothersome or unsightly condition on another property owned by a different individual or entity or a situation where the movement or loss of sediment has or is expected to threaten public or private property. A bothersome or unsightly condition or burden includes silt, mud or similar debris originating from one property but being deposited onto a second off-site property in which that off-site owner may have to remove or clean up the deposit due to liability, statutory, aesthetic, drainage or property damage concerns. Also, erosion or deposition caused by the actions or inaction of an upstream or downstream property owner, which threatens public or private property, is a nuisance. The adversely affected off-site property owner could be a private citizen, corporation, government or other entity.

~~(78)~~(84) *Rainfall intensity* means the rate at which rain is falling at any given instant, usually expressed in inches per hour.

~~(79) *Rational formula* means the means of relating runoff with the area being drained and the intensity of the storm rainfall.~~

(85) *Recreational vehicle* means a vehicle which is:

a. Built on a single chassis;

b. 400 square feet or less when measured at the largest horizontal projection;

c. Designed to be self-propelled or permanently towable by a light duty truck; and

d. Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

~~(80)~~(86) *Regulatory floodway* means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood, as calculated by the Federal Emergency Management Agency, without cumulatively increasing the water surface elevation more than a designated height. This floodway is used by FEMA to determine compliance with its regulations.

~~(81)~~(87) *Retention basins* means a pond or other water body that has been designed to have both a conservation pool for holding some water indefinitely and a flood storage pool for storing stormwater runoff on a temporary basis for the purpose of reducing the peak discharge from the basin.

~~(82)~~(88) *Riprap* means broken rock, cobbles or boulders placed on earth surfaces, such as the face of a dam or the bank of a stream, for protection against the action of water.

~~(83)~~(89) *Runoff* means that portion of the excess precipitation that makes its way toward stream channels or lakes as surface or subsurface flow. When the term "runoff' is used alone, surface runoff usually is implied.

~~(84)~~(90) *Sediment* means solid soil material, both mineral and organic, that is being moved or has been moved from its original site by wind, gravity, flowing water or ice. Also sometimes referred to as "silt" or "sand."

~~(85)~~(91) *Sheet flow* means water, usually storm runoff, flowing in a thin layer over the ground surface. Synonymous with "overland flow."

~~(86)~~(92) *Significant rise* means any rise in the design flood water surface elevation at a particular location along a stream.

~~(87)~~(93) *Site plan* means a plan meeting the requirements of the subdivision regulations of the city that provides a layout of a proposed project.

~~(88)~~(94) *Soil* means the unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of plants.

(95) *Special Flood Hazard Area* means the land in the floodplain within a community subject to a 1-percent or greater chance of flooding in any given year. The area may be designated as Zone A on the FHBM. After detailed ratemaking has been

completed in preparation for publication of the FIRM, Zone A is usually refined into Zones A, AO, AH, A1-30, AE, A99, AR, AR/A1-30, AR/AE, AR/AO, AR/AH, AR/A, VO or V1-30, VE, or V." The SFHA is also called the base floodplain, 100-year floodplain, or 1-percent annual chance floodplain.

~~(89)~~(96) *Stabilized* means to be protected from possible erosion losses, usually by mechanical means or the use of vegetative cover.

~~(90)~~(97) *Standard project flood* means a flood that has a magnitude of approximately one-half of the probable maximum flood, as determined on a case-by-case basis using the U.S. Army Corps of Engineers' current criteria.

~~(91)~~(98) *Start of construction* means, for a structure, the date the building permit was issued, provided the actual start of construction, repair, reconstruction, placement or other improvement was within 180 days of the permit date. The term "start of construction" includes substantial improvement. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of a slab or footings, the installation of piles, the construction of columns or any work beyond the stage of excavation or the placement of a manufactured home on a foundation. Permanent construction of a structure does not include land preparation, such as clearing, grading and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure.

~~(92)~~(99) *Storm frequency* means an expression or measure of how often a hydrologic event of given size or magnitude should, on an average, be equaled or exceeded.

~~(93)~~(100) *Structure* means a walled and roofed building, a manufactured home, a substation or a gas or liquid storage tank that is principally above ground. When used in the context of stormwater, the term means a drainage improvement, such as dams, levees, bridges, culverts, headwalls, flumes, etc.

~~(94)~~(101) *Substantial damage* means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed 50 percent of the market value of the structure before damage occurred.

~~(95)~~(102) *Substantial improvement* means

a. Any combination of repairs, reconstruction or improvements of a structure, the cumulative cost of which equals or exceeds 50 percent of the initial market value of the structure either:

1. Before the first improvement or repair is started; or
2. If the structure has been damaged and is being restored, before the damage occurred.

b. For the purposes of this definition, substantial improvement is considered to occur when the first alteration of any wall, ceiling, floor or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. Incremental improvements over a period of time, the cumulative cost of which equals or exceeds 50 percent of the market value at the time of the first improvement, shall be considered a substantial improvement. The term does not, however, include either:

1. Any project for the improvement of a structure to comply with existing state or local health, sanitary or safety code specifications which are solely necessary to ensure safe living conditions; or
2. Any alteration of a structure listed on the National Register of Historic Places or a state inventory of historic places.

~~(96)~~(103) *Temporary erosion protection* means the stabilization of erosive or sediment-producing areas for a specific time period, usually during a construction job.

~~(97)~~(104) *Texas Water Development Board (TWDB)* means the state coordinating agency for the National Flood Insurance Program.

~~(98)~~(105) *Time of concentration* means the estimated time in minutes or hours required for a drop of water to flow from the hydraulically most remote point in the drainage area to the point at which the flow is to be determined.

~~(99)~~(106) *Use* means any purpose for which a building or other structure or a tract of land may be designed, arranged, intended, maintained or occupied; or any activity, occupation, business or operation carried on, or intended to be carried on, in a building or other structure or on a tract of land.

~~(100)~~(107) *Use permit* means the permit required before any use may be commenced.

~~(101)~~(108) *Variance* means a grant of relief to a person from the requirements of this article when specific enforcement would result in unnecessary hardship. A variance, therefore, permits construction or development in a manner otherwise prohibited by this article.

~~(102)~~(109) *Violation* means the failure of a structure or other development to be fully compliant with this article. A structure or other development without the elevation certificate, other certifications or other evidence, as required by the city engineer, is presumed to be in violation until such time as that documentation is provided.

~~(103)~~(110) *Water surface elevation* means the height, in relation to the North American Vertical Datum (NAVD) of 1988 (or other datum, where specified), of floods of various magnitudes and frequencies in the floodplains of riverine areas and behind dams.

~~(104)~~(111) *Watershed* means the area drained by a stream or drainage system.

*(Code 1982, § 37-111; Ord. No. 99-04-39, art. 2, 4-20-1999; Ord. No. 2001-04-040, § 1, 4-3-2001; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 2, 5-5-09; Ord. No. 2009-05-038, § 3, 5-19-09)*

## ~~Sec. 130-183. Lands to which this article applies.~~

~~This article shall apply to all areas of land within the incorporated limits and extraterritorial subdivision jurisdiction of the city. Certain provisions of this article apply only to special flood hazard areas within the jurisdiction of the city, while other provisions exempt certain other tracts. These limited areas of application are explained in section 130-381 and section 130-412. The erosion control provisions of this article do not apply to land under active agricultural use. As soon as construction or modification to the lands under active agricultural use is proposed so that the use of land will change from agriculture to any other use, then the provisions of this article shall be applicable to the once-exempted land. Division 7 of this article explains this exemption in greater detail.~~

*~~(Code 1982, § 37-121; Ord. No. 99-04-39, art. 3, § A, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)~~*

## Sec. 130-184. Basis for establishing the areas of special flood hazard.

The areas of special flood hazard, identified by the Federal Emergency Management Agency in a scientific and engineering report entitled "Flood Insurance Study, Collin County, Texas and Incorporated Areas," dated June 2, 2009, with accompanying flood insurance rate maps dated June 2, 2009, and any revisions thereto, are hereby adopted by reference and declared to be a part of this article. The flood insurance study is on file in the office of the director of engineering.

*(Code 1982, § 37-122; Ord. No. 99-04-39, art. 3, § B, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 3, 5-5-09)*

## ~~Sec. 130-185. Penalties.~~

~~Any person, firm or corporation violating any of the provisions of this article shall be deemed guilty of a misdemeanor and, upon conviction, shall be punished as provided in section 1-18. Each and every day such offense continues, or is continued, shall constitute a new and separate offense. In addition, the violator shall pay all costs and expenses involved in the case. Nothing herein contained shall prevent the city from taking such other lawful action as is necessary to prevent or remedy any violation. Section 130-266(3), states an additional penalty against persons proceeding with construction without obtaining the necessary permits from the city. Section 130-419, states the possible additional penalty for any private property owner, developer or builder who is in violation of the erosion control guidelines.~~

*~~(Code 1982, § 37-123; Ord. No. 99-04-39, art. 3, § C, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)~~*

## Sec. 130-18~~5~~6. Abrogation and greater restrictions.

This article is not intended to repeal, abrogate or impair any existing easements, covenants or deed restrictions. However, where this article and another ordinance, easement, covenant or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

*(Code 1982, § 37-124; Ord. No. 99-04-39, art. 3, § E, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-1867. Interpretation.

In the interpretation and application of this article, all provisions shall be:

(1) Considered as minimum requirements;

(2) Liberally construed in favor of the governing body; and

(3) Deemed neither to limit nor repeal any other powers granted under state statutes.

*(Code 1982, § 37-125; Ord. No. 99-04-39, art. 3, § F, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-1878. Warning and disclaimer of liability.

The degrees of flood, storm drainage and erosion protection required by this article are considered reasonable for regulatory purposes and are based on scientific and engineering considerations. Larger floods can and will occur on rare occasions. Flood heights may be increased by manmade or natural causes. This article does not imply that land outside the areas of flood hazard or uses permitted within such areas will be free from flooding or flood damages. In addition, this article does not imply that erosion controls will survive inundation by runoff from storms greater than the design flood for erosion controls. This article shall not create liability on the part of the city, any officer or employee thereof or the Federal Emergency Management Agency for any flood damages that result from reliance on this article or any administrative decision lawfully made thereunder.

*(Code 1982, § 37-126; Ord. No. 99-04-39, art. 3, § G, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-1889. Regulatory permits.

It shall be the developers responsibility to secure all regulatory permits associated with development, construction, and drainage improvements. These include but are not limited to U.S. Corps of Engineer 404 permits, TCEQ permits, and U.S. Environmental Protection Agency discharge permits.

*(Code 1982, § 37-128; Ord. No. 99-04-39, art. 3, § I, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## ~~Sec. 130-190. Stormwater management ordinance and stormwater manual.~~

~~(a) The stormwater management ordinance and stormwater manual, whether adopted in part or in whole, shall become part of the official stormwater management plan for streams, channels, NRCS lakes and pipe drainage systems to the limits shown in the stormwater manual. Deviations will not be permitted unless the following criteria are met:~~

~~(1) It can be clearly shown by approved procedures that the deviation will not adversely affect conditions either upstream or downstream of the point of deviation;~~

~~(2) The owners directly affected by the deviation are in written agreement; and~~

~~(3) The deviation is not in conflict with any other plans adopted by the city.~~

~~(b) Request for deviation shall be approved by the director of engineering.~~

~~*(Code 1982, § 37-129; Ord. No. 99-04-39, art. 3, § J, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*~~

## Sec. 130-18991. Maintenance.

Subsurface public drainage improvements dedicated in rights-of-way, subsurface drainage easements, or by fee simple dedication to the public, and accepted by the city shall be maintained and operated by the city as required to maintain flow in the system.

*(Code 1982, § 37-130; Ord. No. 99-04-39, art. 3, § K, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-190. Prohibited discharges.

No person may introduce into any lake, pond, stream, or MS4 conveyance system including streets, alleys, and paved parking areas, which may lead to a lake, stream, pond, surface water in the state, or waters of the United States within the city:

(1) Any pollutants or materials other than stormwater that have an adverse effect on the environment, or may endanger life, health or property, or constitute a public nuisance;

(2) Any discharges that would cause, has the reasonable potential to cause, or contribute to a violation of water quality standards or that would fail to protect and maintain existing designated uses;

(3) Substances specifically prohibited from being discharged into the stormwater system are as follows:

a. Polluted wastewater or other liquid wastes containing concrete, building materials, oil, chemicals or other liquid industrial wastes;

b. Any liquids, solids or gases, including, but not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, sulfides or any other substances which are a fire or other hazard to the system, which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction with other substances to cause fires, explosions, or be injurious in any other way to the facilities or operation of the stormwater system;

c. Any non-stormwater, groundwater, process water that is mixed or contaminated with gasoline or oil in concentrations exceeding a total BTEX limit of 0.5 ppm with a maximum allowable benzene concentration of 0.05 ppm or TPH limit of 15 ppm, tested on a weekly basis;

d. Any non-stormwater having a ph less than 6.5, greater than 9.0, or any non-stormwater capable of having any other corrosive property capable of causing damage or hazard to the stormwater system;

e. Any free or emulsified fats, waxes, greases or oils;

f. Petroleum oil, non-biodegradable cutting oil, products of mineral oil origin, transmission fluid, hydraulic fluid, brake fluid, power steering fluid, antifreeze or other household hazardous wastes;

g. Solid or liquid substances which may cause obstruction to the flow in storm sewers or other interference with the proper operation of the stormwater system such as, but not limited to: ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, whole blood, paunch manure, hair and fleshings, entrails, lime slurry, lime residues, slops, chemical residues, paint residues, bulk solids, waste paper or floatables;

h. Wastewater or industrial wastes generated or produced outside the city unless approval in writing from the director has been given to the person discharging the wastes;

i. Any noxious or malodorous liquids, gases or solids, which either singly or by interaction with other substances are sufficient to prevent entry into the stormwater system for maintenance and repair;

j. Any trucked or hauled pollutants, except at discharge points discharged by the city;

k. Trash, junk, refuse, garbage, grass clippings, tree limbs, tree branches, leaves, brush or firewood;

l. Any non-stormwater containing, but not limited to detergents, surfactants, phosphates or cleaning residues generated from commercial car washing or cleaning services;

m. Swimming pool or spa water containing detectable levels of chlorine, acid, or filtering agent; or

n. Discharges in violation of a TPDES industrial or general construction stormwater permit.

(4) Any person subject to an industrial or general construction TPDES stormwater permit shall comply with all provisions of such permit. Upon inspection of the facility or site during any enforcement proceeding or action, or for any other reasonable cause, proof of compliance with said permit may be required in a form acceptable to the director of engineering.

## Sec. 130-191. Allowable discharges.

Discharge from the following sources shall not be considered a source of pollutants to the storm sewer system, water to the state, or waters of the United States when properly managed to ensure that no potential pollutants are present, unless determined to cause a violation of the provisions of the Clean Water Act or this article:

(1) Water line flushing, excluding discharges of hyper-chlorinated water, unless the water is first de-chlorinated and discharges are not expected to adversely affect aquatic life;

(2) Runoff or return flow from landscape irrigation, lawn irrigation, and other irrigation utilizing potable water, groundwater, or surface water sources;

(3) Discharges from potable water sources that do not violate Texas Surface Water Quality Standards;

(4) Diverted stream flows;

(5) Rising ground waters and springs;

(6) Uncontaminated ground water infiltration;

(7) Uncontaminated pumped ground water;

(8) Foundation and footing drains;

(9) Air conditioning condensation;

(10) Water from crawl space pumps;

(11) Individual residential vehicle washing;

(12) Flows from wetlands and riparian habitats;

(13) De-chlorinated swimming pool discharges that do not violate Texas Surface Water Quality Standards;

(14) Street wash water excluding street sweeper waste water;

(15) Discharges or flows from emergency firefighting activities (firefighting activities do not include washing of trucks, run-off water from training activities, test water from fire suppression systems, and similar activities);

(16) Other allowable non-storm water discharges listed in 40 CFR § 122.26(d)(2)(iv)(B)(1);

(17) Non-storm water discharges that are specifically listed in the TPDES Multi Sector General Permit (MSGP) TXR050000 or the TPDES Construction General Permit (CGP) TXR150000;

(18) Discharges that are authorized by a TPDES or NPDES permit or that are not required to be permitted; and

(19) Other similar occasional incidental non-storm water discharges such as spray park water, unless the TCEQ develops permits or regulations addressing these discharges.

(20) The city may exempt in writing other non-stormwater discharges, which are not a source of pollutants, to the municipal separate storm sewer system or Waters of the State.

## Sec. 130-192. Illicit connections.

The construction, use, maintenance or continued existence of illicit connections to the storm sewer system is prohibited. This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

## Sec. 130-193. Penalties.

Any person, firm or corporation violating any of the provisions of this article shall be deemed guilty of a misdemeanor and, upon conviction, shall be punished as provided in section 1-18. Each and every day such offense continues, or is continued, shall constitute a new and separate offense. In addition, the violator shall pay all costs and expenses involved in the case. Nothing herein contained shall prevent the city from taking such other lawful action as is necessary to prevent or remedy any violation. Section 130-266(3), states an additional penalty against persons proceeding with construction without obtaining the necessary permits from the city. Section 130-419, states the possible additional penalty for any private property owner, developer or builder who is in violation of the erosion control guidelines.

*(Code 1982, § 37-123; Ord. No. 99-04-39, art. 3, § C, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Secs. 130-1942—130-263. Reserved.

# DIVISION 2. ADMINISTRATION

## Sec. 130-264. Duties of city officials.

The director of engineering or designee is hereby appointed to administer and implement this article and other appropriate sections of 44 CFR (Emergency Management and Assistance National Flood Insurance Program Regulations) pertaining to floodplain management. The duties of the director of engineering shall include, but not be limited to:

(1) Reviewing and approving or disapproving all development permits to determine that the permit requirements of this article have been met and that all necessary, local, state and federal permits have been obtained;

(2) Submitting and enacting the components of the Municipal Stormwater Management Program as required by TCEQ.

~~(2)~~(3) Obtaining and recording the actual elevation in relation to mean sea level of the ~~lowest habitable floor, including the basement, of~~ finished pad for all new ~~or substantially improved structures, and whether or not the structure contains a basement~~residential or commercial building sites;

~~(3)~~(4) Maintaining for public inspection all records pertaining to the provisions of this article, including floodproofing certifications;

~~(4)~~(5) Notifying adjacent communities and the state coordinating agency, the Texas Water Development Board (TWDB) and also the Texas Commission on Environmental Quality (TCEQ) prior to any alteration or relocation of a watercourse and submitting evidence of such notification to the Federal Emergency Management Agency;

~~(5)~~(6) Requiring that maintenance is provided within the altered or relocated portion of said watercourse so that the flood-carrying capacity is not diminished;

~~(6)~~(7) Making interpretations, where needed, as to the exact location of the boundaries of the areas of special flood hazard, for example, where there appears to be a conflict between a mapped boundary and actual field conditions;

~~(7)~~(8) Obtaining, reviewing and reasonably utilizing any base flood elevation data available from a federal, state or other source in order to administer this article when base flood elevation data has not been provided;

~~(8)~~(9) Inspecting sites to determine compliance with the erosion control guidelines; and

~~(9)~~(10) Reviewing and allowing any appropriate modifications to the residential lot drainage requirements.

*(Code 1982, § 37-141; Ord. No. 99-04-39, art. 4, § A, 4-20-1999; Ord. No. 2001-04-040, § 3, 4-3-2001; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 4, 5-5-09)*

## Sec. 130-265. Responsibilities of owners.

(a) The owner or developer of a property ~~to be developed~~ shall be responsible for all storm drainage flowing through or abutting such property. Construction of stormwater detention facilities only relieves a developer of any responsibility for off-site drainage improvements with the exception of the NRCS lakes provisions of this article and does not relieve a developer of the responsibility for improvements on-site or adjacent to a proposed development. This responsibility also includes drainage directed to that property by ultimate development as well as the drainage naturally flowing through the property by reason of topography.

~~(a)~~(b) The owner, builder or developer of a property shall be responsible for any silt or soils transported from the property by drainage ~~as well as mitigation measures required to avoid adverse impacts on the channel stability of receiving streams upstream and downstream of, as well as property adjacent to the development. It is the intent of this article that provisions be made for managing storm drainage and preventing erosion and sedimentation problems~~.

~~(b)~~(c) Where the improvement or construction of a storm drainage facility is required along a property line common to two or more owners, the owner hereafter proposing the development of the property shall be responsible for obtaining the necessary permits, making the required improvements at the time of development and acquiring or dedicating the necessary rights-of-way or easements to accommodate the improvements. The initial developer may recover a portion of the cost from the adjacent developer in accordance with a predetermined facilities agreement. ~~Also, the cost of oversized drainage structures will be participated in by the city in accordance with section 130-441, or any subsequent amendment thereto.~~

~~(c)~~(d) Where an applicant proposes development or use of only a portion of the property, provisions for storm drainage and erosion control shall only be required in that portion of the property proposed for immediate development, except as construction or improvements of a drainage facility or erosion controls outside that designated portion of the property are deemed essential to the development of that designated portion or if the remainder parcel is not large enough to support the required improvements financially.

(e) Floodplain and surface drainage easements shall be maintained by the property owner; save and except subsurface structure maintenance as provided by section 130-191; or where maintenance is otherwise expressly assumed by the city; or where the city maintains the floodplain or easement to preserve flood conveyance under NFIP regulations mandatory municipal maintenance. Regardless of maintenance responsibility, adequate maintenance easements and physical access along side and to the ~~-~~ conveyance shall be provided.

~~(d)~~(f) The protection of trees and vegetation shall be maximized during and after all development activities. Replacement of trees along natural channels destroyed by stormwater improvements is encouraged. Pogue

*(Code 1982, § 37-142; Ord. No. 99-04-39, art. 4, § B, 4-20-1999; Ord. No. 2003-05-039, § I, 5-6-2003; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-266. Plat approval; development permit.

The city has several approval processes and permits related to storm drainage and floodplains. These processes and permits are listed below and explained in detail in the following subsections.

(1) *Platting process.* In accordance with the city's subdivision regulations, a construction plan and profile sheets for all public improvements, including drainage facilities, shall be submitted with the ~~final~~ record plat. Approval of the ~~final~~ record plat is contingent upon approval of the construction plans. The required information to be shown on the construction plans for drainage facilities is listed in section 130-267. Platting of public drainage systems, drainage channels, and floodplains require:

a. *Dedication of drainage easements.* Public drainage systems designed to convey the design storm runoff shall be contained within a drainage easement or a floodplain~~/floodway~~ easement or property dedicated to the public. Drainage easements shall be established such that no parcel will be landlocked as a result of the platting action.

b. *Platting of property along drainage channels.* Future platting along streams and drainage channels within the 100-year floodplain, based on fully developed watershed conditions, will require dedication of a floodplain easement.~~compliance with one of the following:~~ Developer shall enter into a hold-harmless agreement on behalf of the current and future land owners, or shall include language on the record plat, that relieves the city of any future stabilization or tree protection measures along the channel. The record plat language shall identify and obligate the responsible party(s) to address any sediment, erosion or flooding related issues emanating from the reach of the creek in question that is adversely affecting private property. The agreement shall be filed for record with Collin County and shall clearly obligate current and/or future owners to the conditions of the agreement.

~~1. Dedication of a floodplain easement;~~

~~2. Dedication of a floodway easement if floodplain reclamation is approved; or~~

~~3. Dedication of floodplain land for use as a park, common open space or environmental preservation area, as mutually agreed upon by the developer and the city.~~

c. *Erosion hazard setbacks.* Erosion hazard setbacks will be utilized to provide stream bank protection for all streams within the city. In all cases, a buffer will be created and protected by easement for the determined setbacks. The setback limits may be altered through mechanical stream bank protectionPogue if approved by the director of engineering and record platted consistent with protected bank area. Where erosion hazard setback easements are established, no building, fence, wall, deck,

swimming pool or other structure shall be located, constructed, or maintained within the area encompassing the setback. The exception to this restriction shall be any hike and bike trail dedicated to the city which may be constructed within the outer 10 feet of the determined erosion hazard setback easement or as determined appropriate by the director of engineering. The setback requirement for each stream or channel shall be determined as described in chapter III of the stream bank stabilization manual and shall be shown on the record plat.

~~d. *Natural channel banks.* Natural channel banks will further be protected by mitigating the adverse impacts of proposed development through the use of detention basins designed to mimic the extent practicable pre-development hydrology in the impacted stream reaches and/or systems. In stream reaches that are currently unstable or anticipated to become unstable due to existing upstream development, and hydrologic mitigation is not available or adequate, grade control and channel stabilization methods as outlined in the stream bank stabilization manual will be utilized. In all cases, a buffer will be created and protected by easement for the determined setbacks. The setback limits may be altered through mechanical or vegetative stream bank protection if approved by the director of engineering. Where setbacks are established the setback area shall be protected by easement and, no building, fence, wall, deck, swimming pool or other structure shall be located, constructed or maintained within the area encompassing the setback.~~

~~e. *Setback requirement*. The setback requirement for each stream shall be determined as described in chapter III of the stream bank stabilization manual and shown on the final plat.~~

~~*f. *Channel stability and tree preservation*. It is recognized that trees provide channel bank stability and aesthetic improvements and therefore shall be maintained through all practicable measures. There is a need for a balance between channel stabilization and tree preservation. The developer may request a minimization of channel stabilization requirements in an effort to preserve trees if the following measures are undertaken:~~

~~1. Perform selective brush and small tree clearing within the floodplain overbanks where the floodplain extends beyond the banks of the channel as approved by the city arborist and the director of engineering. Brush and small tree clearing measures shall be performed to benefit the large diameter trees, improve the available sunlight to the floodplain floor, and to improve the hydraulics through the overbank areas. Tree clearing shall be limited to those trees under 3-inch caliper diameter unless otherwise recommended and approved by the city arborist and director of engineering.~~

2.1. The area adjacent to the channel shall be dedicated to the applicable homeowners' or property owners' association as common area. The limits of this area shall be set at encompass the erosion hazard setback easement location or 50 feet to each side of the tops of banks, whichever area is larger. Commercial developments are exempt from platting the erosion hazard setback easement within a common area.

3. Developer shall enter into a hold-harmless agreement on behalf of the current and future land owners that relieves the city of any future stabilization or tree protection measures along the channel and identifies and obligates the responsible party(s) to address any sediment, erosion or flooding related issues emanating from the reach of the creek in question and adversely affecting private property. The agreement shall be filed for record with Collin County and shall clearly obligate current and/or future owners to the conditions of the agreement.

4. All critical points (bends, drops or other areas that are most affected by erosion) within the channel as determined through a geotechnical and hydrologic investigation shall be stabilized per the measures described in the streambank stabilization manual. These measures may include floodplain benching, but only where "specimen trees" as defined in the city's tree ordinance are not present. The streambank stabilization manual shall be utilized as a guide for determining appropriate streambank stabilization. The director of engineering shall have the discretion to employ alternative methods consistent with the streambank stabilization manual when addressing creek stabilization issues.

5. Grade control shall be constructed throughout the channel reach on or adjacent to the site per the streambank stabilization manual and as approved by the director of engineering.

(2) *Development permit (floodprone areas).* All developers, owners or builders shall submit a floodplain application and Pogue obtain a development permit before beginning any projects in floodplain areas, such as constructing new buildings and infrastructure, filling land, altering waterways, substantially improving existing structures located in flood hazard areas or channelizing, impounding, realigning, deepening or other altering of a natural drainageway. Application forms can be obtained from the director of engineering. The director of engineering uses the application, along with duplicate copies of the accompanying engineering or architectural plans, to identify those construction or renovation projects that would occur in a special flood hazard area. Section 37- 14 4(2) of the City Code, The Stormwater Design Manual identifies the information that must be submitted to the director of engineering as part of the permit application. Construction or

renovation projects cannot begin until the city issues the development permit, and building permits cannot be issued before obtaining a development permit.

(3) *Proceeding without applicable permits.* Any developer, owner or builder who fails to obtain a development permit before beginning the subject project is in violation of this article. In addition to the penalties outlined in section 130-1~~89~~5 of the City Code, no building permit, plat, site plan, certificate of occupancy or other use permit shall be issued for any construction, reconstruction or development upon any land where such construction, reconstruction or development is not in conformity with the requirements and intent of this article. Anyone who violates any of the terms and provisions of this article shall be denied the use permit until the violation is corrected. The city floodplain administrator shall not approve or forward application materials for altering the federal flood insurance maps to the Federal Emergency Management Agency until the application materials are in compliance with the terms of this article. No land disturbing activity for development purposes may be undertaken on undeveloped land until a site plan has been approved and a development or building permit has been issued. Plans for any associated land disturbing off-site improvements shall be submitted and approved along with the site plan. Any infrastructure construction not related to a site plan shall require approval of construction plans prior to issuance of a development permit.

(4) *Deviations from permit terms.* Permits may be revoked by the director of engineering if, upon periodic inspection, it is determined that the work is not progressing in accordance with specifications of the approved plan and permit, or if he determines that erosion from a building or construction site is not being controlled in a satisfactory manner.

(5) Field changes to storm sewer plans; record of as-built drawings. Field changes to storm sewer plans can be made upon the approval of the director of engineering. Record of as-built drawings of storm sewers shall be submitted to the director of engineering at the completion of the project.

*(Code 1982, § 37-143; Ord. No. 99-04-39, art. 4, § C, 4-20-1999; Ord. No. 2000-03-21, § I, 3-7-2000; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2007-11-108, § 1—3, 11-6-2007)*

~~*** Editors' note —** Ord. No. 2007-11-108, § 1, adopted November 6, 2007, eff. 11-30-2007, set out provisions amending § 130-266(1), by adding a new subsection d., pertaining to channel stability and tree preservation. Subsection d of § 130-266(1) is already in use, therefore, Ord. No. 2007-11-108, § 1d., was added as 130-266(1)f. at the editor's discretion.~~

## Sec. 130-267. Plan requirements.

Application materials and plan requirements for storm sewers or floodplain alterations are listed below. All engineering plans for storm sewers, ~~and~~ floodplain alteration projects, and tracts greater than one acre in size shall be sealed by a professional engineer who is registered

in the state and experienced in civil engineering work. The total cost for preparing the engineering plans and implementing the plans shall be borne by the applicant.

(1) *Storm drainage plans.* As part of the platting process, storm drainage plans shall be prepared. These plans shall include drainage facilities for both off-site and on-site drainage, so that the proper transition between the two can be maintained. Criteria for on-site development shall also apply to off-site improvements. The construction of all improvements shall be in accordance with the current specifications and regulations adopted by the city. Storm drainage plans shall be prepared in accordance with section 2.11 of the ~~stormwater manual~~~~S~~Stormwater Design Manual.

(2) *Application materials for development permits.* Owners or builders who are planning to renovate existing structures or construct new structures shall apply for a building permit. If the city's floodplain administrator and/or the city staff determines during the permit review that the proposed project is located in a flood-prone area, then the building permit applicant shall also have to apply for a development permit and submit a floodplain application through the director of engineering and submit for review duplicate copies of the appropriate materials ~~listed below~~ as required by the Stormwater Design Manual. Owners or developers who are proposing to build or expand subdivisions shall submit a development permit application form. If the city staff determines the proposed work to be in flood hazard areas, then the applicant shall submit duplicate copies of the additional appropriate materials outlined ~~below~~ in the Stormwater Design Manual. It is recommended that applicants coordinate the application materials listed ~~below~~ with those needed with other city permits and with the data requirements of the Federal Emergency Management Agency. Such coordination will facilitate staff review, and drawings could be combined to save the applicant from making multiple drawings.

(3) *Water Quality Protection*. McKinney's Stormwater Management Program requires that all new development and redevelopment projects provide water quality protection by implementation of post construction, structural, and non- structural best management practices. Prior to the start of construction activities for both new development and redevelopment, developers and/or builders must submit a detailed post construction water quality protection plan, incorporating current and appropriate best management practices to the director of engineering for review and approval. A maintenance plan for the approved water quality BMPs must be included with the plan submittal. Maintenance performance for the approved plan shall be the responsibility of the HOA or property owner and this maintenance performance responsibility must be clearly indicated on the record plat. The specific requirements for a water quality protection plan and guidelines for water quality protection BMPs can be found in the Stormwater Design Manual. Pogue

. ~~For projects involving making improvements to an existing structure located in flood-prone areas.~~

1. The plan view to scale, showing existing and proposed locations, dimensions, lowest finished floor elevations (including basements) and extent or elevation of the design flood; and

2. A cost estimate of the proposed improvements or a copy of the contract amount for making the improvements; and either

(i) Plans, sealed by a licensed professional engineer in the state, of any floodproofing techniques and elevation in relation to mean sea level to which any nonresidential structure shall be floodproofed; or

(ii) A certificate from a registered professional engineer or architect, stating that the floodproofing techniques used on nonresidential structures meet the requirements of this article.

b. For all subdivisions and new construction in floodplain areas:

1. An engineering report with the following recommended format, as applicable:

(i) A project description;

(ii) A description of the hydrologic and hydraulic analyses used, including the method used to determine historic rainfall and stream data, soil reports used to determine erosive velocity values and discharges and water surface elevations for both the design and base floods;

(iii) The vicinity map;

(iv) A table of values for existing and proposed water surface elevations and velocities;

(v) Documentation that the principle of equal conveyance has been achieved;

(vi) Copies of input and output data for existing and proposed conditions for both the base flood and design flood discharges; and

(vii) An evaluation of the natural floodway and floodplain limits for the design flood. The natural floodway differs from the FEMA regulatory floodway. The natural floodway is established to allow the city to effectively manage floodplain areas. FEMA requirements for the regulatory floodway must also be met by applicants.

2. Engineering drawings consisting of the following recommended elements, as applicable:

(i) A water surface profile, including channel flow line, existing and proposed water surface elevations and location and number designation of cross sections;

~~(ii) The plan view on 24-inch by 36-inch paper, including:~~

~~(A) A scale and north arrow;~~

~~(B) A title block;~~

~~(C) The boundary lines and nearest street intersections;~~

~~(D) Existing and proposed contours;~~

~~(E) Existing and proposed floodplain limits, and limits of the natural floodway and the regulatory floodway;~~

~~(F) The area to be removed from the floodplain or area to be altered;~~

~~(G) The top and toe of fill and/or side slopes and the numerical slope of the fill and/or side slopes labeled;~~

~~(H) The location, dimensions, etc., of all other associated improvements or alterations to the creek and/or floodplain, such as check dams, swales, channel modifications, existing structures, etc.;~~

~~(I) The location of cross sections;~~

~~(J) The location of all existing and proposed easements and dedications; and~~

~~(K) A site vicinity map;~~

~~(iii) Plots of cross sections, including:~~

~~(A) A scale;~~

~~(B) A title block;~~

~~(C) Existing and proposed ground elevations;~~

~~(D) The cut and/or fill areas labeled;~~

~~(E) The limits of and numerical values for existing and proposed "n" values; and~~

~~(F) Equal conveyance removed from both sides.~~

*(Code 1982, § 37-144; Ord. No. 99-04-39, art. 4, § D, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-268. Appeal and variance procedure.

(a) *Appeal.* Any person aggrieved by a decision of the director of engineering may appeal from any order, requirement, decision or determination of the director of engineering to the city manager. The aggrieved person shall file an appeal in writing with the city manager within ten days from the date of the decision. If no resolution of the appeal can be reached with the city manager, the city council shall hear the appeal within 30 days from the date received by the city manager.

(b) *Variance.*

(1) Variances concerning development permits may be issued by the city council for the reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or the state inventory of historic places, without regard to the procedures set forth in the remainder of this section.

(2) Variances for any type of permit or storm sewer facilities shall be issued only upon a determination that the variance is the minimum necessary to afford relief considering the flood hazard, drainage problems and soil loss. The variance shall be issued only upon meeting all three of the criteria listed below:

a. A showing of good and sufficient cause;

b. A determination that failure to grant the variance would result in exceptional hardship to the applicant, including an exceptional hardship created by the applicability of the effective date to the application for a permit; and Pogue

c. A determination that the granting of a variance will not result in additional threats to public safety or extraordinary public expense, create nuisances, cause fraud on or victimization of the public or conflict with existing local laws.

(3) Any applicant to whom a variance for building or renovating in a floodplain is granted shall be given written notice that the structure will be permitted to be built with a lowest floor elevation below the base flood elevation, and that the cost of flood insurance will be commensurate with the increased risk resulting from the reduced lowest floor elevation.

(4) In considering variance requests, the city council shall consider all technical evaluations, all relevant factors, standards specified in other sections of this article, and the:

a. Danger that material may be swept onto other lands to the injury of others;

b. Danger to life and property due to drainage, flooding or erosion damage;

c. Susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the individual owner;

d. Importance of the services provided by the proposed facility to the community;

e. Necessity to the facility of a waterfront location, where applicable;

f. Availability of alternative locations for the proposed use that are not subject to flood damage;

g. Compatibility of the proposed use with existing and anticipated development;

h. Relationship of the proposed use to the comprehensive plan and floodplain management program of that area;

i. Safety of access to the property in times of flood for ordinary and emergency vehicles;

j. Expected heights, velocity, duration, rate of rise and sediment transport by the floodwaters and the effects of wave action, if applicable, expected at the site; and

k. Costs of providing governmental services during and after storm events, including maintenance and repair of public utilities and facilities, such as streets, bridges, and sewer, gas, electrical and water systems.

(5) Upon consideration of the factors listed above and the purposes of this article, the city council may attach such conditions to the granting of variances as it deems necessary to further the purposes of this article.

(6) The director of engineering shall maintain the records of all appeal actions, including technical information, and report any variances of the floodplain management portions of this article to the Federal Emergency Management Agency upon request.

*(Code 1982, § 37-145; Ord. No. 99-04-39, art. 4, § E, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Secs. 130-269—130-299. Reserved.

# DIVISION 3. ~~RUNOFF CALCULATIONS~~DRAINAGE REQUIREMENTS

## ~~Sec. 130-300. Method; computation.~~

~~(a) The selection of an appropriate method for calculating runoff depends upon the size of the drainage area contributing runoff at a most downstream point of a project. The rational method is acceptable for situations in which the drainage area is less than 200 acres. A unit hydrograph method is required for situations with larger drainage areas.~~

~~(a) Runoff computations shall be based upon fully developed watershed conditions in accordance with the land use projections in the latest comprehensive land use plan for the city.~~

~~*(Code 1982, § 37-151; Ord. No. 99-04-39, art. 5, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*~~

## Sec. 130-30~~0~~1. Impact of runoff on downstream facilities.

(a) Stormwater runoff, based on fully developed watershed conditions, will be allowed from all future developments~~;~~ provided that the receiving drainage facilities and/or natural channels can adequately convey the ~~design storm~~ fully developed 100-year storm runoff and there are existing drainage easements, or the required floodplain or drainage easements can be obtained. Calculations to verify downstream adequacy shall be performed ~~to the nearest major receiving stream~~ utilizing the 10% rule as defined in section 130-182. If the receiving drainage facilities and/or natural channels cannot adequately convey stormwater runoff based on fully developed conditions, or the required drainage easement does not exist and cannot be obtained, runoff from the site will be limited to the pre-project flow rate at the point of discharge~~that can adequately be conveyed in downstream drainage facilities and/or natural channels~~.

(b) Flow that can adequately be conveyed is defined as the flow that does not exceed the capacity of downstream drainage facilities contained within a dedicated drainage or floodplain easement~~in the design flood or that does not adversely impact the long term channel stability of the affected stream. Where there are known channel stability problems in the receiving stream, additional analyses and/or improvements may be required either on site or off site as appropriate~~.

*(Code 1982, § 37-152; Ord. No. 99-04-39, art. 5, § A, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-30~~1~~2. Drainage improvements required for development.

(a) Stormwater runoff determinations for drainage facilities will be based on the designation of the design storm frequency. The design storm frequencies for drainage structures for

the city are provided in the Stormwater Design Manual. All drainage systems, whether upstream, downstream, or on site, shall be designed for fully developed watershed conditions as defined in the stormwater management ordinance. Variances will only be allowed based on engineering analysis and with approval of the director of engineering.

(a) All developments shall provide for any new drainage facilities, the improvement of any existing drainage facilities, channel improvements or grading, driveway adjustments, culvert improvements or any other improvement, drainage facility, or work that is necessary to provide for the stormwater drainage needs of the development and the downstream areas impacted. At all storm sewer outfall points, discharges shall be limited to non-erosive velocities or the discharge point shall be stabilized.~~Sheet flow into drainage channels or creeks shall be limited to nonerosive velocities.~~

(b) No proposed development shall be constructed that impedes or constricts runoff from an upstream watershed based on fully developed conditions.

(c) It shall be the developer's responsibility to determine the type, sizes, grades and capacities of all downstream drainage systems that convey runoff from the proposed development based on fully developed 100-year flows. The developer shall verify that the capacities of these systems are not exceeded as a result of the proposed development, and if off-site improvements are required as a result of the proposed development, the developer shall be responsible for constructing the needed improvements or shall detain flows such that the downstream capacity is not exceeded.

(d) If detention is not provided and if no drainage plan for a given watershed addressing downstream drainage systems has been prepared or the factors upon which a previous drainage plan was based have been substantially changed, as determined by the director of engineering, the developer shall, at the developer's sole initial cost and expense, have a drainage plan prepared by a registered professional engineer. In accordance with the ~~stormwater manual~~Stormwater Design Manual criteria and utilizing the 10% rule, the engineer shall determine the necessary future capacities of the drainage system to adequately convey the fully developed 100-year storm runoff from the watershed.~~by a registered engineer to determine the following provisions.~~

~~(1) Hydraulic capacity.~~

~~a. The necessary future capacities of the drainage systems to adequately convey the 100-year design flows from the watershed at full development;~~

~~b. The existing 100-year flows and runoff coefficients within the watershed prior to the proposed development;~~

~~c. The 100-year flows and runoff coefficients generated by each undeveloped tract within the watershed at full development based on current zoning;~~

~~d. The existing 100-year flows in excess of the existing system's capacities within the watershed, if any;~~

~~e. The total cost of construction to provide downstream drainage systems with adequate capacities for the 100-year full development flows within the watershed; and~~

f. The proportionate share attributable to development of each respective undeveloped tract within the watershed based upon the incremental increase in stormwater runoff from each undeveloped tract at full development compared to the total increase above the existing 100-year flows resulting from full development in the watershed. Portions of the watershed that lie outside the city limits shall be analyzed and accommodated as if fully developed.

(2) Channel stability.

a. Runoff from the one-year, 24-hour rainfall event must be detained and released in not less than 12 hours through the use of a staged outlet(s) or similar arrangements in a detention pond(s), and the ten-year peak discharge shall not exceed the undeveloped conditions ten-year flow rate. The 12-hour release period shall be increased to a 24-hour release period if storm water analysis software based on the use of hydrographs and actual stage-storage discharge relationships, such as HEC-HMS, is not used. The portions of the backyards of single-family residential lots which are pervious and adjacent to a natural channel, and natural buffer zones on commercial/industrial tracts which are located adjacent to a natural channel, may be excluded from the detention calculation for the one-year, 24-hour rainfall event provided that all stormwater runoff from impervious surfaces are detained; or

b. Channel stability of the impacted stream must be evaluated to the nearest major receiving stream using methods outlined in the stream bank stabilization manual for runoff from existing and developed conditions from the proposed development; and

c. Channel stabilization measures must be financially guaranteed or constructed in the downstream channel system as required to mitigate adverse channel stability impacts of the development, if any, to the nearest major receiving stream.

(e) In the event the drainage plan identifies that the existing downstream drainage systems are undersized for the fully developed design 100-year storm flows in terms of capacity or channel stability, the developer shall be required to perform one of the followingeither:

(1) Provide on site treatment by restricting stormwater discharges such that they do not exceed downstream capacity in the fully developed 100-year design storm event and/or by detaining the one-year storm runoff for not less than 12 hours and releasing the ten-year peak discharge at or below the undeveloped conditions ten-year flow rate (in which case no additional downstream stability analysis will be necessary) or;

(2) Provide for the design and construction of the downstream improvements necessary downstream to the point identified in the 10% rule study to accommodate the fully developed 100-year storm event.watershed condition; or

(3) Restrict stormwater flows within the development and provide for the design and construction of improvements to accommodate a revised fully developed

watershed condition which accounts for the restricted flows from the development.

(f) No stability evaluation of the impact of runoff on downstream facilities except in the vicinity of the connection is required if runoff from a site is limited to 12-hour release of the one-year, 12-hour storm and the ten-year peak discharge does exceed the undeveloped conditions ten-year flow rate. However, major receiving streams, with known downstream channel stability problems may require additional analyses and/or improvements, either on site or off site as appropriate, when on site mitigation measures are determined inadequate to mitigate the development related adverse impacts. Detention of storms larger than the ten-year storm will not be an acceptable option if it is determined that detention may create an adverse condition, such as an increase in the fully developed 100-year peak flow due to coincidental peaks in 100-year flows. As an alternative to detention In the event that detention would increase the fully developed 100-year peak flow more than the increase caused by un-detained site discharge, the developer may, at the discretion of the Director of Engineering, provide a contribution towards future downstream improvements commensurate with the size of the subject property relative to the overall drainage area at the point of the downstream improvements. provide a contribution towards future downstream improvements commensurate with the cost of the additional detention necessary for the difference between the ten-year and 100-year storms at discretion of the director of engineering.

(g) Financing of on-site and off-site drainage facilities shall be in accordance with section 130-441 of this article.

*(Code 1982, § 37-153; Ord. No. 99-04-39, art. 5, § B, 4-20-1999; Ord. No. 2003-05-039, § I, 5-6-2003; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2007-11-108, §§ 4, 5, 11-6-2007, eff. 11-30-2007)*

## Sec. 130-303. Procedure for drainage areas less than 200 acres.

Computation of stormwater runoff for drainage areas less than 200 acres may be by the rational method, which is based on the principle that the maximum rate of runoff from a given drainage area for an assumed rainfall intensity occurs when all parts of the area are contributing to the flow at the point of discharge. The rational method formula and design parameters for utilizing the formula for runoff calculation are contained in section 5 of the stormwater manual.

*(Code 1982, § 37-154; Ord. No. 99-04-39, art. 5, § C, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 5, 5-5-09)*

## Sec. 130-304. Procedure for drainage areas greater than 200 acres.

(a) For drainage areas in excess of 200 acres, where the use of the rational method does not provide reliable results, a unit hydrograph method shall be used. The use of a unit hydrograph calculation will be based upon standard and accepted engineering principles normally used in the profession, subject to the approval of the director of engineering. Acceptable methods and parameters for the unit hydrograph method are contained in section 5 of the stormwater manual.

(b) The unit hydrograph method shall be based upon fully developed watershed conditions. The detention effects of large regional detention facilities can be taken into account in unit hydrograph methods. Circumstances that may require the use of a unit hydrograph method include sizing open channels, reclaiming floodplains, creating lakes or building other types of drainage-related facilities on major drainage courses. Design engineers of these types of facilities should be aware that the requirement of designing for fully developed watershed conditions will mean that they will have to calculate these fully developed flows, instead of using the flows calculated in the Federal Emergency Management Agency's (FEMA) flood insurance studies. FEMA's flows shall not be used, because the flows are based upon existing watershed conditions. For more information, see division 5 of this article on the sizing of channels and other major drainage facilities, and division 6 of this article for floodplain alteration procedures.

*(Code 1982, § 37-155; Ord. No. 99-04-39, art. 5, § D, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 6, 5-5-09)*

## Secs. 130-305—130-326. Reserved.

# DIVISION 4. DESIGN OF LOCAL DRAINAGE SYSTEMS

## Sec. 130-327. Design storm frequencies.

(a) The calculations of runoff quantities that must be accommodated in drainage facilities require the selection of the design storm frequency. The design storm frequencies for determining the hydraulic capacity of various drainage structures are given below:

| *Drainage facility* | *Design recurrence interval* |
|---|---|
| Roadway ditches | Ten-year with 100-year spread of water not to extend beyond one open lane of traffic in residential estates type subdivisions. |
| Closed ditches | Ten-year with 100-year positive overflow for inlets on grade in streets, such that the 100-year flood depth of flow in the street does not exceed on the top of the curb. |
| Closed storm sewer systems | Ten-year with 100-year positive overflow for inlets on grade in streets, such that the 100-year flood depth of flow in the street does not exceed the top of the curb. Inlet bypass flows shall be in accordance with the stormwater manual. |
| Closed storm sewer systems and inlets at street low point, sag or sump | 100-year |
| Culverts and bridges | 100-year |
| Concrete-lined channels | 100-year |
| Earthen channels | 100-year |
| Levees | Standard project flood |
| Dams above natural ground/spillways | Spillway design flood varies with the class of structure (see section 130-356) |

(b) The approved drainage system shall provide for positive overflow at all low points. The term "positive overflow" means that, when the inlets do not function properly or when the design capacity of the conduit or roadway ditch is exceeded, the excess flow (flows up to the ten-year flood) can be conveyed overland along an open course. Normally, this

would mean along a street or alley, but it can be constructed on private property within the dedication of a special drainage easement.

*(Code 1982, § 37-161; Ord. No. 99-04-39, art. 6, § A, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-328. Street and alley capacities.

(c) *Streets.* Flows generated by the 100-year storm event shall be contained within the street right-of-way. Design parameters and calculations for street capacities and allowable spread width are contained in section 6 of the stormwater manual.

(d) *Alleys.* The flows created by the 100-year storm shall be contained within the capacity of all paved alleys. Section 6.3 of the stormwater manual references alley flow limitations. Section 6.4 of the stormwater manual provides the formulas to be used in the calculation of alley capacities.

*(Code 1982, § 37-162; Ord. No. 99-04-39, art. 6, § B, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 7, 5-5-09)*

## Sec. 130-329. Placement of inlets and manholes.

(a) Storm sewer inlets shall be built along paved streets at such intervals that the depth of flow, based upon the 100-year storm, does not exceed the top of the curb. Inlets shall be located as necessary to remove the flow based on the ten-year storm. If, in the opinion of the design engineer, the flow in the gutters would be excessive using the above design criteria, the storm sewers or inlet locations could be altered to relieve adverse conditions.

(b) Design considerations for the placement of inlets is further discussed in section 7.1 of the stormwater manual. Section 7.3 of the stormwater manual provides the formulas to be used in inlet computations. The placement of manholes is discussed in section 8.1 of the stormwater manual.

*(Code 1982, § 37-163; Ord. No. 99-04-39, art. 6, § C, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 8, 5-5-09)*

## Sec. 130-330. Inlet capacities and sizes.

Figures and formulas to be used for inlet design are found in section 7 of the stormwater manual.

*(Code 1982, § 37-164; Ord. No. 99-04-39, art. 6, § D, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 9, 5-5-09)*

## Sec. 130-331. Pipe design standards.

(a) *The Manning equation.* Storm sewer conduit shall be sized to flow full using Manning's equation. This equation shall be used to determine the conduit size in accordance with the stormwater manual.

(b) *Minimum and maximum velocities in pipes.* The minimum velocity in a conduit shall be 2.5 feet per second. This minimum velocity is required to minimize or prevent the accumulation of sediment in the system. Such sediment accumulation can severely reduce to ability of the system to convey the design flow. The minimum slopes for various pipe sizes required to maintain this minimum velocity and the recommended maximum velocities of flow in a conduit are contained in section 8 of the stormwater manual. The maximum discharge velocities in the pipe shall not exceed the permitted velocity of the receiving channel or conduit at the outfall to prevent erosive conditions. The maximum outfall velocity of a conduit in partial flow shall be computed for partial depth and shall not exceed the maximum permissible velocity of the receiving channel unless controlled by an appropriate energy dissipater and protected by appropriate channel stability measures per the stream bank stabilization manual.

(c) *Roughness coefficients for conduits.* In general, stormwater shall be carried in concrete pipe conduit. Table 8.1 of the stormwater manual shows recommended roughness coefficients for storm drains. If, in the opinion of the design engineer, other values for the roughness coefficient should be used, the different value can be used with the permission of the director of engineering. Appropriate notes of the approved roughness coefficient shall then be shown on the engineering plans.

(d) *Hydraulic gradient of conduits.* Conduits must be sized and slopes must be set such that runoff flows smoothly down the drainage system. To ensure this smooth passage, the hydraulic gradient must be at the proper elevations. The proper starting elevation of the hydraulic gradient shall be set according to the applicable criteria contained in section 8.3 of the stormwater manual.

(e) *Minor head losses.* When establishing the hydraulic gradient of a storm sewer, minor head losses at points of turbulence shall be calculated and included in the computation of the hydraulic gradient as outlined in section 8.3 of the stormwater manual.

(1) *Entrance losses.* Entrance losses to a closed storm sewer system from an open channel, lake, or storm sewer inlet shall be calculated as shown in section 8.3 of the stormwater manual.

(2) *Expansion losses.* For pipe size changes and wye connections, head loss shall be calculated as shown in section 8 of the stormwater manual.

(3) *Manhole and bend losses.* Head losses associated with manholes for pipe direction changes in pipes of equal diameter shall be calculated as shown in section 8.3 of the stormwater manual.

(4) *Junction losses.* Head losses associated with wye connections at manholes with branch laterals entering the main line shall be calculated as shown in section 8.3 of the stormwater manual.

(f) *Outfalls to open channels and lakes.* The flow lines of storm sewer conduits that discharge into open channels shall match the flow line of the channel. Exceptions to this and other design criteria for outfalls is discussed in section 8.4 of the stormwater manual.

~~(g) *Easements for enclosed storm sewers.* All storm sewer conduits to be dedicated to the city shall be located in an easement dedicated to the city at the time of final platting of the property. Storm sewer easements shall be at least 15 feet wide. Wider easements may be required for multiple box culverts, other multiple storm sewer designs or for extremely wide single-line storm sewers.~~

~~*(Code 1982, § 37-165; Ord. No. 99-04-39, art. 6, § E, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*~~

## ~~Sec. 130-332. Culvert design standards.~~

~~(a) Culverts shall be designed in accordance with section 10.4 of the stormwater manual.~~

~~(b) Driveway culverts within residential estate subdivisions shall be a minimum of an 18-inch diameter. Culverts shall be sized for the ten-year event and checked for impacts on and of the 100-year event.~~

~~*(Code 1982, § 37-166; Ord. No. 99-04-39, art. 6, § F, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*~~

## Sec. 130-30233. Drainage of residential lots.

Existing drainage between developed lots will remain the responsibility of the affected property owners. Future developments are required to drain surface runoff from an individual lot to a public right-of-way or to an underground drainage system contained in an easement. The director of engineering shall have the discretion to allow modifications to the lot-to-lot drainage requirements where adherence to these requirements would be in conflict with the tree preservation ordinance or where the lot size is one-fourth acre or larger, and it is determined by the director of engineering to not pose a burden on a future property owner.

*(Code 1982, § 37-167; Ord. No. 99-04-39, art. 6, § G, 4-20-1999; Ord. No. 2001-04-040, § 4, 4-3-2001; Ord. No. 2003-05-039, § I, 5-6-2003; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Secs. 130-30334—130-354. Reserved.

# DIVISION 5. SPECIAL DRAINAGE FACILITIES

## Sec. 130-355. Channels.

(a) *Channel design.* Unless approved by the director of engineering, open channels shall not be permitted when the ~~drainage area is less than 200 acres~~. Inside pipe diameter required to carry the fully developed 100 yr flow is 60 inches or smaller. Exceptions to this would be residential estate subdivisions and other areas where there are significant natural features, including trees, springs, exposed channels and other environmental items, which would work positively into the aesthetics of a development. Criteria for determining the nature of open channels is found in ~~section 9.1 of~~ the ~~stormwater manual~~Stormwater Design Manual.

(b) *Starting water surface condition.* When performing hydraulic analyses for channel or drainageway design, the starting water surface shall be based on the criteria found in ~~section 8.3 of~~ the ~~stormwater manual~~Stormwater Design Manual.

*(Code 1982, § 37-181; Ord. No. 99-04-39, art. 7, § A, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-356. Lakes and dams.

(a) In the event that a property owner or developer desires to modify an existing pond or lake or desires to impound stormwater by filling or constructing an aboveground dam, thereby creating a lake, pond, lagoon or basin as part of the planned development of that property, the criteria listed below shall be met before city approval of the impoundment can be given. Ponds or lakes created by excavation of a channel area without erecting a dam above natural ground elevation or in-stream low water check dams are also subject to the criteria listed below, with the exception of spillway capacity requirements. The director of engineering has the final authority to determine the design criteria for a proposed dam, check dam or excavated lake. The requirements of the state must also be met for the construction of dams, lakes and other impoundments.

(b) The design criteria for a dam are dependent on the size and hazard classification of the dam. The size and hazard classification will be based on the recommended guidelines adopted by the Texas Commission on Environmental Quality (TCEQ) under V.T.C.A., Water Code § 12.052, which provides for the safe construction, maintenance, repair and removal of dams located in the state, and will be determined by the director of engineering based on information furnished by the owner. The following criteria will be used to classify a dam:

(1) *Size.* The classification for size is based on the height of the dam and storage capacity, whichever gives the larger size category. The term "height" is defined as the distance between the top of the dam and the existing streambed at the downstream toe. The term "storage" is defined as the maximum water volume impounded at the top of the dam.

(2) *Hazard ~~potential~~ classification.* The hazard ~~potential~~ *classification* for a dam is a measure of the potential loss of life, property damage, or economic impact of the area ~~based on the potential for loss of human life and property damage downstream from a dam in the event of failure. Hazard potential classifications are based on the potential for loss of life and for the extent of economic loss based on existing and potential development~~ downstream of the dam in the event of a failure or malfunction of the dam or appurtenant structures.

(3) *Spillway design flood.*

a. The classification of a dam based on the above criteria will be used to determine the spillway design flood (SDF). The total capacity of a dam structure, including principal and emergency spillways, shall be adequate to pass the SDF without exceeding the top dam elevation. The SDF's for various dam classifications are shown in the ~~stormwater manual~~Stormwater Design Manual.

b. In all cases, the minimum principal spillway design capacity is the total 100-year inflow design flood assuming fully developed upstream conditions.

c. In all cases, a dam breach analysis shall be required to determine the proper hazard classification of the structure. A dam breach analysis is required to determine the downstream consequences of a failure for all dams over six feet in height. If the consequences of a breach failure are determined to pose a significant threat to life or properties, the spillway design flood will be equal to the probable maximum flood (PMF)~~,~~. All dams shall be constructed with a minimum freeboard of two feet above the SDF elevation except in the case of dam designed to pass the PMF, which will have top of dam set at the maximum water surface achieved by the passage of the PMF. See section 130-357 for NRCS dam requirements.

(4) Maintenance and liability criteria.

a. The owner or developer shall retain their private ownership of the constructed lake, pond or lagoon or basin and shall assume full responsibility for the protection of the general public from any health or safety hazards related to the lake, pond or lagoon constructed. ~~NRCS dams are owned by the original sponsors of the dam or their assigns who may delegate all or a portion of the maintenance of the dam to others.~~For NRCS assisted watershed dams, the land and lakes are in private ownership, with operation and maintenance of the dam and its appurtenances provided by the City or by the County and the County Soil and Water Conservation District.

b. The owner or developer shall assume full responsibility for the maintenance of the lake, pond or lagoon or basin constructed. The owner or developer shall keep the director of engineering advised of the currently responsible agent for this maintenance.

c. The developer shall submit an Emergency Action Plan to TCEQ and provide a copy to the City.

(5) *Grading upstream of lakes.* In order to protect lakes from accelerated sediment accumulation due to development related grading, the director of engineering may require a pre-grading sediment survey of a lake with a surface area of greater than five acres Pogue prior to any significant grading activity in the watershed of the lake. The survey shall be conducted by the city at the developer's or contractor's expense to establish the base level of sediment in the lake. Upon completion of the project, a post-construction survey shall be conducted by the city at the developer's or contractor's expense. The developer or contractor shall be responsible for removal of additional accumulated sediment in the lake based on the difference between the pre- and post-construction surveys. If multiple grading projects are ongoing in the watershed of the lake, the survey costs may be shared on a pro-rata basis.

*(Code 1982, § 37-182; Ord. No. 99-04-39, art. 7, § B, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 10, 5-5-09)*

## Sec. 130-357. Natural Resources Conservation Service (NRCS) lakes.

(a) There are a number of Natural Resources Conservation Service (NRCS) assisted watershed dams and lakes within the city limits and extraterritorial jurisdiction of the city. These dams and lakes were constructed to NRCS (previously Soil Conservation Service) and TCEQ standards. Although the land and lakes are in private ownership, the dams are maintained according to the operations and maintenance agreement pertaining to each dam. NRCS lakes provide stormwater retention and water quality enhancement as a design feature. This retention volume was considered in the design of the structure and shall be maintained with regard to their original design to collect silt from stormwater runoff and to provide regional flood control~~present complex issues of flood control, erosion control, maintenance and floodplain management. These dams and lakes were constructed to NRCS (previously Soil Conservation Service) and TCEQ standards. The dams are operated and maintained jointly by the county and the county soil and water conservation district. The land and lakes are in private ownership, with operations and maintenance provided by the county and the county soil and water conservation district~~. The city is responsible for floodplain management of those areas upstream, downstream and adjacent to the lakes. The City may establish a drainage impact fee for an entire watershed to finance the cost of upgrading an NRCS lake and/or to stabilize stream reaches adversely impacted by the proposed development. The City will coordinate and cooperate with these entities to provide maximum protection for the citizens of the City.~~Operation and maintenance of the NRCS lakes shall remain the responsibility of others except when otherwise agreed to by the city council.~~

(b) The city shall control future development upstream, downstream and adjacent to all NRCS dams and lakes. Planning for future development, which impacts on, or is impacted by, NRCS dams~~lakes~~ shall require ~~that~~ a detailed engineering study ~~be performed~~ to provide a technical basis for development. Design for upgrading dams shall

comply with other sections of this ordinance and the Stormwater Design Manual. Furthermore, ~~and that~~ the dam shall be upgraded as follows:

(1) Provide principal spillway capacity adequate to discharge the routed 100-year flood event based on fully developed watershed conditions and limited to ~~downstream~~ constraints including both hydraulic capacity and channel stability immediately downstream;

(2) Provide total capacity of the dam structure, including principal and ~~emergency~~ auxiliary spillways to accommodate the probable maximum flood (PMF);

(3) Maintain existing flood storage and planned sediment storage capacities;

(4) Prohibit upstream development within the contour line determined by the ~~emergency~~ auxiliary spillway crest elevation plus two feet, or the routed 100-year flood elevation (based on fully developed watershed conditions and the improved dam) plus two feet, whichever is greater. In addition, the areas required for reasonable maintenance access to the lake, dam and associated appurtenances and for safe operation of the spillway for the existing and rehabilitated dam shall be preserved and protected from encroachment through easement. These easements shall be described by a metes and bounds survey; and

(5) Restrict development and improvements within the floodplain established by a breach flow analysis from the dam to the downstream limit of the dam breach impact. Commercial development may be allowed below NRCS dams that have been rehabilitated to safely pass the PMF, if conditions warrant and with approval of the Director of Engineering.

(c) The detailed study of the NRCS floodwater retarding structure shall include an evaluation of the existing lake sediment level.

(d) At the discretion of the director of engineering, a developer may, in lieu of upgrading an NRCS floodwater retarding structure, offer a contribution toward the future upgrade of the structure. However, easements as described in subsection (b)(4) of this section shall be required.

(e) A metes and bounds description of an easement with elevation two feet above the emergency spillway elevation or an elevation two feet above the routed 100-year flood elevation, whichever is higher shall be provided on a plat prior to filing.

*(Code 1982, § 37-183; Ord. No. 99-04-39, art. 7, § C, 4-20-1999; Ord. No. 2003-05-039, § I, 5-6-2003; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## ~~Sec. 130-358. Levees.~~

~~In the event that developers or owners wish to build levees to protect an area from flooding, applicable U.S. Army Corps of Engineers, FEMA and state guidelines and the following criteria apply:~~

~~(1) Levees shall be designed to have four feet of freeboard above the standard project flood for the fully developed watershed flows.~~

~~(2) Levees shall be designed according to the U.S. Army Corps of Engineers' design criteria for federally authorized levees, whether or not they are federally authorized levees.~~

~~(3) Ring levees protecting individual structures proposed for construction after the enactment date of the ordinance from which this section is derived shall not be permitted.~~

~~(4) Provisions shall be made for ensuring the permanent maintenance of levees either by a flood control district or similar governmental organization or by the existing property owner and all future owners, heirs or assigns.~~

~~(5) Levee systems shall be designed with interior drainage systems to prevent flooding from local runoff contained within the system for the 100-year design flood.~~

~~(6) Levee systems shall have written operation procedures that address gate-closure conditions and an emergency warning plan. A copy of these procedures shall be furnished to the director of engineering.~~

~~(7) Automated gate-closure systems shall have power from two independent sources and shall be capable of being operated manually.~~

~~(8) All new levee systems shall have permanent positive closures to the required design elevation. Temporary closures involving sandbagging or other procedures requiring manual operations shall not be permitted.~~

~~(9) Additional plan requirements include water surface profiles for the design flood and standard project flood; the top of the levee profile, definition of interior drainage facilities, including pump station and ponding areas; location of gravity outlets, gate wells and closure structures; and elevation-duration data on the receiving system.~~

~~*(Code 1982, § 37-184; Ord. No. 99-04-39, art. 7, § D, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*~~

## Sec. 130-35~~89~~. Detention and retention facilities.

(a) Detention/retention facilities may be required to reduce runoff rates due to inadequate storm drainage facilities or increased zoning resulting in a significant increase in runoff rates, volume or frequency. Where detention is required and practicable, regional detention is encouraged. Calculations to verify downstream adequacy of hydraulic capacity ~~and channel stability~~ shall be performed in accordance with the 10% rule as defined in section 130-182. If an approved study demonstrates that the downstream facilities and stream system can adequately convey the fully developed 100-year storm event and required easements exist or can be obtained, then detention is not required.~~to the nearest major receiving stream if detention and 12-hour release rate of the one-year storm runoff are not provided~~.

(b) Detention/retention facilities shall be designed to safely pass the fully developed 100-year storm event~~design flood~~ according to criteria in ~~section 11.1 of~~ the ~~stormwater manual~~Stormwater Design Manual~~, and to control the release of the one-year flow to a~~

~~minimum 12-hour release rate assuming a storm water analysis software based on the use of hydrographs and actual stage-storage discharge relationships, such as HEC-HMS, is used. A 24-hour release rate shall be required if such software is not used~~.

*(Code 1982, § 37-185; Ord. No. 99-04-39, art. 7, § E, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2007-11-108, §§ 6, 7, 11-6-2007; Ord. No. 2007-11-108, § 14, eff. 11-30-2007)*

## ~~Sec. 130-360. Flumes.~~

~~Flumes are not recommended for widespread use. Flumes shall not be permitted when the purpose of a permanent flume is to carry runoff down the sides of earthen channels. A flume may be used to direct overflow runoff along property lines until the runoff can be intercepted by streets or conduit flows. Flumes crossing sidewalks shall be covered or bridged, so as to minimize danger to pedestrians. Applicants shall dedicate drainage easements for flumes. Those easements shall have sufficient width to allow future maintenance accessibility, and in no case shall the easement be less than 15 feet wide.~~

*~~(Code 1982, § 37-186; Ord. No. 99-04-39, art. 7, § F, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)~~*

## ~~Sec. 130-361. Connections from buildings to storm sewers.~~

~~Drainage from residential areas, such as roof tops, should be allowed to flow overland before joining the storm sewer system. Seepage into basements that is pumped to ground level, seepage from springs and runoff from roof drains on nonresidential buildings that would flow onto or across driveways, sidewalks or other areas commonly crossed by pedestrians can create hazards or nuisances to pedestrians. Thus, if hazards or nuisances would be created, the basement and rooftop drains shall be tied directly to the nearest storm sewer. Pumped lines from basements shall have backflow preventers.~~

*~~(Code 1982, § 37-187; Ord. No. 99-04-39, art. 7, § G, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)~~*

## Secs. 130-35962—130-380. Reserved.

# DIVISION 6. FLOODPLAIN GUIDELINES

## Sec. 130-381. Lands to which this article applies.

Floodplain areas shall include all areas inundated by the fully developed 100-year flood and special flood hazard areas shown in the flood insurance study and on the FEMA flood insurance rate maps for the county, dated June 2, 2009, and subsequent amendments thereto. Applicants shall comply with the requirements of this article for floodplain areas before making substantial improvements to or increasing the outside dimensions of an existing structure or developing land within the floodplain as defined above.~~design flood line of a creek or stream having a contributing drainage area of 320 acres or more, whether or not the land has been formally designated as a floodplain. Floodplain areas shall also include all areas inundated by the design flood and the areas of special flood hazard shown in the flood insurance study and on the flood insurance rate maps for the county, dated January 1996, and subsequent amendments thereto.~~

*(Code 1982, § 37-201; Ord. No. 99-04-39, art. 8, § A, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-382. General floodplain regulations.

Utilization of natural floodplains shall be the preferred consideration in providing stormwater management control within the city. Where maintaining natural floodplains is deemed impractical by the city, structural improvements and drainage systems will be designed and constructed to minimize adverse impact on the floodplain.

(a) *Permitted uses of floodplain areas*.

(1) To minimize possible losses of life and property, the following uses are permitted in a floodplain area, provided they are also permitted in the underlying zoning district:

a. Farms and ranches;

b. Local utilities, electrical substation, water reservoir or pumping stations and water treatment plants;

c. Public parks, hike and bike trails and playgrounds, private recreation clubs or areas, private community centers and golf courses;

d. Parking lots in accordance with subsection (b)(5) of this section;

e. Outside commercial amusements, approved by a specific use permit;

f. Helistops, approved by a specific use permit;

g. Radio, television or microwave towers and amateur communications towers with a special permit; and

h. Water quality enhancement facilities such as ponds, wetlands, etc.

(2) Structures customarily associated with the above uses may be constructed within a floodplain area only if the proposed structure meets the same engineering requirements of section 130-382(l) below.

(1) Open private recreation clubs or areas and private community centers without exterior walls are permitted in floodplain areas. Private facilities listed above, with enclosed walls that would incur damage, are not permitted in floodplain areas.

(2) Uses and structures other than those permitted above shall not be permitted in floodplain areas.

~~(a)~~(b) *Regional detention/retention of stormwater runoff.* Existing NRCS lakes provide for up to 200 acre feet of stormwater retention within the constructed sediment pool as a design feature. This volume was considered in establishment of the design flood and shall be maintained below the level of the designed flood pool, or restored in lakes being improved. In addition, the flood pools of these facilities were sized to accommodate a specific volume of flood storage and this volume shall not be reduced in any case. ~~Natural floodplains for major streams will be maintained to provide regional flood control measures, enhance water quality and mitigate regional erosion. Major streams for the city are Wilson Creek, Franklin Branch, Stover Creek, Honey Creek, Rowlett Creek, Cottonwood Creek and the East Fork Trinity River.~~

~~(b) *Reclamation of floodplains.* Portions of the 100-year floodplain, based on fully developed conditions, may be reclaimed; provided that there is no increase in the water surface elevation, acceptable velocities are maintained and channel stability in the reach being reclaimed as well as up and downstream is not adversely impacted. Additionally, in major receiving streams and any stream with a mapped floodplain, an equivalent volume of valley storage must be provided within the floodplain.~~

~~(1) Permitted uses of floodplain areas.~~

~~a. To minimize possible losses of life and property, the following uses are permitted in a floodplain area, provided they are also permitted in the underlying zoning district:~~

~~1. Farms and ranches;~~

~~2. Local utilities, electrical substation, water reservoir or pumping stations and water treatment plants;~~

~~3. Public parks, hike and bike trails and playgrounds, private recreation clubs or areas, private community centers and golf courses;~~

~~4. Parking lots in accordance with subsection (b)(5) of this section;~~

~~5. Outside commercial amusements, approved by a specific use permit;~~

~~6. Helistops, approved by a specific use permit;~~

~~7. Radio, television or microwave towers and amateur communications towers with a special permit; and~~

~~8. Water quality enhancement facilities such as ponds, wetlands, etc.~~

~~b. Structures customarily associated with the above uses may be constructed within a floodplain area only if the proposed structure meets the same engineering requirements applicable to filling in a floodplain (see section 130-383).~~

~~c. Open private recreation clubs or areas and private community centers without exterior walls are permitted in floodplain areas. Private facilities listed above, with enclosed walls that would incur damage, are not permitted in floodplain areas.~~

~~d. Uses and structures other than those permitted above shall not be permitted in floodplain areas.~~

(c) *Residential construction*.

(1) New construction in reclaimed floodplain areas and substantial improvements of any existing residential structure in floodplain areas shall have the lowest floor, including basements or fully enclosed areas, elevated to at least two feet above either the base flood or the fully developed 100-year flood elevation, whichever is greater~~the design flood elevation~~. Pad elevations for residential lots raised out of the floodplain shall be at least one foot above the elevation of either the base flood of the fully developed 100-year flood elevation, whichever is greater~~the design flood~~. Incremental improvements, either at one time or over a period of time, the cumulative cost of which equals or exceeds 50 percent of the market value at the time of the first improvement, shall be considered as a substantial improvement. New residential structures on stilts or behind ring levees serving individual lots shall not be permitted.

(2) Improvements to an existing residential structure located within a designated floodplain that increase the outside dimensions~~ of an existing residential structure~~, but that do not result in making a substantial improvement to that structure, must meet the floodproofing requirements of section 130-38~~3~~2(l) below.

(d) *Nonresidential construction*.

(1) New construction in reclaimed floodplain areas and substantial improvement of any existing commercial, industrial or other nonresidential structure in floodplain areas shall either have the lowest floor, including basements, elevated to at least two feet above either the base flood or the fully developed 100-year flood elevation, whichever is greater~~he design flood elevation~~, or, together with attendant utility and sanitary facilities, shall:

a. Be floodproofed so that, below two feet above the design flood elevation, the structure is watertight with walls substantially impermeable to the passage of water;

b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy;~~ and~~

c. Be certified by a registered professional engineer or architect that the standards of this subsection are satisfied. Such certifications shall be provided to the director of engineering; and

~~c.~~d. Must meet the requirements of section 130-382(l) below.

(2) Incremental improvements, either at one time or over a period of time, the cumulative cost of which equals or exceeds 50 percent of the market value at the time of the first improvement, shall be considered as a substantial improvement. Improvements to an existing commercial, industrial or nonresidential structure that increase the outside dimensions, but do not result in a substantial improvement, must meet the requirements of section 130-38~~32~~(l).

(e) *Manufactured homes*.

(1) All existing manufactured homes located within either a FEMA or fully developed floodplain shall be anchored to resist flotation, collapse or lateral movement by providing over-the-top and frame ties to ground anchors. Special requirements shall be that:

a. Over-the-top ties be provided at each of the four corners of the manufactured home, with two additional ties per side at intermediate locations, with manufactured homes less than 50 feet long requiring one additional tie per side;

b. Frame ties be provided at each corner of the home with five additional ties per side at intermediate points, with manufactured homes less than 50 feet long requiring four additional ties per side;

c. All components of the anchoring system be capable of carrying a force of 4,800 pounds; and

d. Any additions to the manufactured home be similarly anchored.

(2) For all new manufactured home parks and manufactured home subdivisions; for expansions to existing manufactured home parks and manufactured home subdivisions; for existing manufactured home parks and manufactured home subdivisions where the repair, reconstruction or improvement of the streets, utilities and pads equals or exceeds 50 percent of the value of the streets, utilities and pads before the repair, reconstruction or improvement has commenced; for manufactured homes not placed in a manufactured home park or manufactured home subdivision; and for new manufactured homes moved into an existing site in an existing manufactured home park, require that:

a. Stands or lots are elevated on compacted fill, so that the lowest floor of the manufactured home will be at least two feet above the design flood elevation;

b. Adequate surface drainage and access for a hauler are provided; and

c. No new manufactured homes shall be placed in a floodplain, except on a pad site created by compacted fill in which the new pad site is elevated so

that the lowest finished floor of the manufactured home is elevated at least two feet above the design flood elevation.

(3) Table 11 summarizes the requirements for manufactured homes in floodplain areas.

*** Editors' note —** The table referred to in subsection ~~(b)(4)c~~(e)(3) is not printed herein but is on file in the city secretary's office.

(f) *Recreational vehicles.* A recreational vehicle placed on a site in an SFHA must:

(1) Meet the elevation and anchoring requirements for manufactured homes; or

(2) Be on the site for fewer than 180 consecutive days; or

(3) Be fully licensed and ready for highway use. “Ready for highway use” means that it is on its wheels or jacking system is attached to the site only by quick disconnect type utilities and has no permanently attached additions.

(g) *Streets, parking lots and bridges.*

(1) The top of the curb or street crown of all new streets to be built in reclaimed floodplain areas shall be at least one foot above the design flood elevation.

(2) The low beam of all new bridges to be constructed across floodplains shall be a minimum of one foot above the design flood elevation.

(3) All new private bridges to individual homes shall have their low beams at one foot above the design flood elevation.

(4) To the extent practicable, street crossings and bridges shall be designed such that if a larger flood or blockage should occur, they do not cause flood damages of areas that would otherwise not flood (overflow back to the creek).

(5) Parking lots associated with residential uses in reclaimed floodplain areas shall be at least at the design flood elevation.

(6) Parking lots for commercial and industrial uses may be built at one foot below the design flood elevation.

~~(0)~~(7) Parking lots for public parks or playgrounds, private recreation clubs or areas, private community centers and golf courses may be located below the design flood elevation.

~~(g)~~(h) *Utilities.* All new and replacement water supply systems, sanitary sewer facilities and other public utilities shall be designed to minimize or eliminate infiltration of floodwaters into the system. On-site waste disposal systems shall be located to avoid impairment to them or contamination from them during flooding.

~~(h)~~(i) *Fences.* In any floodplain or positive overflow areas, fences (private and public screening) shall be constructed such that blockage or diversion of surface water flow does not occur. No fence having openings less than ten feet measured horizontally, by

one foot measured vertically, may be constructed within an effective flow area and perpendicular to the direction of flow. Breakaway fences may be approved by the Director of Engineering.

~~(i)~~(j) *Trees.* The planting of trees in existing drainage channels, designated floodways, floodplain or floodway easements, erosion hazard setback areas~~zones~~, or positive overflow areas is prohibited, unless it is for the purpose of replacement of trees destroyed by stormwater improvements as cited in section 130-265(f) or as approved by the Director of Engineering.

~~(j)~~(k) *Fill areas.* Where fill is proposed for placement to raise the ground surface ~~to at least one foot above the design flood elevation~~, design engineers proposing the reclamation shall demonstrate that the fill will not settle below the design elevation of the fill through proper compaction; and that the fill will be adequately protected from erosion, scour or differential settlement. Fill slopes shall be permanently protected from erosion losses by grassing, establishing vegetative cover approved by the director of engineering, or installing channel linings or stabilization measures when allowed by the other provisions of this article. Additional fill requirements are included in section 130-383 below.

~~(k)~~(l) *Additional construction standards for structures.* All substantial improvements and new construction permitted in a floodplain area must comply with the following requirements:

(1) Structures must be securely anchored to the foundation to prevent flotation and collapse during inundation and designed to prevent damage to nonstructural elements during inundation.

(2) Thermal insulation used below the first floor elevation must be of a type that does not absorb water.

(3) Adhesives must have a bonding strength that is unaffected by inundation.

(4) Doors and all wood trim must be sealed with a waterproof paint or similar product.

(5) Mechanical, electrical and utility equipment shall be located above the fully developed 100-year ~~design~~ flood elevation.

(6) Water heaters, furnaces, electrical distribution panels and other critical mechanical or electrical installations must not be placed in basements. Electrical circuits for basements shall be separate from circuits serving floors above the basement, and circuits for basements shall be installed lowered from above.

(7) Basements are permitted for nonresidential structures only if they are designed to preclude inundation by the design flood elevation, either by:

a. The elimination of exterior openings below the design flood elevation; or

b. The use of watertight closures, such as bulkheads and flood shields. However, no basements are permitted in soils whose permeability meets or exceeds the minimum local standards of permeability established for the installation of individual sewer disposal systems.

(8) Plywood used at or below the lowest floor elevation must be of an exterior or marine grade and of a water-resistant or waterproof variety.

(9) Wood flooring used at or below the lowest floor elevation must be installed to accommodate a lateral expansion of the flooring, perpendicular to the flooring grain, without incurring structural damage to the building.

(10) Basement ceilings for nonresidential structures must be of sufficient wet strength and be so installed as to survive inundation.

(11) Paints or other finishes used at or below the lowest floor elevation must be capable of surviving inundation.

(12) All air ducts, large pipes and storage tanks located at or below the lowest floor elevation must be firmly anchored to prevent flotation.

(13) Tanks must be vented at a location above the design flood elevation.

~~(14) *Prohibited discharges.* No person may introduce into any lake, pond, stream, or MS4 conveyance system including streets, alleys, and paved parking areas, which may lead to a lake, stream, pond, or waters of the United States within the city:~~

~~a. Any pollutants or materials other than stormwater that have an adverse effect on the environment, or may endanger life, health or property, or constitute a public nuisance;~~

~~b. Substances specifically prohibited from being discharged into the stormwater system are as follows:~~

~~1. Polluted wastewater or other liquid wastes containing concrete, building materials, oil, chemicals or other liquid industrial wastes;~~

~~2. Any liquids, solids or gases, including, but not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, sulfides or any other substances which are a fire or other hazard to the system, which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction with other substances to cause fires, explosions, or be injurious in any other way to the facilities or operation of the stormwater system;~~

~~3. Any non-stormwater, groundwater, process water that is mixed or contaminated with gasoline or oil in concentrations exceeding a total BTEX limit of 0.5 ppm with a maximum allowable benzene concentration of 0.05 ppm or TPH limit of 15 ppm, tested on a weekly basis;~~

~~4. Any non-stormwater having a ph less than 6.5, greater than 9.0, or any non-stormwater capable of having any other corrosive property capable of causing damage or hazard to the stormwater system;~~

5. Any free or emulsified fats, waxes, greases or oils;

6. Petroleum oil, nonbiodegradable cutting oil, products of mineral oil origin, transmission fluid, hydraulic fluid, brake fluid, power steering fluid, antifreeze or other household hazardous wastes;

7. Solid or liquid substances which may cause obstruction to the flow in storm sewers or other interference with the proper operation of the stormwater system such as, but not limited to: ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, whole blood, paunch manure, hair and fleshings, entrails, lime slurry, lime residues, slops, chemical residues, paint residues, bulk solids, waste paper or floatables;

8. Wastewater or industrial wastes generated or produced outside the city unless approval in writing from the director has been given to the person discharging the wastes;

9. Any noxious or malodorous liquids, gases or solids, which either singly or by interaction with other substances are sufficient to prevent entry into the stormwater system for maintenance and repair;

10. Any trucked or hauled pollutants, except at discharge points discharged by the city;

11. Trash, junk, refuse, garbage, grass clippings, tree limbs, tree branches, leaves, brush or firewood;

12. Any non-stormwater containing, but not limited to detergents, surfactants, phosphates or cleaning residues generated from commercial car washing or cleaning services; or

13. Swimming pool or spa water containing detectable levels of chlorine, acid, or filtering agent.

*(Code 1982, § 37-202; Ord. No. 99-04-39, art. 8, § B, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-383. Criteria for approval of floodplain alterations.

(a) No new construction is allowed in floodplain areas, but construction is allowed in those areas that can be reclaimed from the floodplain. Portions of the 100-year floodplain, based on fully developed conditions, may be reclaimed; provided that there is no increase in the water surface elevation, acceptable velocities are maintained, and channel stability in the reach being reclaimed. Additionally, in any stream with a contributing watershed of 200 acres or more at the point of a proposed development, an equivalent volume of valley storage must be provided within the floodplain. The city uses a natural floodway in addition to the regulatory floodway established by FEMA in managing the floodplains of the city. The natural floodway consists of the natural channel and floodplain that is effective in conveying the design flood. Areas of ineffective flow around bridges, topographic constrictions and other constrictions are excluded from

~~the natural floodway. This exclusion does not apply to the regulatory floodway nor shall it apply for the purposes of valley storage. The effective flow area and limits of the natural floodway are determined using four-to-one flow expansions downstream of constrictions and one-to-one flow contractions upstream of constrictions. Reclamation by filling in floodplain within areas of ineffective flow, outside of the natural floodway, are not subject to the same requirements as areas within the natural floodway.~~ A development permit for floodplain reclamation or alteration for all types of reclamation shall be allowed only if all of the following criteria are met:

(1) Alterations shall be in compliance with FEMA guidelines. A portion of the 100-year floodplain may be reclaimed provided there is no upstream or downstream increase in the water surface elevation and acceptable channel stability and velocities are maintained.

(2) Any alteration of floodplain areas shall not cause any additional expense in any current or projected public improvements.

(3) Maximum slopes of filled areas or excavated areas not in sound rock shall not exceed three to one (three horizontal to one vertical). Any city-maintained land shall be at least on a four-to-one slope regardless of the existence of rock with the following exceptions: When proposed as part of a landscape plan, fill slopes, vertical walls, terracing and other slope treatments may be considered where public safety and maintenance are not jeopardized and where no unbalancing of stream flow or upsetting of the channel's stability results.

(4) Alterations ~~of~~ to the floodplain ~~or natural floodway~~ are permitted without consideration to the water surface elevations when the entire floodplain is on one's own property. No ~~significant~~ rise in water surface elevations of the fully developed 100-year flood event~~design flood~~ of the creek is permitted on adjacent properties without the owner's written consent, or the rise is fully contained within a floodplain or drainage easement. ~~However, channel stability of the reach in question as well as upstream and downstream reaches remains of concern and shall be considered.~~

(5) Alterations ~~of~~ to the floodplain shall not create an erosive or aggradational flow velocity on either side of a natural channel adjacent to floodplain reclamation, whether on or off site, in any flood event up to and including the fully developed 100-year flood event~~on or off site in any flood event up to and including the design flood~~.

~~(6) Alterations of the floodplain shall not increase downstream discharges greater than an amount that would cause a significant increase in the water surface elevations of the design flood or upset the channel's stability in the creek.~~

~~(7)~~(6) The effects of existing improvements, or public and private improvements for which a future commitment has been made by the city or county, state or federal agencies, shall be used in determining water surface elevations and velocities.

~~(8)~~(7) The floodplain shall be altered only to the extent permitted by equal conveyance on both sides of the natural channel. The right of equal conveyance applies to all owners and uses, including greenbelt, park areas and recreational usages.

Owners may relinquish their right to equal conveyance by providing a written agreement to the city~~, however, channel stability issues shall still be addressed~~.

~~(9)~~(8) When constructing a swale parallel to the main channel, which also ties to the main channel, the lowest elevation of excavated areas ~~in the floodplain~~ shall not be lower than one-third of the depth of the ~~natural~~ main channel, as measured down from the top of bank of the main channel~~adjacent stream bank~~, or the water surface elevation resulting from the one-year flood, whichever is lower. The Director of Engineering may consider an exception to this, depending upon the distance between the swale and the main channel and with appropriate stabilization of the swale outfall. The upstream end of the excavation area shall not tie into the creek, and no excavation shall be closer than 50 feet to the bank of the natural channel, except as necessary to drain. Excavation of lakes may exceed the depth indicated above. In any case, excavation in the floodplain shall not cause or allow a diversion of flood flows outside the FEMA ~~or natural~~ floodway.

(9) Relocation or alteration of ~~the~~ natural ~~channel of~~ streams ~~with a contributing drainage area of 320 acres or more~~ shall not be permitted without:

a. ~~a~~An environmental evaluation, the scope of which ~~with the scope of such evaluation~~ to be determined by the director of engineering; and

~~a.~~b. Appropriate permitting by State and Federal regulators.

(b) The criteria in subsection (a) of this section shall be met before a grading or development permit can be issued for a proposed project. Typical projects requiring a development permit include placing fill, whether or not it actually raises the property out of the floodplain; constructing a dam; straightening channel sections; temporary storage of fill materials, supplies and equipment; creating on- or off-line lakes; installing retaining walls or other creek side-slope protection; changing the streambed gradient; constructing a swale parallel to the main channel; and making improvements, substantial or otherwise, to existing structures in a floodplain in which the existing outside dimensions of the structure are increased.

(c) The required submittals for a grading or development permit are listed in section 130-267(2). In general, the information needed for the application of projects involving floodplain areas can be obtained by running a backwater model, such as HEC-RAS; and a flood routing model, such as TR-20, TR-55 or HEC-HMS. The backwater information shall be used to determine that the upstream water surface elevations and velocities have not increased in a way or to a degree that channel stability is adversely impacted. Starting water surface conditions for backwater calculations are outlined in section 8.3 of the ~~stormwater manual~~Stormwater Design Manual. Flood-routing information shall be used to ensure that the cumulative effects of the reduction in floodplain storage of floodwaters will not cause downstream increases in water surface elevations ~~or adversely impact channel stability~~.

(d) Applicants can obtain copies of the existing conditions backwater models and flood-routing where available from the director of engineering. These models shall be kept

current with modification to the floodplains at the expense of the party making the changes.

*(Code 1982, § 37-203; Ord. No. 99-04-39, art. 8, § C, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 11, 5-5-09)*

## Sec. 130-384. Verification of floodplain alterations.

(a) Prior to final City acceptance ~~by the city~~ of utilities and street construction for projects involving floodplain alterations or adjacent to defined floodplains, creeks, channels and drainageways, a certified statement shall be prepared by a registered professional land surveyor, showing that all lot elevations, as developed within the subject project, meet or exceed the required minimum finished pad elevations necessary to create the minimum finished floor elevations as shown on the ~~final~~ record plat of the subdivision. This certification shall be filed with the director of engineering.

(b) In addition, at any time in the future when a building permit is desired for an existing platted property, which is subject to flooding or carries a specified or recorded minimum finished floo~~rd~~ elevation, a registered professional land surveyor or a registered professional engineer shall prepare a certified statement that sites are built to the design elevations. The certified survey data showing the property to be at or above the specified elevation shall be furnished to the ~~director of engineering~~Chief Building Official for approval. A certificate of compliance with the provisions of this article, pertaining to specified finished floor elevations, shall be required.

(c) The applicants shall furnish, at their expense, to the director of engineering the above certifications and any other certified engineering and surveying information requested by the director of engineering to confirm that the required minimum floor and pad elevations have been achieved. Building permits will not be issued until:

(1) A letter of map revision or amendment has been issued by FEMA; and

(2) Lots and/or sites are certified by a registered professional land surveyor or a registered professional engineer that they are elevated from the floodplain according to FEMA-approved revisions to the floodplain and the requirements of this article.

*(Code 1982, § 37-204; Ord. No. 99-04-39, art. 8, § D, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 12, 5-5-09)*

## Secs. 130-385—130-411. Reserved.

# DIVISION 7. EROSION CONTROL GUIDELINES

## Sec. 130-412. Lands to which this article applies.

Private property owners, developers or builders shall be accountable for the movement of soil from their property or construction site which results in accumulation of sediment in dedicated streets, alleys, lakes, ponds, any waterway or other private properties. Development activities shall comply with erosion control guidelines established within this article, as well as those required by the EPA and TCEQ. At its discretion, the City may review and enforce a SWP3 required by State or Federal permit. Any accumulation or deposit of soil material beyond the limits of the property or in city streets, alleys or drainage facilities in an amount sufficient to constitute a threat to public health, safety and comfort as determined by the director of engineering shall constitute a nuisance and violation of this article. ~~The only exceptions to this provision are lands under active agricultural use. As soon as construction or modification to the exempted land is to begin so that the use of the land will change from agriculture to any other use, then the land shall lose its exemption and become subject to the provisions of this article.~~

*(Code 1982, § 37-211; Ord. No. 99-04-39, art. 9, § A, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-413. General guidelines.

(a) Erosion and sediment controls must be designed to retain sediment on-site to the extent practicable with consideration for local topography, soil type, and rainfall.

(b) Control measures must be properly selected, installed, and maintained according to the manufacturer's or designer's specifications.

(c) Controls must be developed to minimize the offsite transport of litter, construction debris, and construction materials.

~~(a) Maximum use shall be made of vegetation to minimize soil loss.~~

~~(b) Natural vegetation should be retained wherever possible.~~

~~(c) Where inadequate natural vegetation exists, or where it becomes necessary to remove existing natural vegetation, temporary controls (best management practices) should be installed promptly to minimize soil loss and ensure that erosion and sedimentation does not occur.~~

~~(d) Wherever possible during construction, erosion controls shall be used on hillsides to slow drainage flow rate and prevent the movement of soil.~~

~~(e) Erosion control elements should be implemented as soon as practical in the development process.~~

~~(f) Waste or disposal areas and construction roads shall be located and constructed in a manner that will minimize the amount of sediment entering streams.~~

~~(g) Frequent fording of live streams will not be permitted; therefore, temporary bridges or other structures shall be used wherever an appreciable number of stream crossings are necessary. Temporary crossings shall be designed and constructed to pass a minimum of a ten-year flow and so as to not divert larger flow in such a way as to cause flooding of or damage to public or private property or improvements.~~

~~(h) When work areas or material sources are located in or adjacent to live streams, such areas shall be separated from the stream by a dike or other barrier to keep sediment from entering a flowing stream. Care shall be taken during the construction and removal of such barriers to minimize the sediment transport into a stream.~~

~~(i) Should preventative measures fail to function effectively, the applicant shall act immediately to bring the erosion and/or siltation under control by whatever additional means are necessary.~~

~~(j) Erosion control devices shall be placed to trap any losses from stockpiled topsoil.~~

~~(k) The selection and timing of the installation of erosion controls shall be based upon weather and seasonal conditions that could make certain controls not practicable.~~

~~(l) Vegetation used for vegetative cover shall be suitable for local soil and weather conditions. Ground cover plants shall comply with listings from the Texas Agricultural Extension Service for North Central Texas.~~

~~(m) Off-site runoff shall be safely diverted away from construction areas to the extent it is practical to do so.~~

~~(n) Stripping of vegetation from project sites shall be phased so as to expose the minimum amount of area to soil erosion for the shortest possible period of time. Phasing shall also consider the varying requirements of an erosion control plan at different stages of construction.~~

~~(o) Developers, builders, or owners of property shall install all utilities, including franchise utilities, before final acceptance of a subdivision, property and/or structure. Final acceptance will also be contingent upon having all necessary erosion control measures installed to minimize off-site sediment deposition. A site may be accepted at the discretion of the city engineer, without erosion control measures if perennial vegetative cover is established and actively growing and if all conditions of any permits (including 404, SWPPP, etc.) have been met prior to acceptance.~~

*(Code 1982, § 37-212; Ord. No. 99-04-39, art. 9, § B, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-414. Required.

(a) *Application of article.* A responsible party engaging in any land disturbing activity or any construction activities shall prepare an erosion control plan and submit that plan to the director of engineering for approval. This article shall apply regardless of whether a responsible party is required to obtain a permit from the city in order to conduct such land disturbing or construction activity. The responsible party shall also be held liable for

violations of this article committed by third parties engaging in activities related to the responsible party's project.

(b) *Erosion control plan implementation and compliance.* Each responsible party shall implement and maintain the erosion control measures shown on its approved erosion control plan in order to minimize the erosion and the transport of silt, earth, topsoil, etc., by water runoff or construction activities, beyond the limits of the responsible party's site onto city streets, drainage easements, drainage facilities, storm drains of other city property prior to beginning any land disturbing activity. No inspection of any type may be performed on a project or portion thereof until a City approved erosion control plan is implemented by the responsible party.

(c) *Erosion control deposit account*. An erosion control deposit shall be posted to ensure implementation and continued maintenance of the city approved erosion control plan. At no time shall the deposit balance fall below an amount as determined from time to time by city council, or the initial deposit amount, whichever is less. If the fund has less than the amount as determined from time to time by city council, work on the project shall stop until additional funds are deposited to bring the balance above the amount as determined from time to time by city council. Pogue

(1) Prior to approval of the development permit for nonresidential or multifamily sites greater than 10 acres or residential subdivisions, the responsible party shall pay an erosion control deposit to the city in the amount as determined from time to time by city council.

(2) Deductions from erosion control deposit account/stop work orders/citation.

a. The city may deduct fees/citations from the responsible party's erosion control deposit account if after multiple notifications the erosion control devices at the site have not been brought into compliance with the approved erosion control plan.

b. The city may, at its sole discretion, cause erosion control devices to be installed or repaired, sediment to be removed, or take other actions necessary to correct the problem. Costs for such work, an administration fee, and re-inspection fees may be charged against the erosion control deposit account. Stop work orders may be issued until the total amount of charges is refunded by the responsible party into the erosion control deposit account. A citation may also be issued for each violation in which the city acts to cure the violation. The responsible party shall have the right of appeal as set forth in section 130-235.

(3) Upon issuance of a temporary certificate of occupancy the director of engineering may require an erosion control deposit to be collected where the site has not established permanent ground cover.

(4) Upon issuance of a certificate of occupancy the developer may request the return of the remainder of his deposit by submitting a written request to the director of engineering. The balance of the deposit remaining in an account after deductions for all violations have been made shall be refunded within 30 days of receipt of the written request. The responsible party shall have the right of appeal as set forth in section 130-268.

(5) Erosion control deposits posted pursuant to the requirements of this article shall not accrue interest.

~~(c) *Off-site borrow, spoil and staging areas.* Where applicable, off-site borrow areas, spoil areas and construction staging areas shall be considered as part of the project site and shall be governed by this article.~~

(d) *Related land areas.* The erosion control requirements of this article shall apply to all related land areas. Additionally, when land disturbing activity occurs on a project, all disturbed land areas related to the project shall have permanent erosion control established before final occupancy of structures located thereon or final acceptance of the subdivision may be obtained. This section applies whether or not a building permit is required.

(e) *Removal of erosion control devices*. Upon issuance of a certificate of occupancy or upon establishing permanent ground cover on a site or lot, all temporary erosion control devices shall be removed and legally disposed of.

(f) *Final Acceptance*. Developers, builders, or owners of property shall install all utilities, including franchise utilities, before final acceptance of a subdivision, property and/or structure. Final acceptance will also be contingent upon having all necessary erosion control measures installed to minimize off-site sediment deposition. A site may be accepted at the discretion of the city engineer, without erosion control measures if perennial vegetative cover is established and actively growing and if all conditions of any permits (including 404, SWPPP, etc.) have been met prior to acceptance. Regarding residential subdivisions, permanent erosion control devices and when applicable, temporary erosion control devices, as specified in the approved erosion control plan shall be installed and maintained prior to final acceptance of a subdivision. The developer for such subdivision shall continue to maintain all temporary erosion control devices until permanent erosion control has been established on all those lots within the subdivision for which a building permit has not been issued.

~~(e) *Below ground installations.* All discharges resulting from below ground installations shall be passed through city approved erosion control devices or removed from the site for proper disposal.~~

~~(f) *Grading upstream of lakes.* In order to protect lakes from accelerated sediment accumulation due to development related grading, the director of engineering may require a pre-grading sediment survey of a lake with a surface area of greater than five acres prior to any significant grading activity in the watershed of the lake. The survey~~

~~shall be conducted by the city at the developer's or contractor's expense to establish the base level of sediment in the lake. Upon completion of the project, a post-construction survey shall be conducted by the city at the developer's or contractor's expense. The developer or contractor shall be responsible for removal of additional accumulated sediment in the lake based on the difference between the pre- and post-construction surveys. If multiple grading projects are ongoing in the watershed of the lake, the survey costs may be shared on a prorata basis.~~

*(Code 1982, § 37-213; Ord. No. 99-04-39, art. 9, § C, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-415. Plans and permit.

All operators of sites with construction activity, including demolition, clearing, grading, excavation, and landfilling activities, shall be responsible for submitting an erosion control plan for approval by the city. Each erosion control plan required by this article shall clearly identify all erosion and sediment control measures to be installed and maintained throughout the duration of the project for which that plan is submitted. For residential lots, the standard city erosion control plan found in the Residential Builder Packet shall apply or the builder/contractor may submit an alternative erosion control plan for approval by the city. The responsible party shall install and maintain erosion control devices in accordance with the~~h~~is city approved erosion control plan ~~as required by this article~~.

Concurrently with the approval of a building or development permit by the city and prior to commencement of land disturbing activities, the builder/contractor or other responsible party shall be responsible for obtaining an approved erosion control plan as the city deems appropriate. The approved erosion control plan shall indicate and apply to all areas within the project controlled by, or coming into the control of, the applicant at the time of issuance.

*(Code 1982, § 37-214; Ord. No. 99-04-39, art. 9, § D, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-416. Nonresidential and multifamily construction.

When construction or land disturbing activities are conducted as part of a nonresidential or multifamily construction project, permanent erosion control shall be established prior to the occupancy of any nonresidential or multifamily structure. Phased occupancy will be allowed only when there are no outstanding erosion control violations for the project for which the request is made.

*(Code 1982, § 37-215; Ord. No. 99-04-39, art. 9, § E, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-417. Residential subdivisions; compliance.

In addition to the other requirements of this article, when construction or land disturbing activities are conducted as part of a residential subdivision project, the following shall apply:

(1) *Erosion control deposit account.* ~~Prior to approval of the record plat by the city planner, the developer shall submit an erosion control plan for approval by the~~

~~city and shall pay an erosion control deposit to the city in the amount as determined from time to time by city council.~~

a. If a developer has more than one subdivision or multiple phases of a subdivision under construction, a single deposit account equal to the amount due for the largest of the developer's subdivisions or phases will be adequate (except in the case of a lake, where the maximum shall be as determined from time to time by city council). ~~The deposit shall be posted to ensure implementation and continued maintenance of the city approved erosion control plan. At no time shall the deposit balance fall below an amount as determined from time to time by city council, or the initial deposit amount, whichever is less. If the fund has less than the amount as determined from time to time by city council, work on the project shall stop until additional funds are deposited to bring the balance above the amount as determined from time to time by city council. No inspection of any type may be performed on a project or portion thereof until a city approved erosion control plan is implemented by the responsible party.~~

~~a.~~b. Subdivisions for which the developer certifies that all houses within the subdivision will be sold at no more than the current housing and urban development home maximum per-unit subsidy for Dallas, Texas, shall be exempt from the initial erosion control deposit requirement. The city housing division shall determine whether the subdivision meets these criteria. Upon two or more violations of the erosion control standards of the stormwater ordinance, within the exempted subdivision, the ~~chief building official~~ director of engineering may, at his discretion, require the deposit to be paid in full, and may withhold inspections or stop work until the deposit is paid.

(2) *Refund*. After building permits have been issued for 90 percent of the lots within the development, the developer may request the return of the remainder of his deposit by submitting a written request to the director of engineering. However, the developer shall continue to maintain temporary erosion control devices on those remaining lots for which building permits have not been issued and for any other areas upon which permanent erosion control has not been established.

~~(2) *Final acceptance.* Permanent erosion control devices and when applicable, temporary erosion control devices, as specified in the approved erosion control plan shall be installed and maintained prior to final acceptance of a subdivision. The developer for such subdivision shall continue to maintain all temporary erosion control devices until permanent erosion control has been established on all those lots within the subdivision for which a building permit has not been issued.~~

(3) *Transfer of property by developer.* If the developer sells all of the lots in a subdivision to one purchaser, that purchaser becomes the responsible party for the subdivision, is liable for violation of this article and shall post an erosion

control deposit as required by this article. The balance remaining in the original developer's account shall be released as provided herein upon the submission of written proof of transfer of lots and a new erosion control deposit by the purchaser. As required by this article, the such purchaser shall post an erosion control deposit with the city.

(4) *Deductions from erosion control deposit account/stop work orders/citation.*

a. The city shall inspect the erosion control devices located at a site for compliance with the approved erosion control plan submitted by a developer. If a developer fails to implement or maintain erosion control devices as specified in his approved erosion control plan, the city shall provide such party with written notice of noncompliance identifying the nature of the noncompliance. Such notice shall also inform the developer of the circumstances under which a deduction from his deposit account will be made and the time frame for the filing of an appeal of such action by the city. The developer shall have 24 hours to bring his erosion control devices into compliance with the approved erosion control plan for the site to which notice of noncompliance was issued. Correction shall include sediment clean-up, erosion control device repair, erosion control device maintenance and/or installation of additional erosion control devices to prevent re-occurrence of the violation. The 24-hour cure period, may be extended for inclement weather or other factors at the discretion of the director of engineering.

b. At the end of 24-hour cure period, the city shall reinspect the site and shall deduct a reinspection fee as determined from time to time by city council from the developer's erosion control deposit account. If at the time of such reinspection, the erosion control devices at the site have not been brought into compliance with the approved erosion control plan, the city may issue a stop work order and issue a citation for each violation of this article.

c. If a violation is not resolved within the 24-hour cure period, the city may, at its sole discretion, cause erosion control devices to be installed or repaired, sediment to be removed, or take other actions necessary to correct the problem. Costs for such work, an administration fee, and reinspection fees shall be charged against the erosion control deposit account. Stop work orders shall be issued until the total amount of charges is refunded by the developer into the erosion control deposit account. A citation shall also be issued for each violation in which the city acts to cure the violation. The responsible party shall have the right of appeal as set forth in section 130-235.

(5) *Erosion control deposit account balance; deposit refund.* After building permits have been issued for 90 percent of the lots within the development, the developer may request the return of the remainder of his deposit by submitting a written request to the building official. However, the developer shall continue to

maintain temporary erosion control devices on those remaining lots for which building permits have not been issued and for any other areas upon which permanent erosion control has not been established. The balance of the deposit remaining in an account after deductions for all violations have been made shall be refunded within 30 days of receipt of the written request for refund along with a list of all deductions made from the deposit account. The responsible party shall have the right of appeal as set forth in section 130-268.

(6) *Erosion control deposits.* Erosion control deposits posted pursuant to the requirements of this article shall not accrue interest.

*(Code 1982, § 37-216; Ord. No. 99-04-39, art. 9, § F, 4-20-1999; Ord. No. 2001-06-065, § I, 6-6-2001; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2008-08-078, 8-19-2008)*

## Sec. 130-418. Residential lots with a building permit.

When land disturbing activities are conducted on a residential lot for which a building permit must be issued, the responsible party shall comply with the following:

(1) *Erosion control plan and permit.* Prior to city approval of a building permit for a residential lot by the city, the builder/contractor or other responsible party obtaining the building permit shall submit an erosion control plan for approval by the city and shall obtain an erosion control permit for the subdivision or any respective phase of a subdivision, as the city deems appropriate. The erosion control plan shall apply to all sites under control of the builder/contractor within the subdivision. The erosion control plan shall indicate all lots controlled by the applicant at the time of issuance. If no erosion control plan is submitted, the standard city erosion control plan for residential lots shall apply. A single erosion control permit shall be issued for all lots under control or coming into the control of the builder/contractor within the subdivision for the duration of the permit, which duration shall be one year. Upon expiration, a new plan and permit shall be required. No building permits shall be issued until the erosion control permit has been obtained. No inspection may be performed on a project until a city-approved erosion control plan is implemented.

(2) *Stop work order/citation.*

a. The city shall inspect the erosion control devices located at a site for compliance with the approved erosion control plan submitted for such site. If a responsible party fails to implement or maintain erosion control devices as specified in the approved erosion control plan, the city shall provide such party with written notice on noncompliance identifying the nature of such noncompliance. The responsible party shall have 24 hours to bring the erosion control devices into compliance with the approved erosion control plan for the site where the violation occurred. Modifications to the approved erosion control plan may be required to maintain all sediment on site. Correction shall include sediment clean-up, erosion control device repair, erosion control device maintenance, and/or

installation of additional erosion control devices to prevent reoccurrence of the violation. The 24-hour cure period may be extended for inclement weather or other factors at the discretion of the building official. Other inspections shall be delayed until all erosion control violations have been corrected and a reinspection has been performed. A reinspection fee may be assessed, and any reinspection fees assessed shall be paid prior to the reinspection.

b. At the end of the 24-hour cure period, the city shall reinspect the site. If at the time of such reinspection, the erosion control devices at the site have not been brought into compliance with the approved erosion control plan, the city may avail itself of any or all of the following, which shall not be exclusive:

   1. Issue a stop work order;

   2. Revoke the erosion control permit; or

   3. Issue a citation for each violation of the city's erosion control requirements.

c. The stop work order may apply to all sites subject to the erosion control permit or may apply to specific sites, at the discretion of the building official. When a stop work order has been issued, a re-inspection fee shall be assessed on each lot that was identified as being in violation of the erosion control permit. Re-inspection fees shall be doubled for second and subsequent violations of the erosion control permit on a specific site. To obtain a reinspection for removal of the stop work order, a request must be submitted therefore and the re-inspection fee, as set by the building official, shall be paid.

d. If any soil or material is deposited, by natural event or by an actor, on the right-of-way adjacent to a residential lot or upon any adjacent lot, in violation of any provision of this section or of any state statute regulating soil erosion, and the identity of the actor (property owner, builder, permittee, or responsible party) cannot be determined, the owner or person in whose name the permit was issued is presumed to be the person who caused or failed to prevent the deposit of soil or material from a lot to the adjacent right-of-way or to an adjacent lot. This presumption is rebuttable and shall have the effects and consequences set forth in V.T.C.A., Penal Code § 2.05, and as it may be amended. The city records relative to the permit are prima facie evidence of the contents of the record.

e. If the erosion control devices have been properly installed and maintained, but the intent of the approved control plan (maintaining sediment on site) is not met, the responsible party shall take action within 24 hours to control soil eroding from the site and clean up any sediment and shall have one week to submit a new erosion control plan. Work may continue during the review period. Implementation of this plan will be

~~required within 24 hours of plan approval by the director of engineering. If no plan is submitted within one week, then construction activities shall be halted until a new plan is submitted and approved.~~

~~(3) *Removal of erosion control devices.* Upon issuance of a certificate of occupancy or upon establishing permanent ground cover on a lot, all temporary erosion control devices shall be removed and legally disposed of.~~

~~*(Code 1982, § 37-217; Ord. No. 99-04-39, art. 9, § G, 4-20-1999; Ord. No. 99-11-92, § 1A, 11-16-1999; Ord. No. 2000-03-21, § I, 3-7-2000; Ord. No. 2006-12-145, § 1, 12-19-2006)*~~

## Sec. 130-41~~8~~9. Enforcement.

(a) *Violations.* It shall be an offense for a responsible party or a third party performing work on a project to violate any of the requirements of this article, including, but not limited to, the following:

(1) Conducting any land disturbing or construction activity without an approved erosion control plan for the location where the violation occurred;

(2) Failing to install erosion control devices or to maintain erosion control devices throughout the duration of land disturbing activities, in compliance with the approved erosion control plan for the location where the violation occurred;

(3) Failing to remove off-site sedimentation that is a direct result of land disturbing activities where such off-site sedimentation results from the failure to implement or maintain erosion control devices as specified in an approved erosion control plan for the location where the violation occurred;

(4) Allowing sediment-laden water resulting from belowground installations to flow from a site without being treated through an erosion control device; or

(5) Failing to repair damage to existing erosion control devices, including replacement of existing grass or sod.

(b) *Notice of violation.* Written notice of violation shall be given to the responsible party or his job site representative as identified in the erosion control plan for a site. Such notice shall identify the nature of the alleged violation and the action required to obtain compliance with the intent of the approved erosion control plan.

(c) *Citation/Stop work order*. An erosion control inspector shall verify that the erosion control measures are in place prior to and during the permitted activity. If a permittee (which includes the site's owner, his/her contractor, or other agent) does not comply, or is not complying, with any correction notice or erosion control measures, the enforcement process may take the following form in the following order.

(1) If a responsible party fails to implement or maintain erosion control devices as specified in the approved erosion control plan, the city shall provide such party with written notice on noncompliance identifying the nature of such noncompliance. The responsible party shall have 24 hours to bring the erosion control devices into compliance with the approved erosion control plan for the site where the violation occurred.

Modifications to the approved erosion control plan may be required to maintain all sediment on site. Correction shall include sediment clean-up, erosion control device repair, erosion control device maintenance, and/or installation of additional erosion control devices to prevent reoccurrence of the violation. The 24-hour period may be extended for inclement weather or other factors at the discretion of the director of engineering.

(2) At the end of the 24-hour period the city may reinspect the site. If at the time of reinspection the erosion control devices at the site have not been brought into compliance with the approved erosion control plan a reinspection fee shall be assessed.

(3) If an inspector returns to a site for a third or subsequent inspection because erosion control measures have not been brought into compliance reinspection fees shall be doubled. In addition, a stop work order shall be issued and no department shall proceed with further inspections until the erosion control measures have been brought into compliance. The stop work order may apply to all sites subject to the erosion control permit or may apply to specific sites, at the discretion of the director of engineering. To remove the stop work order the fee(s) shall be paid in full and erosion control violations corrected.

(4) If at any time the erosion control devices at the site have not been brought into compliance with the approved erosion control plan the city may avail itself of any or all of the following, which shall not be exclusive:

a. Issue a stop work order;

b. Revoke the erosion control permit; or

c. Issue a citation for each violation of the city's erosion control requirements.

(5) If any soil or material is deposited, by natural event or by an actor, on the right-of-way adjacent to a site or upon any adjacent site, in violation of any provision of this section or of any state statute regulating soil erosion, and the identity of the actor (property owner, builder, permittee, or responsible party) cannot be determined, the owner or person in whose name the permit was issued is presumed to be the person who caused or failed to prevent the deposit of soil or material from a site to the adjacent right-of-way or to an adjacent site. This presumption is rebuttable and shall have the effects and consequences set forth in V.T.C.A., Penal Code § 2.05, and as it may be amended. The city records relative to the permit are prima facie evidence of the contents of the record.

(6) If the erosion control devices have been properly installed and maintained, but the intent of the approved erosion control plan (maintaining sediment on site) is not met, the responsible party shall take action within 24 hours to control soil eroding from the site and clean up any sediment and shall have one week to submit a new erosion control plan. Work may continue during the review period. Implementation of this plan will be required within 24 hours of plan approval by

the director of engineering. If no plan is submitted within one week, then construction activities shall be halted until a new plan is submitted and approved.

Where there is an imminent threat to public health or safety or to private property, the enforcement process may be accelerated at the reasonable discretion of the director of engineering providing to the permittee reasonable notice of any intended action by said director of engineering.

~~(c)~~(d) *Class C misdemeanor.* Any person, firm, or corporation performing land disturbing activities and violating any of the provisions or terms of this article and not complying within the time periods stated in this article shall be deemed guilty of a class C misdemeanor and, upon conviction thereof, be subject to a fine not exceeding $500.00 for each offense, and each and every day, such violation shall continue shall be deemed to constitute a separate offense.

*(Code 1982, § 37-218; Ord. No. 99-04-39, art. 9, § H, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-41920. Appeals.

(a) *Appeal to director of development services.* Upon notice of noncompliance, a responsible party may appeal the city's decision to take deductions from his erosion control deposit pursuant to section 130-417, by filing a written appeal to the director of development services within seven days of the city's written notice of its intent to make such deduction for costs as allowed herein. An appeal filed pursuant to this section shall specifically state the bases for the aggrieved party's challenge to the city's authority to take deductions under this article.

(b) *Standard for appeals.* When reviewing an appeal filed pursuant to this section, the director of development services shall evaluate all evidence submitted. The burden of proving that a violation of this article occurred shall be on the city. The city shall provide evidence sufficient to reasonably support a determination that the responsible party failed to comply with the requirements of this article as alleged by the city.

(c) *Issuance of opinion by director.* Decisions of the director of development services shall be issued within 20 days of the city's receipt of the written appeal. Decisions of the director shall be final.

*(Code 1982, § 37-219; Ord. No. 99-04-39, art. 9, § I, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## ~~Sec. 130-421. Stream bank erosion.~~

~~Erosion control will be provided along streams and drainage channels. Section 130-266 provides for erosion hazard setback zones along streams for which natural channels are to be preserved. Where bank stabilization or other erosion protection measures are required to protect streams and channels, the stream bank protection and erosion damage mitigation measures provided in the Stream Bank Stabilization Manual for the city shall be utilized as approved by the director of engineering.~~

*~~(Code 1982, § 37-220; Ord. No. 99-04-39, art. 9, § J, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)~~*

**Secs. 130-42~~02~~—130-440. Reserved.**

# DIVISION 8. FUNDING OF IMPROVEMENTS

## ~~Sec. 130-441. City participation in improvements.~~

~~The required engineering analysis for control of development upstream and downstream of NCRS lakes will be financed by the city to provide the basis for appropriate floodplain management decisions.~~

*~~(Code 1982, § 37-231; Ord. No. 99-04-39, art. 10, § A, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)~~*

## Sec. 130-44**12**. On-site drainage improvements.

The cost of any drainage system improvements required by the proposed development and located completely within the limits of the proposed development shall be financed entirely by the developer, except as identified in section 130-443.

*(Code 1982, § 37-232; Ord. No. 99-04-39, art. 10, § B, 4-20-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## Sec. 130-44**23**. Off-site drainage improvements.

~~(a) The city shall fund through the drainage system funding mechanism, as funds are available, said availability and source of funds being determined by the city council, the design cost and cost of the drainage plan, as required in division 3 of this article, attributable to the existing 100-year flows in excess of the existing drainage system's capacities within the watershed prior to any proposed development. The city may fund the cost of improvements to increase the capacity and provide channel stability as needed for the existing drainage system to safely contain and discharge existing 100-year flows. Any funding of construction costs by the city is subject to recoupment by the city under the city's adopted drainage system funding mechanism.~~

(a) The initial constructing developer shall fund, at the developer's sole cost and expense, the design cost, construction cost and the cost of the drainage plan necessitated by the proposed development including the impacts from flows up to and including the 100-year flows generated from future improvements to developed and undeveloped tracts within the watershed and those tracts that lie outside the city limits, and all engineering, construction and other costs, including drainage studies or portions thereof, related to drainage within the watershed. ~~Upon completion of the construction of structure sizing or structure improvements and at the request of the developer funding construction, the city shall enter into a reimbursement agreement, approved by the city council, to enable the developer to be reimbursed as funds are available for the design cost, construction cost and the drainage plan cost that exceed any amounts charged to the constructing developer under the drainage system funding mechanism in accordance with the provisions of this article.~~

(b) Drainage improvements for streets defined on the thoroughfare plan may be reimbursed with roadway impact fees, following the guidelines established for those fees.

~~(c) The costs of construction of or improvements to downstream drainage systems to accommodate development outside the city limits, including channel stabilization measures, shall be charged to affected tracts within the watershed inside the city in accordance with the drainage system funding mechanism adopted by the city.~~

~~(d)~~(c) The developer shall sign an acknowledgement of payment on a form approved by the city as a condition of receipt of payment and developer shall forward a copy of the signed acknowledgment to the director of engineering.

*(Code 1982, § 37-233; Ord. No. 99-04-39, art. 10, § C, 4-20-1999; Ord. No. 99-11-92, § 1B, 11-16-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)*

## ~~Sec. 130-444. Reimbursements by city.~~

~~The city council shall not disapprove any development otherwise in compliance with this article where the developer agrees to fund any required improvements. Upon receipt of said agreement, the city shall be required to begin accumulating funding for any reimbursements described in section 130-443 by establishment of stormwater funding mechanisms through adoption of appropriate ordinance or resolution within two years of execution.~~

*~~(Code 1982, § 37-234; Ord. No. 99-04-39, art. 10, § D, 4-20-1999; Ord. No. 99-11-92, § 1C, 11-16-1999; Ord. No. 2006-12-145, § 1, 12-19-2006)~~*

## Secs. 130-44~~35~~—130-462. Reserved.

# DIVISION 9. ADOPTION

## Sec. 130-463. Adoption.

(a) Whereas, the present stormwater management ordinance of the city does not provide for adequate storm drainage facilities, flood control, and erosion control in the developed and developing areas within the jurisdiction of the city, and that the inadequacy constitutes an urgency in the interest of public health, safety, and welfare, this article will become effective on June 2, 2009, except that documents meeting one of the following conditions shall be exempted from provisions of this article exceeding requirements of the previously adopted stormwater management ordinance:

(1) Commercial, residential or industrial subdivision lots less than 2.5 acres in area where the plat was recorded or where a complete preliminary plat had been submitted and approved prior to July 1, 1999; and

(2) All on-site and adjacent infrastructure required by the then-existing ordinance was constructed and accepted prior to July 1, 2001.

(b) Any lot which is replatted shall meet the requirements of this article unless the resulting lots were contemplated and shown on an approved preliminary plat or conceptual site plan prior to July 1, 1999, which lots shall be exempt.

*(Code 1982, § 37-241; Ord. No. 99-04-39, art. 11, 4-20-1999; Ord. No. 2003-05-039, § I, 5-6-2003; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2006-12-145, § 1, 12-19-2006; Ord. No. 2009-05-027, § 13, 5-5-09)*