

CHAPTER 27

STORM WATER MANAGEMENT

27-1. Purpose.

The purpose of this storm water management chapter is to regulate the rate and volume of storm water runoff from land developments and to provide design standards for infrastructure which controls the transportation or movement of storm water in order to reduce the potential for damage to property and protect the public health, safety, and general welfare.

27-2. Applicability.

The requirements of this chapter shall apply to the following:

- (a) All subdivisions which require the approval of the City Council.
- (b) Any development after the date of adoption of this Chapter of the City Ordinance which results in the cumulative net addition of twenty thousand (20,000) square feet of impervious surface to the site, except that 27-2(a) shall not apply to development of a single-family or duplex residential home and accessory buildings in a residential zoning district.

27-3. Definitions.

For the purposes of these regulations, the following terms, phrases, words and their derivations shall have the meaning given in this section. When not inconsistent with the context, words used in the present tense include the future, words in the plural number include the singular, and vice versa for each. The use of the word "shall" in these definitions, and throughout the text of this title, is always mandatory and not merely suggestive. The following definitions shall be applicable in this Chapter:

- (a) "Administering authority" means the city employee, departments, agent, or designee empowered by the City Council to administer this chapter.
- (b) "Agricultural land use" means use of land for planting, growing, cultivating and harvesting of crops for human or livestock consumption and pasturing or yarding of livestock.
- (c) "Applicant" means any person who applies for a permit to undertake activities governed by this chapter.
- (d) "Best management practices" or "BMP" means a practice, technique, or measure that is an effective, practical means of preventing or reducing soil erosion or water pollution, or both, from runoff both during and after land development activities. These can include structural, vegetative or operational practices.
- (e) "Business day" means a day which the city's offices are routinely and customarily open for business.

- (f) "Chapter" means the Storm Water Management chapter in the City Code of Ordinances.
- (g) "City" means the incorporated city of Arcola, Illinois, and all lands within the boundaries thereof.
- (h) "Design storm" means the precipitation amounts that occur over a twenty-four (24) hour period that have a specified statistical recurrence interval and temporal distribution for a particular locale. For the purposes of this Chapter, the two-year, five-year, ten-year, twenty-five-year, fifty-year, and one hundred-year design storms utilize the SCS Type II distribution and have precipitation amounts as published in NOAA Atlas 14 Volume 2 Version 3.0 as follows:
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|---|-------------|
| (1) Two-year 24-hour precipitation: | 3.09 inches |
| (2) Five-year 24-hour precipitation: | 3.77 inches |
| (3) Ten-year 24-hour precipitation: | 4.35 inches |
| (4) Twenty-five-year 24-hour precipitation: | 5.18 inches |
| (5) Fifty-year 24-hour precipitation: | 5.89 inches |
| (6) One-hundred-year 24-hour precipitation: | 6.66 inches |
- (i) "Directly Connected Impervious Area" or "DCIA" means an impervious surface that is directly connected to a storm sewer or other conveyance via an impervious flow path.
- (j) "Existing development" means buildings and other structures and impervious area existing prior to the date of adoption of the Storm Water Management chapter in the City Code of Ordinances.
- (k) "Fill" means any act by which earth, sand, gravel, rock or any other material is deposited, placed, replaced, pushed, dumped, pulled, transported, or moved to a new location and shall include the resulting conditions.
- (l) "Financial security instrument" means a surety bond, performance bond, maintenance bond, irrevocable letter of credit, or similar guarantees submitted to the city finance director/city treasurer to assure that requirement of the ordinance are carried out in compliance with the stormwater management plan.
- (m) "Hydrologic soil group" or "HSG" has the meaning used in the runoff calculation methodology promulgated by the United States Natural Resources Conservation Service Engineering Field Manual for Conservation Practices.
- (n) "Impervious surface" means a surface that releases the rainfall as surface runoff during a large portion of the design rainfall event. "Rooftops", "sidewalks", "gravel

and pavement parking lots", and "street surfaces" are examples of impervious surfaces.

- (o) "Maximum extent practicable (MEP)" means a level of implementing best management practices in order to achieve a performance standard specified in this chapter which takes into account the best available technology, cost effectiveness and other competing issues such as human safety and welfare, endangered and threatened resources, historic properties and geographic features. MEP allows flexibility in the way to meet standards and may vary based on the performance standard and site conditions.
- (p) "New development" means any of the following:
 - (1) Structural development, including construction of a new building or other structures.
 - (2) Expansion or alteration of an existing structure that results in an increase in the surface dimension of the building or structure.
 - (3) Creation or expansion of impervious surface.
- (q) "Non-erosive velocity" means a rate of flow of stormwater runoff, usually measured in feet per second, that does not erode soils. Non-erosive velocities vary for individual sites, taking into account topography, soil type, and runoff rates.
- (r) "Peak flows" means the maximum rate of flow of water at a given point in a channel, watercourse, or conduit resulting from the predetermined storm or flood.
- (s) "Pervious surface" means any land cover that permits rain or melting snow to soak into the ground.
- (t) "Plan" means a storm water management plan required by this chapter.
- (u) "Post-development" means this term refers to the extent and distribution of land cover types anticipated to occur under conditions of full development that will influence the rainfall runoff and infiltration. This term is used to match pre- and post-development storm water peak flows as required by the chapter.
- (v) "Pre-development" means this term refers to the extent and distribution of land cover types present before the initiation of the proposed land development activity, assuming that all land uses prior to land-disturbing activity are in good condition as described in the Natural Resources Conservation Service Technical Release 55, "Urban Hydrology for Small Watersheds", commonly referred to as TR-55, and include existing impervious areas as defined elsewhere in this Chapter.
- (w) "Principal responsible party" means individual person assigned by the property owner to be responsible for installing and maintaining stormwater management improvements.

- (x) "Runoff" means the rainfall, snowmelt, or irrigation water flowing over the ground surface.
- (y) "Runoff curve number" or "RCN" has the meaning used in the runoff calculation methodology promulgated by the United States Natural Resources Conservation Practices.
- (z) "Sediment" means solid earth material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice, and has come to rest on the earth's surface at a different site.
- (aa) "Sedimentation" means the deposition of eroded soils at a site different from the on where the erosion occurred.
- (bb) "Site" means the entire area included in the legal description of the land on which the development activity is proposed.
- (cc) "Stormwater" means the flow of water which results from, and occurs during and immediately following, a rainfall, snow-melt or ice-melt event.
- (dd) "Stormwater management" means any measures taken to permanently reduce or minimize the negative impacts of stormwater runoff quantity and quality after land development activities.
- (ee) "Structure" means any human-made object with form, shape, and utility, either permanently or temporarily attached to, placed upon, or set into the ground, stream bed, or lake bed.
- (ff) "Time of concentration" or "Tc" means the time required for runoff to travel from the most hydrologically distant point of a watershed to the point of collection.
- (gg) "Unnecessary hardship" means that circumstance where special conditions, which were not self-created, affect a particular property and make strict conformity with regulation unnecessary burdensome or unreasonable in light of the purposes of this chapter.

27-4. Storm Water Management Ordinance Administration.

No construction activity on sites meeting the criteria described in section 27-2 shall occur until the city Administering Authority issues written approval of the stormwater management plan. The following process shall be followed to demonstrate compliance with this chapter

- (a) The landowner must provide the following when requesting plan approval:
 - (a) The name, mailing address, phone number, and other pertinent contact information of the owner of the property upon which the construction activity will occur. The property owner will be bound by the terms of this chapter and will be responsible for costs enumerated in this chapter.

- (b) A stormwater management plan containing the required information listed in section 27-5.
- (c) Copies of permits or permit applications or approvals required by any other governmental entity.
- (d) Evidence, if required by the city, of financial responsibility to complete the work proposed in the approved plan. The city may require a financial security instrument sufficient to guarantee completion of the project.

(b) The approval process shall consist of the following:

- (a) The applicant shall forward three copies of the stormwater management submittal for review to the Administering Authority's office who shall review the submittal for compliance with requirements of this chapter.
- (b) For all applications, the Administering Authority may request comments from other city departments and other governmental agencies.
- (c) Within twenty (20) working days of receiving the required information, the Administering Authority shall review the submittal and notify the applicant whether the application is approved, disapproved, conditionally approved, or whether additional information is required.
- (d) Any proposed modifications to an approved plan, construction schedule, or alterations to accepted construction sequencing shall be approved by the Administering Authority prior to implementation of the changes.

(c) Conditions of approval shall be as follows:

- (a) The plan shall be implemented prior to the start of any land disturbing or construction activity.
- (b) The property owner is responsible for successful completion of the stormwater management plan. The property owner shall be liable for all costs incurred, including environmental restoration costs resulting from noncompliance with an approved plan.
- (c) Approval shall constitute express permission by the property owner for the Administering Authority, or their designee, to enter the property prior to construction for inspection of pre-construction conditions of the property, and for inspections during the construction phase to assure compliance with the ordinance and approved plan.
- (d) Other conditions may be written into the approval by the Administering Authority.

(d) Final inspections and long-term maintenance of stormwater management practices shall be conducted as follows:

- (1) Within five (5) working days after installation of all practices in an approved stormwater management plan or after corrections to the installation of practices duly required as provided in paragraph 27-4(d)(3), the property owner shall notify the Administering Authority of such installation. Changes to the approved plan must be approved by the plan review staff prior to implementation. Changes to the approved plan will result in the re-submittal of record drawings that clearly indicates the changes from the approved plan.
- (2) Within five (5) working days of receiving notice of completion by the property owner, the Administering Authority, or their designee, shall inspect the property to verify compliance with the approved plan.
- (3) Within ten (10) working days of inspection, the Administering Authority shall provide the property owner, in writing, acceptance of installed practices or orders for correction of practices found to be inconsistent with the approved plan.
- (4) Within twenty (20) working days of acceptance by the City, the property owner shall provide as-built drawings of the drainage system including the computed in-place volume of all storage facilities in sufficient detail to determine that the constructed facility is substantially the same as that presented in the approved storm water drainage plan. The drawings shall be certified by a qualified Illinois professional engineer.
- (5) Periodic inspections and maintenance of the facility, in accordance with the schedule provided under paragraph 27-5(f) of this chapter, shall be conducted by the City. The City may, at its discretion, send delegated written orders for said inspections and maintenance to the property owner. The property owner shall be responsible for costs of inspections and maintenance, whether conducted by the City, contracted by the City, or contracted by the owner.
- (6) Easements shall be granted to the City to provide for maintenance of drainage facilities which serve the site. All known agricultural drainage tile located underneath areas to be developed shall be granted an easement if no written easement exists prior to development. Such easements shall be recorded in the Douglas County recorder's office before the Administering Authority issues any final approval except in the case of subdivisions where such easements are shown on the plat.

27-5. Storm Water Management Plan Requirements.

Stormwater management plans shall at a minimum include the following information:

- (a) A narrative describing the proposed project, including a description of the types of storm water storage areas to be used and an implementation schedule for the planned improvements.
- (b) A map showing the drainage areas for each watershed.
- (c) A summary of runoff peak flow rates for the 2-, 5-, 10-, 25-, 50-, and 100-year design storms, by watershed area, including;
 - (1) Pre-development peak flow rates.
 - (2) Post-development peak flow rates with no detention
 - (3) Post-development peak flow rates with detention.
 - (4) Runoff curve number (RCNs) determination calculations.
 - (5) Time of concentration (Tc) calculations.
- (d) A complete site plan prepared by a qualified Illinois professional engineer drawn to an easily legible scale, shall be clearly labeled, and shall include, at a minimum, all the following information:
 - (1) Property line and lot numbers.
 - (2) All buildings and outdoor uses, existing and proposed, including all dimensions and setbacks.
 - (3) All existing and proposed public and private roads, interior roads, driveways, parking lots, sidewalks, and other impervious surfaces.
 - (4) All natural and artificial water features, including, but not limited to lakes, ponds, streams (including intermittent streams), and ditches. Show ordinary high water marks and one hundred (100) year flood elevations of all waterways, if any.
 - (5) Field-delineated wetland boundaries, if any.
 - (6) The extent and location of all soil types as described in the Douglas County soil survey.
 - (7) Depth to bedrock.
 - (8) Depth to seasonal high water table.
 - (9) Existing and proposed elevations and contours on the project site, and for a sufficient distance from the site to determine watershed areas contributing to the site and downstream conveyance systems

- (10) Elevation, sections, profiles, and details as needed to describe all natural and artificial features of the project.
 - (11) Soil erosion control and overland runoff control measures, including runoff calculations as appropriate.
 - (12) Any other information necessary to reasonably determine the location, nature, and condition of any physical or environmental features.
 - (13) Location of all existing and proposed drainage features such as storm sewers, ditches, swales, stormwater detention facilities, drainiles, etc.
 - (14) The limits of site disturbance and a calculation of square footage of disturbed areas.
- (e) Engineered designs for all structural management practices.
 - (f) A maintenance plan and schedule for all permanent stormwater management practices.

27-6. Storm Water Management Performance Standards for Rate Control.

The submitted plan shall include stormwater management performance standards. Proposed design, suggested location and phased implementation of effective, practicable stormwater management measures for plans shall be designed, engineered, and implemented to achieve the following results:

- (a) All stormwater facilities shall be designed, installed, and maintained to effectively accomplish the following:
 - (1) For areas of the City that have limitations on runoff peak flow rates (either absolute rates or per-acre rates) established by a City-approved master planning document, limit post-development peak runoff rates as specified by the planning document.
 - (2) For areas without a study adopted by the city limiting runoff rates to specified levels, limit the post-development peak runoff rate for the two-, five-, ten-, twenty-five-, fifty-, and one-hundred-year design storms to the pre-development runoff rate for the same recurrence interval storm event.
- (b) All runoff calculations shall be according to the methodology described in the Natural Resources Conservation Service's Technical Release 55, "Urban Hydrology for Small Watersheds" (commonly referred to as TR-55) or computer programs based on this methodology such as HEC-1, HEC-HMS, TR-20, PondPak, HydroCAD or XP-SWMM. Alternate methods of analysis may be considered if their technical validity and accuracy is demonstrated and approved by the Administering Authority.
- (c) The maximum runoff curve number (RCN) used in such calculations for agricultural land shall be 62 for HSG A, 71 for hydrologic Soil Group B, 78 for HSG C, and 81 for HSG D. The curve numbers for other land uses shall be as specified in Table 2-2

of TR-55, utilizing separate calculations for the directly connected impervious areas (DCIAs) of the watershed and the unconnected impervious and pervious areas of the watershed.

- (d) The TR-55 flow segment method shall be used for determining time of concentration (Tc) for each watershed.

27-7. Storm Water Management Facility Design Standards.

- (a) Storm Water Storage Area Design Standards: The following standards shall govern design of storm water storage areas (detention facilities), and the types of facilities are listed in order of most preferred to least preferred. The land owner shall provide justification for the use of any given type of facility within the project narrative required in paragraph 27-5(a)(1).

- (1) Wet Bottom Detention Pond: The use of wet bottom detention ponds is recommended, as they help to minimize storm water pollution and provide positive site amenities. The following requirements shall apply to the design and construction of wet bottom detention basins:

- i. The volume below the normal water depth (permanent pool volume) shall be equal to or greater than the volume of the two-year storm runoff from the watershed served by the pond.
- ii. Minimum normal water depth (excluding safety ledges and side slopes) shall be five feet (5') provided, however, that if fish are to be maintained in the pond at least one-quarter (1/4) of the pond area shall be a minimum of ten feet (10') deep.
- iii. Measures shall be included in the design to minimize pond stagnation and to help ensure adequate aerobic pond conditions.
- iv. Storage facility side slopes shall not exceed a slope of three (3) horizontal units to one (1) vertical unit above the normal water level.
- v. Storage facility shall provide a safety ledge no more than one (1) foot below the normal water elevation which shall extend for a width of at least eight feet (8') and shall not exceed a slope of three (3) horizontal units to one (1) vertical unit.
- vi. Storage facility side slopes below the normal water level shall not exceed the stable angle of repose under saturated conditions of the soil material.
- vii. Discharge pipes less than twelve inches (12") in diameter and restriction orifice outlets of less than four inches (4") in diameter shall not be

allowed. Multiple discharge pipes from a storm water storage area are discouraged.

- viii. Warning signs shall be placed at appropriate locations to warn of deep water, possible flood conditions during storm periods, and other dangers that exist to pedestrian and vehicular traffic.

(2) Dry Bottom Detention Pond: A dry bottom detention pond may be considered only when the construction of a wet detention pond is demonstrated to be infeasible. The following requirements shall apply to the design and construction of dry bottom detention basins:

- i. Dry bottom storm water storage facilities should be designed where possible to serve a secondary purpose for recreation, open space, or similar types of uses which will not be adversely affected by occasional intermittent flooding and will not interfere with storm water management.
- ii. Storage basin excavations shall follow the natural land contours as closely as practicable. The geometry of dry bottom storm water storage basins shall be approved by the Administering Authority.
- iii. Minimum grades for turf area within the basin shall be two percent (2%) (50 units horizontal to 1 unit vertical) except that the minimum grade shall be one percent (1%) (100 units horizontal to 1 unit vertical) if tile underdrain is adequately installed underneath the turf areas.
- iv. Storage facility side slopes shall not exceed a slope of three (3) horizontal units to one (1) vertical unit.
- v. Temporary seeding, sodding or other soil stabilization measures as directed by the Administering Authority shall be established in the storm water storage basin immediately following the construction or reconstruction of these facilities. During the construction of the overall development, it is recognized that a limited amount of sediment buildup may occur in the storm water storage facility due to erosion. In no case shall the volume of the storage basin be reduced to less than ninety percent (90%) of the required volume during the construction phase of the development. Basins may be over excavated to provide additional storage volume for anticipated sedimentation during construction activities.
- vi. Permanent vegetation measures such as hydroseeding, conventional seeding, native seeding, nurse crops, sod installation, engineered soil, fertilizing, and associated stabilization techniques such as mulching shall

be utilized to control soil movement and erosion within the storage area. These measures shall conform to the guidelines in the latest edition of the "Illinois Urban Manual" available from the Association of Illinois Soil and Water Conservation Districts. The installation of these permanent measures shall take place only after the majority of construction and other silt and sediment producing activities have been completed. Prior to the establishment of permanent erosion control measures, the required capacity of the storm water storage area and the excess storm water passageway shall, if necessary, be restored by excavation of deposited material to provide one hundred percent (100%) of the required storage volume.

- vii. Discharge pipes less than twelve inches (12") in diameter and restriction orifice outlets of less than four inches (4") in diameter shall not be allowed. Multiple discharge pipes from a storm water storage area are discouraged.
- viii. Warning signs shall be placed at appropriate locations to warn of deep water, possible flood conditions during storm periods, and other dangers that exist to pedestrian and vehicular traffic.
- ix. The outlet control structure shall be provided with an interceptor for trash and debris, and it shall be designed and constructed to minimize soil erosion and not to require manual adjustments for its proper operation. The control structure shall be designed to operate properly with minimal maintenance or attention. The control structure shall be provided with safety screens for any pipe or opening, other than a weir, to prevent children or large animals from crawling into structures. The control structure shall be constructed to allow access to it at all times, including times of flood flow.

(3) Alternative Storm Water Storage Areas: The following alternative means of storm water storage may be used on development sites under two (2) acres in area or where practical necessity makes the use of Wet- or Dry-Bottom Detention Basins infeasible. The use of such alternative storm water storage areas is only permitted upon the approval of the Administering Authority. Storage of storm water runoff in public streets will not be allowed.

- i. Paved Storm Water Storage: Design and construction of the pavement base must ensure that there is minimal pavement damage due to flooding. Control structures in paved areas must be readily accessible for

maintenance and cleaning. Flow control devices will be required unless otherwise approved by the Administering Authority.

- ii. **Rooftop Storm Water Storage:** Rooftop storage of excess storm water shall be designed and constructed to provide permanent control inlets and parapet walls to contain excess storm water. Adequate structural roof design must be provided to ensure that roof deflection does not occur which could cause the roofing material to fail and result in leakage. Overflow areas must be provided to ensure that the weight of storm water will never exceed the structural capacity of the roof. Any rooftop storage of excess storm water shall be approved only upon submission of building plans signed and sealed by an Illinois licensed structural engineer or architect attesting to the structural adequacy of the design.
- iii. **Automobile Parking Lot Storage Areas:** Automobile parking lots may be designed to provide temporary detention storage on a portion of their surfaces. Automobile parking facilities used to store excess storm water may be constructed having a maximum depth of stored storm water of 0.6 foot; and these areas shall be located in the most remote, least used area of the parking facility. Parking lot storm water detention shall not be permitted in areas containing handicapped parking areas. Design and construction of automobile parking in storm water areas must ensure that there is minimal damage to the parking facility due to flooding, including minimal damage to the subbase. Warning signs shall be mounted at appropriate locations to warn of possible flood conditions during storm periods.
- iv. **Underground Storm Water Storage:** Underground storm water storage facilities must be designed for easy access in order to remove accumulated sediment and debris. These facilities must be provided with a positive gravity outlet unless otherwise approved by the Administering Authority.

(4) Off-site stormwater management is allowed provided that all of the following conditions for the off-site facility are met:

- i. The off-site facility is in place.
- ii. The off-site facility is designed and adequately sized to provide a level of stormwater management that meets the standards of this chapter.
- iii. The existing off-site facility has a legally-recorded easement to allow the City access, inspection, and maintenance rights.

(b) Storm water system element design standards: The following standards shall govern design of all components of the stormwater management system, including but not limited to basins, ditches, swales, storm sewers, gutters, and other conveyances.

- (1) Required Freeboard: A minimum of one vertical foot of freeboard shall be provided above the 50-year peak water surface elevation to the emergency overflow elevation of a wet- or dry-bottom storm water detention facility and to the top of other conveyance components (such as ditches, gutters, etc.) A minimum of one vertical foot of freeboard shall be provided above the 100-year peak water surface elevation to the top elevation of a wet- or dry-bottom storm water detention facility and to the lowest adjacent ground elevation at any existing or proposed building.
- (2) Street Flooding Protection: On local streets the depth of water at the crown of the street shall not exceed six inches during the 100-year storm event. On arterial streets and in commercial zoning districts the water level shall not exceed the top of curb elevation and the center twelve (12) feet of the street shall not be inundated during the 100-year storm event.
- (3) Off Site Runoff: If storm water runoff enters the proposed development from another parcel, it shall be demonstrated how this runoff is to be collected and conveyed. It will be the responsibility of the developer to provide an adequate and safe flow path for off-site runoff.
- (4) Connection to Existing Systems: Where a proposed stormwater management system outlets to an existing pipe, stream, river, or other drainage facility, it shall be demonstrated that the water levels in the receiving system have been properly accounted for as a boundary condition and will not adversely affect the hydraulic performance of the proposed system. If necessary, the proposed system elements may need to be raised to a higher elevation so as to avoid the impacts of downstream hydraulic restrictions.
- (5) Emergency Overflow: An emergency overflow path shall be provided for each storm water detention facility. This overflow structure shall be constructed to function without special maintenance and shall not increase the risk of erosion or endangering public safety. It shall be demonstrated that discharge from the emergency overflow will have adequate conveyance downstream of the development.
- (6) Outlets: Discharges from new construction sites must have a stable outlet capable of carrying the one-hundred-year design flow rate at a nonerosive velocity. Outlet design must consider flow capacity and flow duration. This requirement applies to

both the site outlet and the ultimate outlet to stormwater conveyance or water body.

27-8. Construction Site Erosion Control.

The developer shall take such steps as necessary to minimize soil erosion during and after construction. An erosion control plan shall be submitted to comply with Subparagraph 27-5(d)(11) of this Chapter, and shall conform to the guidelines in the latest edition of the "Illinois Urban Manual" available from the Association of Illinois Soil and Water Conservation Districts. Further, the following factors shall always be observed during any phase of development construction:

- (a) Natural vegetation should be retained and protected wherever possible. Areas immediately adjacent to natural watercourses should be left undisturbed whenever possible.
- (b) The smallest practical area of land should be exposed for the shortest practical time during development.
- (c) Provisions shall be made to accommodate the increased runoff caused by changed soil and surface conditions during and after development in accordance with this chapter.
- (d) Permanent vegetation and structures should be installed as soon as practical during development.

27-9. Protecting Existing Drainage.

(a) Protection of natural drainage features shall be accomplished by the following:

- (1) Existing perennial streams shall not be modified to accommodate on site flows of storm water. Stream banks may be modified, however, incident to the installation of a storm water runoff outfall, necessary to ensure safety or bank stabilization, and/or for the improvement of aquatic habitats.
- (2) Other natural drainage features such as depressional storage areas and swales may be incorporated into the drainage system.
- (3) No fill shall be placed nor grade altered in such a manner that it will cause surface water upstream of the development to pond or direct surface flows in such a way as to create a nuisance.

(b) Protection of existing agricultural drainage improvements shall be accomplished by the following:

- (1) The outlet for existing agricultural drainage tile will be located and the capacity of the outlet shall be maintained for the watershed upstream of the development area.
- (2) Existing easements for any agricultural drainage tile located underneath areas that will be developed shall be preserved. If no easement exists an easement shall be granted for access and maintenance as provided in this chapter. Such easements shall be of sufficient width and located to provide for continued functioning and necessary maintenance of drainage facilities.
- (3) No buildings or permanent structures including paved areas but excluding streets, sidewalks, or driveways, which cross the easement by the shortest possible route may be located within the easement without the consent and approval of any public body to which the easement is granted.
- (4) All agricultural drainage tile located underneath areas that will be developed shall be replaced with nonperforated conduit to prevent root blockage provided, however, that drainage district tile may remain with the approval of the drainage district.
- (5) Agricultural drainage tile which, due to development, will be located underneath roadways, drives, or parking shall be replaced with ductile iron, or reinforced concrete pipe or equivalent material approved by the reviewing authority as needed to prevent the collapse of the agricultural drainage conduit.
- (6) Agricultural drainage tile may be relocated within development areas upon approval of the Administering Authority and the drainage district responsible for maintaining the tile (if applicable). Such relocation shall maintain sufficient slope and capacity to prevent sedimentation and to prevent an increase in scouring or structural damage to the conduit. Such relocation approvals shall consider the interests of those landowners who are served by the tile.
- (7) No storm sewer inlet, outlet, or detention basin outlet shall be connected to agricultural drainage tile unless flow is restricted to an amount equal to or less than the discharge capacity of the tile. Such connection shall only be made with the approval of the Administering Authority and the drainage district responsible for maintaining the tile (if applicable). Such connection approvals shall consider the interests of those landowners who are served by the tile.

27-10. Variances.

The granting of variances is not consistent with the purpose of this chapter. It is, therefore, essential that every effort be made to comply with the requirements contained in this chapter.

However, when, in the opinion of the land owner, the standards of this chapter place an undue hardship on a specific development proposal, the land owner may apply for a variance.

(a) Upon the land owner's request, the Administering Authority shall review the request and prepare a recommendation for the City Council to consider.

(b) Only the City Council may grant a variance. Upon holding a public hearing on the matter in a manner prescribed by State law, the Council shall rule on the variance at its earliest convenience after the hearing. A variance may be granted if the applicant demonstrates all of the following:

(1) The property cannot yield a reasonable return on investment if the variance is not granted;

(2) The relief requested is the minimum necessary to meet the requirements of this Chapter to the maximum extent practicable;

(3) There will be no threat to public health and safety or to beneficial stream uses and functions, especially aquatic habitat, or creation of a nuisance;

(4) There will be no additional public expense such as for flood protection, rescue or relief operations, policing, or repairs to streambeds and banks, roads, utilities, or other public facilities;

(5) The applicant's circumstances are unique such that the proposed variance will not serve as a special privilege, but will alleviate a demonstrable hardship not shared by other property;

(6) The granting of the variance will not alter the essential character of the area involved including existing stream uses;

(7) All other agency permits have been obtained;

(8) The applicant did not know or deliberately place himself or herself in the position of hardship;

(9) Such other considerations applicable to the particular property as determined by the City Council.

(c) The City may require an independent study and report by a qualified professional engineer or other appropriate qualified professionals, the cost of which shall be paid by the applicant for the variance. The purpose of the study shall be to provide evaluations of the applicant's proposed development as they may affect stream flows and hydraulic characteristics of the watercourse and to also evaluate possible alternatives to the applicant's proposal.