PART V - DRAINAGE POLICY

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DRAINAGE POLICY

A. GENERAL

This section discusses the principal public policy issues that are integral to implementing a drainage management plan. Specific policy recommendations in this section were used to develop the stormwater design criteria manual, the capital improvement project list, and maintenance program recommendations presented in other sections of this report.

Because typical urban land ownerships are small, and approximately 15 percent of the land area is typically owned by the municipality itself in the form of street right-of-way, it's not practical for each landowner to individually provide and maintain a private drainage system. Therefore, municipalities have by necessity and tradition assumed responsibility for establishing specific drainage systems within their boundaries and have become the "owners" of most structural drainage systems. In so doing the municipality also accepts the corresponding duty to maintain those improved facilities. For the City to reasonably manage drainage in its boundaries it must:

- Specifically define a common level of service to be established.
- Provide for the construction of physical components of the drainage system.
- Control the use of land to avoid the obstruction of drainage.
- Provide for physical maintenance of drainage system improvements to ensure their function is not impaired.

B. GENERAL POLICY OBJECTIVES

Equitable division of responsibility for management of drainage between the City and private property owners is a fundamental consideration in establishing policies for providing drainage service. Pure equity must be tempered with practical constraints. The ultimate objective is to provide an equal and acceptable level of drainage service to all citizens and to fairly apportion the cost of that service.

C. NEW CONSTRUCTION AND DEVELOPMENT

It is recommended that the City adopt the "Stormwater Management Criteria" manual, a copy of which is presented in Appendix I. This manual defines what is generally accepted as a reasonable level of service for storm drainage systems and outlines current standards of practice and technology for design of those systems. Included in the specific policy recommendations contained within the manual are the following:

1. All enclosed and improved open channel drainage system components shall be designed for the 10-year return period peak flow or the capacity of the existing upstream improved system, whichever is greater.

2. Enclosed pipe-inlet systems will be required under the following conditions.
   a. Within the right-of-way of improved streets regardless of system design capacity.
   b. In all areas:
      1) Where the design peak discharge of a 10-year return period storm is less than 200 cubic feet per second (CFS).
      2) Where the bank line of an open channel, either natural or improved, would be within 30 feet of any habitable structure.
   c. In residential areas:
      1) Where more than one lot or ownership tract is tributary and the 10-year peak discharge equals or exceeds 8 cfs.
      2) Where the bank line of an open channel, either natural or improved, would be within 60 feet of any existing or proposed residential structure.

   Although higher in initial cost than open channels, enclosed systems have less maintenance requirements and a longer life cycle. Because they are enclosed there is less potential hazard to the public, and they generally meet with greater public acceptance. However, surface overflow space must still be provided to assure the passage of discharges that exceed the design capacity of the enclosed system.

3. Improved open channels may be used where the 10-year design flow is greater than or equal to 200 cfs. Channel lining is required for flows less than 500 cfs. Banklines must be 60 feet or more from residential structures and 30 feet or more from any habitable structure in areas other than residential.

4. Existing natural channels may be retained in the drainage system of a developed area where the 10-year design flow is equal to or greater than 500 cfs and flow velocities do not exceed recommended maximums based on soils present in the channel bed and bank.

5. Overflow channels will be required in all areas in addition to, and above, the conveyance elements, whether open or enclosed. Overflow channels shall have sufficient capacity, when combined with the capacity of the conveyance element, to convey the 100-year peak discharge without damage to land or buildings. Restrictions on land use within the overflow areas will be required to prevent obstruction of flow.

6. Detention facilities shall be provided in connection with land development where recommended by the Stormwater Management Master Plan.

7. Dedication of easements for all improved system components to be maintained by the City shall be required as well as maintenance access connections to street right-of-way. Easements will also be required, although not for City maintenance purposes, along natural, or unimproved, channels and around private detention facilities other than parking lots, rooftop detention or similar situations.

In addition to these specific criteria, it is recommended that the City adopt regulations requiring erosion control plans for all new construction projects to prevent siltation on streets and in the existing downstream drainage system.

D. MINOR SYSTEM IMPROVEMENTS IN DEVELOPED AREAS

For a number of years, the City has required developers to construct curb and gutter and storm sewer systems in their developments and dedicate them to the City for operation and maintenance. The capital cost of these "minor system" improvements was, in effect, paid for by individual property owners through special assessment to their property. However, some areas within the corporate limits, primarily those annexed after development, have no such improved facilities. Their "minor system" consists of small roadside ditches and driveway culverts. Property owners in these areas have not made an individual investment commensurate with that of other property owners.

Because of the different levels of individual investment, it is not equitable for the City to upgrade the unimproved minor drainage system simply to relieve the adjoining property owners of what may be perceived as a nuisance. The City as a whole, however, derives specific and general benefits from unimpeded traffic flow and free access by emergency and public service vehicles so it is necessary that the City maintain the unimproved minor system to assure its continued function. In addition, since the runoff from the street right-of-way is a part of the total system demand, and the culverts and ditches on the right-of-way act to concentrate and channelize flow at its point of release to private property, the City has the common duty to control its release to avoid damage to such property. Therefore, it is recommended that the City:

1. Construct new or upgraded minor system drainage facilities only when water discharged from a public street or other City property is causing damage in the form of erosion or structure flooding to the downstream property.
2. Require individual property owners to install and repair driveway culverts on streets not having curb and gutter with enclosed drainage systems.
3. Replace cross-road culverts if their structural condition is not serviceable, or when hydraulic capacity is less than 2-year return period demand and the deficiency causes structure flooding upstream from the culvert.

4. Replace or extend enclosed pipe-inlet systems only when structural failure has occurred, or is impending, or when the hydraulic capacity is less than a 5-year storm demand and structure flooding has occurred or is predicted to occur by competent professional advice.

E. STORM WATER DETENTION

Once storm water detention is constructed it becomes an integral part of the drainage system. Its failure to function adversely affects the remaining downstream elements of the drainage system making it imperative that it be maintained. At the same time, the design of detention facilities often incorporates the detention function with other private beneficial uses of the storage area such as parking lots, community recreation areas for homeowners associations, etc. That joint use makes it impractical and undesirable to require dedication of the space to the City.

Because of the special administrative difficulties and the certain need for regular periodic maintenance expense associated with most detention facilities for such items as sediment removal, mowing, etc., detention should only be employed in cases where its use will:

- Permit desirable development upstream from deficient sections of the drainage system which can't economically be upgraded to convey the increased discharge.
- Provide a clear economic benefit to the City when compared with the "no detention" alternative.

However, if the City elects to require the provision of stormwater detention on developments where its use is deemed in the best interest of the City, and does not require the provision of detention in connection with other developments where there is no economic or functional benefit to the City, then an inequitable penalty accrues to some land. The detention provider is, in effect, required to pay for general inadequacies in the existing drainage system. Therefore, it is recommended that the City:

1. Require storm water detention in connection with land development in areas identified in the Stormwater Management Master Plan.

2. Require dedication of detention basins serving more than one property owner to the City for operation and maintenance.
3. Require owner maintenance of private detention facilities such as residential subdivision ponds owned by homeowners associations, parking lot impoundments, roof-top basins, and other similar facilities.
4. Consider establishment of an "impact fee" system for drainage, generally to be paid as a condition of receiving permits to develop, that is waived when detention is provided thus eliminating the inequalities in development requirements.

F. EXISTING SYSTEM CAPITAL IMPROVEMENTS

When an existing drainage system component is replaced, the replacement unit should be designed and constructed to meet current City criteria and standards. The mere failure of any existing element of the drainage system to meet those current standards for hydraulic capacity should, however, not be cause for automatically planning and budgeting for its replacement. Sound and maintainable facilities should only be replaced when their lack of capacity results in, or will result in, economic consequences commensurate with the cost of replacement, or when there is an overriding public safety or property damage issue involved.

The following recommendations apply to the upgrading of existing drainage system elements that have been previously provided by developers and accepted by the City; those which cross or are located in public right-of-way or other City-owned property; or those that are major system elements not subject to developer improvement in connection with the development of open land. It is recommended that the City replace facilities where:

1. Structural failure has occurred or is impending.
2. Building flooding occurs at 25-year or more frequent intervals.
3. Erosion on private property due to direct discharge from public drainage facilities will eventually either endanger buildings or otherwise adversely affect the use of the property.

4. Uncontrolled discharge of water from public right-of-way onto adjacent private property creates a recurring nuisance and the lack of maintenance control for the property owner.

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