



UDC Update Request Application for External Parties
(neighborhoods, external agencies, stakeholders, etc.)

Part 1. Applicant Information

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Signature: Deborah Reid Digitally signed by Deborah Reid
(Include title if representing a governmental agency or public/private organization) Date: April 22, 2020
Date: 2020.04.22 16:50:53 -05'00'

Part 2. Basis for Update (check only one)

- ☐ Clarification amendments to provide for ease of interpretation and understanding of the existing provisions of the UDC
(Note: Clarification amendments should not change or alter the intent or meaning of existing UDC provisions)
- ☐ Editing change that does not alter the impact of the provisions being addressed including changes such as spelling,
grammar correction, formatting, text selection, or addition of text in compliance with existing ordinance, statutes or case law
- ☐ Completed Rule Interpretation Determination (RID)
- ☒ Requested by the Zoning Commission, Planning Commission, Board of Adjustment, HDRC, City Council or other appropriate
city board or council (CCR, resolution or signature of the chairperson is required)

Part 3. Reason(s) for Update (check all that apply)

- ☐ Modify procedures and standards for workability and administrative efficiency
- ☐ Eliminate unnecessary development costs
- ☐ Update the procedures and standards to reflect changes in the law or the state of the art in land use planning and urban design
- ☒ See Part 4 (if none of the provided choices in this section apply, please discuss the reasons for the proposed update in Part 4)

Part 4. Summary of Proposed Update with Suggested Text (see application instructions)

In order to reduce cumulative impacts as watershed approach full build-out, this
amendment would make on-site stormwater detention a requirement of participation in the
Regional Stormwater Management Program (RSWMP).

Summary of Amendment

These changes incorporate concepts of regional management and green infrastructure into Regional Stormwater Management Program (RSWMP) Overview. They would also require effective regional detention or flood control funding in the same sub-watershed as the development as part of participation in RSWMP. They include 'erosion, scour, and deposition' as examples of adverse impacts. For infill development, they would require stormwater management for reuse of an existing building unless there is no increase in impervious cover.

Supporting Goals

Implement the following Natural Resources and Environmental Sustainability (NRES) Goals included in SA Tomorrow.

NRES Goal 1: San Antonio protects the natural environment and ensures sustainable land use and development.

NRES Goal 6: San Antonio is a national leader in storm water management best practices and low impact development (LID) design.

NRES P19: Continue to manage the capacity and transmission capabilities of the storm drainage network to prevent degradation of natural resources.

NRES P20: Encourage preservation of 100-year floodplains as natural drainage ways without permanent construction, unnecessary straightening, bank clearing or channeling.

APPENDIX H - STORM WATER DESIGN CRITERIA MANUAL

CHAPTER 4 - PLANNING

4.1 - Introduction

This chapter will touch on the aspects of planning in regard to drainage.

Planning for different components of a project is crucial to the success of the project, whether the project is a residential subdivision, commercial development, or a capital improvement project. The Design Engineer must consider the impacts to the existing drainage systems as well as the aesthetics of the planned improvements.

The City of San Antonio had commissioned a study in the 1950s to determine drainage improvement needs throughout the City of San Antonio (City Drainage Master Plan). These improvements cost hundreds of millions of dollars and a number of the improvements were funded over the years through bond programs and other funding sources. In more recent years, following the development of the Digital Flood Insurance Rate Maps (DFIRM) for Bexar County, a number of additional flooding issues were realized throughout Bexar County. These flooding issues were studied and a Regional Drainage Master Plan was developed to address these issues.

The following should be considered during the development of the project:

Multi-use facilities are encouraged, but not required. Multi-use facilities allow for water quality, satisfy National Pollutant Discharge Elimination System (NPDES) requirements, enhance ground water recharge, provide open space, provide recreation or other amenities, and/or provide habitat. Multi-use facilities may be utilized so long as the facility meets the standards set forth in Chapter 2.8 of this manual and does not increase the rate or volume of erosion above that which would result from the use of a facility without multiple uses. Utilization of multi-use detention facilities to alleviate existing flooding problems, enhance and provide amenities for older neighborhoods, and support the revitalization of economically depressed areas is encouraged in public and private redevelopment initiatives.

4.2 - Regional Drainage Master Plan (Watershed Master Plan)

The Bexar Regional Watershed Management (BRWM) is a partnership among Bexar County, the City of San Antonio, the San Antonio River Authority and 20 suburban cities to address flood management and [water quality concerns on a regional basis](#).

An Inter Local Agreement for Bexar Regional Watershed Management program was approved in May 2003 and amended in April 2010 between the managing partners (Bexar County, the City of San Antonio, and the San Antonio River Authority). The oversight and implementation process for this program includes elected officials, entity staff at all levels, and most importantly, a citizens' advisory process. The program was set up to develop and implement efficient and economic flood control throughout Bexar County.

A number of potential Capital Improvement Projects have been identified through the BRWM Watershed Master Plans. A number of these projects within the Watershed Master Plan have been funded and constructed.

4.3 - Regional Storm Water Management Program (RSWMP)

This section represents the policies of the RSWMP and understanding this section will enable the design engineer to provide utility and transportation infrastructure, capital improvement projects, public facilities, and development projects meeting the policies of the UDC.

4.3.1A - RSWMP Overview [and Community Goals](#)

The City of San Antonio determined that regional storm water management based on a watershed approach, is preferable and will include ~~to~~ site-specific storm water mitigation. Regional management will be crucial in mitigating drainage and flooding impacts from large storm events and in maintaining the ecological functioning of floodplain systems. The regional portion of the storm water management program provides for the administration, planning, design, construction, and operational management of regional storm water facilities (RSWF). Regional storm water management uses a watershed-wide approach to analyze potential flooding problems, identify appropriate mitigation measures and select site locations and design criteria for RSWF. These RSWF include, but are not limited to, regional detention and retention ponds, watershed protection, land purchase, waterway enlargement, channelization, and improved conveyance structures utilizing green infrastructure, natural channel design and restoration techniques that will incorporate water quality and debris capture components. The regional storm water management program allows developers to participate in the program to meet requirements greater than those for a twenty-five (25) year storm rather than constructing ~~the on-site detention controls required by this section~~, when the City has determined that the increased runoff from the proposed development will not produce a significant adverse impact to other properties ~~as outlined in 4.3.1C~~ or on those features receiving the runoff discharged from the site.

4.3.1B - RSWMP Participation

All developers shall participate in the RSWMP in the following ~~one (1) of three (3)~~ ways:

1. Payment of a fee in lieu of on-site detention in combination with on-site detention as outlined in 2.6.3 (except in areas designated by the Director of TCI as "mandatory detention areas"). The fee schedule is included in UDC Appendix "C," section 35C-109.
2. Construction of on-site water quality facilities where the remainder of runoff will be mitigated by ~~and~~ ~~or~~ off-site measures located within the same sub-watershed (typically storm water detention facilities) to mitigate increases in runoff resulting from the proposed development anticipated from ultimate development of the watershed plus freeboard (based on Table 9.3.14).
3. ~~Construction or~~ ~~P~~ participation in the construction of an off-site RSWF within the same sub-watershed in combination with on-site detention as outlined in 2.6.3 to mitigate increased storm water runoff anticipated from ultimate development of the watershed.

4.3.1C - Adverse Impact

To determine a significant adverse impact for the purposes of this section, the following criteria will be used to analyze the receiving storm water facilities within two thousand (2,000) linear feet of the project, to the nearest downstream RSWF, or to the nearest floodplain with an ultimate analysis accepted by the city, whichever is less. For lots less than three (3) acres in size, adverse impact analyses need only extend to where tributary drainage areas equal one hundred (100) or more acres.

1. The storm water surface elevation (WSE) in receiving facility [natural or improved] drainage systems within two thousand (2,000) linear feet of the proposed development may not be increased by the proposed development unless the increased WSE is contained within easements or rights-of-way or the receiving systems have sufficient capacity to contain the increased WSE without increasing flooding to habitable structures.
2. Ultimate development runoff at low water crossings during regulatory (five (5), twenty-five (25), and one hundred (100) year frequency) storm events must not classify the low water crossing as "Dangerous to Cross" based on Figure 4.3.1.C. If the ultimate WSE exceeds this criterion, the crossings may be improved to the standards of this chapter in lieu of providing onsite storm water control measures or paying a fee.
3. Three (3) development conditions shall be analyzed with each adverse impact analysis.

Existing Conditions. This refers to current development conditions in the watershed and on site. This shall be used as the baseline for determining the impact of the development of the site, or the watershed, to other properties or drainage systems.

Proposed Conditions. This refers to existing conditions with the proposed development added. This shall be used to determine if the increased runoff from the proposed development results in an adverse impact to other properties or drainage systems including the physical impacts due to erosion, scour and deposition associated with increased frequency and volume of runoff that negatively alters the ecological functioning of the receiving water body. The NRCS allowable velocity and sheer stress method will be used to calculate impact and capacity of the receiving water body/floodplain within the watershed at ultimate conditions.

Ultimate Conditions. This refers to ultimate development conditions within the watershed. In addition to being used to design proposed drainage facilities (subsection "4.3.2 System Criteria," below), this condition shall also be used to determine if the increased runoff from the ultimate development of the watershed results in an adverse impact to other properties or drainage systems.

In addition to verifying low water crossing capacity (item 2, above), this analysis shall be used to assist the city in identifying watershed wide storm water management issues.

4. Minimum standards for identifying Dangerous Roadway conditions are identified in Figure 4.3.1C below.

Note: The City of San Antonio contends that any runoff crossing a roadway creates a potentially dangerous condition. Figure 4.3.1C represents the maximum flow depth over roadways that the City will accept in adverse impact analyses signed and sealed by the licensed professional engineers.

Figure 4.3.1C 1 - Roadway Flow Depth vs. Velocity

5. The City of San Antonio may reject a developer's request to participate in the RSWMP by payment or mitigation and require on-site detention. The City's decision will be based on the knowledge of significant adverse impacts that would be created by ultimate development of the watershed regardless of the distance from the development to the area of concern. The City may also reject a request for participation when it is not in the best interests of the RSWMP. The developer is recommended to meet with TCI Storm Water Division to discuss participation options prior to commencing design of a project. This preliminary meeting in no way relieves the developer of his responsibility to prepare the necessary engineering documentation to support his request for participation.

4.3.1D - Fee in Lieu of

The storm water development fee in lieu of ~~on-site detention~~ must be paid prior to a plat being released for recordation by the City of San Antonio or the issuance of a building permit. The fee shall be determined in accordance with the provisions of UDC Section 35-C109, storm water management fees.

4.3.2 - System Criteria

All storm water management facilities, or combination of facilities, shall be designed for ultimate development. Facilities with drainage areas less than one hundred (100) acres shall be designed for a twenty-five (25) year storm. Facilities with drainage areas over one hundred (100) acres or areas within a FEMA designated floodplain shall be designed for a one hundred (100) year storm or a twenty-five (25) year storm plus freeboard (based on Table 9.3.14) if that elevation is higher. Detention facilities and streets are exceptions to the frequency criteria cited above. Detention facility outflows will be designed for five (5) year, twenty-five (25) year and one hundred (100) year frequency storms. Refer to subsection 6.2 for specific drainage design criteria for streets.

4.3.3 - Responsibility to Accept Storm Water

The owner or developer of property to be developed shall be responsible for the conveyance of all storm water flowing through the property. This responsibility includes the storm water flowing onto the property by any other developed property as well as the drainage naturally flowing through the property by reason of topography. Future upstream development shall be accounted for by assuming ultimate development when sizing drainage systems as specified in this section. Existing detention facilities may be accounted for in the ultimate analysis and shall be incorporated in the models if included.

4.3.4 - Positive Overflow Pathways

Storm water management facilities for local drainage systems will be designed to ensure that a positive overflow pathway is provided to the nearest one hundred (100) year conveyance facility. The overflow pathway must be delineated on a plan that shows all existing structures in the vicinity impacted by the overflow pathway.

4.3.5 - Maintenance

Maintenance of publicly owned facilities will be the responsibility of the City. Maintenance of private facilities is the responsibility of the property owner or the community association and must be specified in the maintenance schedule submitted to the City. A maintenance schedule for both publicly owned and privately owned facilities must be approved by the Director of TCI prior to the approval of construction drawings.

4.3.6 - Inspection

Authorized personnel from the City of San Antonio or Bexar County within the ETJ shall conduct periodic inspections of these facilities and structures. Any required repairs will be consistent with current construction standards. Maintenance issues identified by the City, County, or State during inspections shall be the responsibility of the current owner.

4.3.7 - New Development

Peak storm water runoff rates from all new development shall be less than or equal to the peak runoff rates from the site's predevelopment conditions for the five (5), twenty-five (25), and one hundred (100) year design storm events, except as provided in section 4.3.1 above.

4.3.8 - Redevelopment

Peak storm water runoff rates from an area of redevelopment due to zoning or replatting shall be less than or equal to the peak runoff rates produced by existing development conditions for the five (5), twenty-five (25) and one hundred (100) year design storm events, except as provided in section 4.3.1 above.

4.3.9 - Low Impact Development

The City of San Antonio encourages the installation of low impact development (LID) features such as bioretention, permeable pavement with storage, engineered swales, engineered infiltration storm drain systems, and engineered wetlands. For all developments proposed within the City of San Antonio jurisdictional boundaries, these features may be considered on-site detention features to the extent that they reduce the storm water runoff expected downstream as a result of such developments. It shall be the developer's responsibility to demonstrate that said LID features provide such benefit. Credit toward RSWMP fees will be considered and approved on a case by case basis by the Director of TCI.

4.4 - Subdivision/Development

This section represents the policies of the City of San Antonio Unified Development Code as it relates to drainage and is included as a reference for the design engineer.

4.4.1 - Major Plat

A Major Plat is a subdivision of property into five (5) or more lots or has infrastructure that is required to facilitate the development of the property. If there is an alteration of an existing floodplain or any drainage facility or other infrastructure is required, then the platting of property will fall under a Major Plat. A Storm Water Management Plan Report is required for the plat. Should the Storm Water Management Plan Report show no adverse impact within the reach downstream of the proposed development per section

4.3.1C and the City has reviewed and concurs with the findings; the developer may participate in the RSWMP by payment of the "Fee in Lieu of" (FILO) instead of providing detention.

4.4.2 - Minor Plat

A Minor Plat is a subdivision of property into four (4) or less lots and no infrastructure is required to facilitate the development of the property. A Storm Water Management Plan Report is required for the plat. Should the Storm Water Management Plan Report show no adverse impact within the reach downstream of the proposed development per section 4.3.1C and the City has reviewed and concurs with the findings; the developer may participate in the RSWMP by payment of the "Fee in Lieu of" (FILO) instead of providing detention.

4.4.3 - Replat

A replat is for property that was previously platted and the property will be reconfigured or further subdivided. A Storm Water Management Plan Report is required for the replat. If the previous plat had paid a fee to participate in the FILO and the Storm Water Management Plan Report show no adverse impact within the reach downstream of the proposed replat per section 4.3.1C and the City has reviewed and concur with the findings, the developer may continue to participate in the FILO, by paying any additional fees if required.

4.4.4 - Amending Plat

An Amending Plat is for correcting an error on a previously approved or recorded plat. There should be no changes to drainage facilities or infrastructure. A letter will be required with the plat submittal that there are not changes to drainage facilities or infrastructure.

4.4.5 - Master Development Plan (MDP)

The Master Development Plan is a conceptual long range development plan that provides an overall view for residential or commercial development. The MDP requires a Storm Water Management Plan Report to show what impacts the development might have on existing infrastructure and floodplains. The SWMP Report may require updating if the report is referenced during plat reviews. In addition, if the MDP SWMP Report is submitted with a plat review, a letter identifying what pages of the report are relevant to the plat area along with an exhibit identifying where the platted area is in relation to the overall MDP area will be required.

4.4.6 - Planned Unit Development (PUD)

The Planned Unit Development is considered under the Master Development Plan. The streets within a PUD may be public or private. Drainage facilities shall conform to storm water management standards. A Storm Water Management Plan Report is required for the PUD.

4.4.7 - Enclave

An Enclave subdivision will have private streets. The private streets are design and constructed to public street standards. Drainage facilities shall conform to storm water management standards. A Storm Water Management Plan Report is required for the Enclave subdivision.

4.4.8 - Master Plan Community District (MPCD)

The Master Plan Community District is considered under the Master Development Plan. The streets within a MPCD may be public or private. Drainage facilities shall conform to storm water management standards. A Storm Water Management Plan Report is required for the MPCD.

4.4.9 - Master Development Pattern Plan (MDPP)

The Master Development Pattern Plan is considered under the Master Development Plan. Drainage facilities shall conform to storm water management standards. A Storm Water Management Plan Report is required for the MDPP.

4.4.10 - Inner City Reinvestment/Infill Policy (ICRIP)

A development within the ICRIP target area and fit into one of the following two categories; Residential, Mixed use Development; or Commercial/Industrial Development with drainage facilities shall conform to storm water management standards. A Storm Water Management Plan Report is required for the development. The development may qualify for Waivers of City and SAWS fees. If the development within the ICRIP area is less than twenty thousand (20,000) square feet then the development is exempt from the FILO fee. If the development within the ICRIP area is greater than twenty thousand (20,000) square feet then the development is subject to fifty percent (50%) of the FILO fee.

4.4.11 - Infill Development Zone (IDZ)

A development within the IDZ area shall comply with the storm water management standards with the following exception. The reuse of an existing building ~~or the development of an existing parcel or lot of less than ten thousand (10,000) square feet~~ where there is not increase in impervious surfaces. The development within an IDZ area is exempt from the FILO fee.

4.4.12 - Redevelopment Projects

A development project that redevelops an existing site shall conform to storm water management standards. A Storm Water Management Plan Report is required for the redevelopment. If the existing site included some impervious cover prior to 1997 and the development is eligible for the FILO, then the fee would be paid on additional impervious cover. The exception to the FILO fee would be if the redevelopment is within an ICRIP or IDZ areas.

4.5 - Planning for the Floodplain

There are a number of floodplains across the county that may impact a development or the development may impact the floodplain. The engineer should consider, during the planning of the development, to minimize the impacts to the floodplain.

Where the floodplain is part of the development, and where possible, multiple uses of drainage facilities and open space shall be incorporated by the owner or developer of a new subdivision. Alternative uses such as:

- public recreation
- horse/bike/hiking trails
- walking paths
- nature preserves
- wildlife habitat areas, etc.

are encouraged subject to the approval of the Director of TCI.

The above alternative uses should enhance the floodplain and provide a benefit to the development.

4.6 - Planning for Drainage Systems

There are many components that may make up the drainage system within a development. These components should work together to provide an economical solution for the conveyance of storm water to an outfall location.

Should the conveyance of the storm water require the alteration of the natural water course, the following will apply.

Diversion of storm water away from the natural watercourse will not be allowed, except within the property boundaries controlled by the developer provided that the diverted water is returned to its natural flowing watercourse prior to leaving the developer's property. A timing analysis of the diverted hydrograph on watersheds greater than twenty (20) acres, as it reenters the receiving watercourse, must be performed to show that the peak flow rate has not been increased as a result of the diversion.

Where possible, multiple uses of drainage facilities and open space shall be incorporated by the owner or developer of a new subdivision. Alternative uses such as:

- public recreation
- horse/bike/hiking trails
- walking paths
- nature preserves
- wildlife habitat areas, etc.

are encouraged subject to the approval of the Director of TCI.

The above alternative uses should enhance the drainage facilities and provide a benefit to the development.

4.6.1 - Storm Water Management Plan Checklist

The Storm Water Management Plan Checklist is provided in Appendix A as a reference.

4.7 - Planning for Storage

Storage of storm water may be needed for a proposed development or for the mitigation of an existing flooding problem. There are different storage solutions available to the design engineer. These may include regional storage facility, surface or underground storage facilities, or natural surface areas.

Some of the items that need to be considered during the planning process are:

- Is the development/site within a mandatory detention area?
- Is there a regional detention close to the development/site?
- What are the downstream drainage system capacities/restrictions?
- Is the storage facility private or public?
- Who will maintain the facility? (property owner, homeowners association, or public agency)
- What permits are required?

The following should be considered during the planning process for surface storage facilities.

Where possible, multiple uses of drainage facilities and open space shall be incorporated by the owner or developer of a new subdivision. Alternative uses such as public recreation, horse/bike/hiking trails, walking paths, nature preserves, wildlife habitat areas, etc. are encouraged subject to the approval of the Director of TCI.

Storm water detention facilities shall be located in topographically depressed areas where possible. When necessary, dams may be constructed to detain flows.

For developments that require a subdivision plat and a storage facility is required/needed, the following deferral may be considered with the approval of Director of TCI. The deferral is for the final design and construction of the storage facility to be completed before any additional development occurs on the property.

Full detention basin design may be deferred until the building permit stage IF the property owner submits a "request for detention deferral" demonstrating an understanding of the implications of such design deferral AND the following notes are placed on the subdivision plat AND supporting documentation is provided.

1. "Storm water detention is required for this property. Building permits for this property shall be issued only in conjunction with necessary storm water detention approved by the City of San Antonio. The property may be eligible to post a fee in lieu of detention (FILO) if offsite drainage conditions allow but only when approved by the City of San Antonio. Maintenance of on-site storm water detention shall be the sole responsibility of the lot owners and/or property owners association and their successors or assignees."
2. "No building permit shall be issued for this platted property until a storm water detention system design has been approved by the City of San Antonio or Bexar County for commercial properties within the ETJ."

4.8 - Planning for Transportation

The streets and highways within the San Antonio area provide the connections for private and public transportation. The streets are used for different modes of transportation, but are also used for the collection and conveyance of storm water. Arterial streets shall remain passable during a storm event as described in Chapter 6.2.1.1. All culvert and bridge crossings shall be "all weather crossings" to allow safe passage of all modes of transportation during a storm event as described in Chapters 10.1 and 11.1 respectively.

4.9 - Planning for Open Space

A viable system of natural open space that serves to protect and conserve cultural resources, riparian areas, significant natural features, and preserve floodplains will help reduce erosion, provide recharge, improve water quality, and help reduce impacts of development.

These open space areas shall be covered by some form of easement and deed restrictions for allowed uses. These uses shall be compatible with the open space and may provide some low-impact forms of recreation such as walking, bicycling and nature watching are encouraged.

Should a drainage facility traverse or be adjacent to an open space, every effort should be made to make sure that the facility is compatible with the open space.

4.10 - Planning for LID

Low Impact Development is a land development approach which manages storm water runoff close to its source. It can be a cost effective tool for managing storm water while meeting multiple goals and enhancing the site. Technical guidance for the overall site and specific BMP design is found in the San Antonio River Basin Low Impact Development Technical Design Guidance Manual.

4.11 - Planning for Dams

Dams are used for the capture of storm water, which may contain an outlet structure.

The storm water impounded by a dam may impact upstream or adjacent property owners. A drainage easement as described in Chapter 15.5, shall be required to cover the storm water impoundment area.

An overflow structure should be considered for storms greater than the design storm and to eliminate the overtopping of the dam.

Upstream of an existing or proposed dam, the elevations of structures should be placed such that the finished floor is at a minimum of one foot above the top elevation of the dam and above the backwater elevation.

Downstream of an existing or proposed dam, placement of structures immediately downstream should be avoided and elevation of structures should be placed such that the finished floor is at a minimum of one foot above the backwater or breach water surface elevation.

If a dam is proposed, impacts to development and infrastructure, both upstream and downstream shall be evaluated.

4.12 - Maintenance Standards

The following section is intended to provide guidance on general maintenance responsibilities and designation for Public and Private Drainage Easements. It is not meant to address rights or responsibilities associated with emergency situations.

An easement is a grant of one or more property rights by a property owner to another person or entity. Private drainage easements are typically necessary when storm water is to be conveyed across private property from a separate private property up to a contributing drainage area of 100 acres. Public drainage easements are typically necessary when the off-site contributing drainage area exceeds 100 acres or if the contributing area is a FEMA designated floodplain. Additionally, public drainage easements are typically necessary when storm water is to be conveyed across private property from public property, public rights-of-way and easements, or public infrastructure to an established channel, creek, or other public drainage system.

Drainage easements are a form of utility easement and per the Unified Development Code are required to be labeled or designated "public" or "private". Maintenance is action taken to restore or preserve the design functionality of any facility or system. The granting and acceptance of an easement does not confer ownership but rather confers the right to use a landowner's property in some specific way. Per the Unified Development Code, the City of San Antonio assumes no responsibility for the maintenance, installation or improvement of pipes or storm water systems within an enclave or planned unit development. There is also a general duty under state law for property owners to keep their property free from nuisance and in a reasonably safe condition.

Drainage easements allow the City of San Antonio to perform certain maintenance and make repairs to drainage structures, at its option and as necessary, so that the overall safety and health of the city related to drainage can be maintained. The property owner retains ownership of the property and, similar to other utility easements on private property, also retains responsibility for normal care and maintenance.

For example, the City of San Antonio will remove a blockage in a channel within a public drainage easement, but will not remove a standing tree on a channel bank outside of the conveyance area. Additionally, the City of San Antonio may not remove a blockage in the conveyance area until that blockage has the potential to significantly affect water flow. Other examples of normal care and routine maintenance for owners includes, but is not limited to, litter collection, nuisance mowing, or other items that do not impede drainage. Examples of typical storm water conveyance maintenance undertaken by the City of San Antonio are managing significant overgrowth of vegetation (greater than 24-inches to 36-inches depending on grass species type), debris removal, channel restoration, and removal of downed trees in the conveyance area.

- A. Maintenance of publicly owned facilities will be the responsibility of the city. Maintenance of private facilities is the responsibility of the property owner or the community association and must be specified in the maintenance schedule submitted to the city. A maintenance schedule for both publicly owned and privately owned facilities must be approved by the Director of TCI prior to the approval of construction drawings.
- B. Authorized personnel from the City of San Antonio shall conduct periodic inspections of these facilities and structures. Any required repairs will be consistent with current construction standards. Maintenance issues identified by the city or state during inspections shall be the responsibility of the current owner.
- C. An unobstructed access right-of-way connecting the drainage easement with an alley or roadway, parallel to or near the easement, shall be provided at a minimum spacing of one (1) access right-of-way at approximately one thousand (1,000) foot intervals. The access right-of-way shall be a minimum

of fifteen (15) feet in width and shall be kept clear of obstructions that would limit maintenance vehicular access. Additional access points may be required if the flow line of the designed channel incorporates grade control structures of vehicular bridges that may block channel access to maintenance equipment. Channel design, earthen or concrete, shall have ramps in the side slopes near the access points that allow maintenance equipment to descend to the floor level of the channel. The maximum allowable ramp slope for vehicular access is seven to one (7:1). Access points adjacent to roadways or alleys shall be provided with a post and cable feature with padlock to prevent unauthorized use.

- D. Design of new channels or alterations to existing channels shall consider future maintenance requirements. A maintenance schedule for any private channel shall be submitted to and approved by the Director of TCI prior to approval of construction plans. Maintenance requirements of concrete channels consist of de-silting activities, prevention of vegetation establishment in construction joints, and repair of concrete as necessary. Maintenance of earthen channels includes regular observation and repair, as necessary, of erosion, scouring, and removal of silt deposits, as necessary to maintain design parameters. Developers shall be responsible for maintaining newly planted channels until coverage is established throughout eighty-five percent (85%) of the area. This area shall include slopes, floor, and any attendant maintenance easement. New earthen channels shall be planted with drought resistant, low growth, native species grasses, which will allow unobstructed passage of floodwaters. Johnson grass, giant ragweed and other invasive species shall not be allowed to promulgate in channels. Suggested species shall include, but are not limited to, common bermuda, coastal bermuda, buffalo grass, sideoats grama, seep muhly, little bluestem, and indian grass. [Channel design must accommodate for sufficient growth to maintain healthy and effective vegetative cover from the selected species.](#) Mowing frequencies vary with the vegetation growth rates, but is required when the grass exceeds the design roughness coefficient of the channel.

4.13 - References

- City of San Antonio Development Services. *Interactive Development Process Manual*. City of San Antonio, San Antonio, Texas. Retrieved from http://www.sanantonio.gov/dsd/pdf/DPM/0_Coversheet_Intro.pdf
- City of San Antonio Department of Public Works. *Fee In-Lieu-Of (FILO) Program*. City of San Antonio, San Antonio, Texas, April 2013. Retrieved from http://www.sanantonio.gov/dsd/pdf/FILO_Final.pdf