

UDC Update Request Application

Part 1. Applicant Information

Name: Suzanne B. Scott, General Manager Organization (if applicable): San Antonio River Authority
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 Phone: 210.392.3613 Email: sbscott@sara-tx.org
 Signature: *Suzanne B. Scott* Date: 4-7-2015
 (Include title if representing a governmental agency or public/private organization)

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)

The amendments clarify and define low impact development, which is currently referenced but not defined in the UDC; provide incentives for use of LID, natural channel design, and the conservation subdivision use pattern; eliminate unnecessary development costs associated with conservation subdivisions; recommend amendments occurring throughout the code to eliminate conflicts; and establish procedures to reduce variances that would otherwise be required as part of the normal development process.

Other Recommend UDC Updates Related to the Proposed LID/NCDP

Article II. Use Patterns Statement of Purpose

Alternative Development Themes. In order to provide opportunities to develop to meet new and emerging markets addressing specific design characteristics outlined in the city's master plan policies the following development alternatives are provided as options available to the developer:

[Section 35-202 Conservation Development](#)

[Section 35-203 Commercial Center Development](#)

[Section 35-204 Office or Institutional Campus Development](#)

[Section 35-205 Infill Development](#)

[Section 35-206 Commercial Retrofit Development](#)

[Section 35-207 Traditional Neighborhood Development](#)

[Section 35-208 Transit Oriented Development](#)

[Section 35-209 Form Based Code](#)

[Section 35-210 Low Impact Development/Natural Channel Design Protocol](#)

Article II 35-201 Generally

Table 201-1: Use Patterns and Applicable Provisions of UDC

UDC Provision	Conventional Subdivision	Conservation Subdivision	Commercial Center	Office/Institutional Campus	Commercial Retrofit	Traditional Neighborhood Development	Transit-Oriented Development	Low Impact Development/Natural Channel Design Protocol
	35-202	35-203	35-204	35-205	35-206	35-207	35-208	35-209
Use Regulations (§ 35-311) [incorporated areas only]	Y	Y	P	P	N	N	Y	<u>Y</u>
Zoning District Design Regulations (§ 35-310) [incorporated]	Y	P	N	N	N	N	N	<u>P</u>

areas only]								
Traffic Impact Analysis (§ 35-502)	Y	Y	Y	Y	N	N	P	<u>Y</u>
Parks and Open Space Standards (§ 35-503)	Y	P	N	P	N	P	N	<u>P</u>
Storm water Management (§ 35-504)	Y	Y	Y	Y	P	Y	Y	<u>Y</u>
Transportation and Street Design (§ 35-506) - Generally	Y	Y	Y	Y	Y	Y	Y	<u>P</u>
Cross section and Construction Standards (§ 35-506(d))	Y	P	Y	Y	N	P	P	<u>P</u>
Connectivity (§ 35-506(e))	Y	N	Y	Y	Y	Y	Y	<u>Y</u>
Utilities (§ 35-507)	Y	P	Y	Y	Y	Y	Y	<u>Y</u>
Impact Fees (§ 35-508)	Y	Y	Y	Y	Y	Y	Y	<u>P</u>
Buffers (§ 35-510)	Y	Y	Y	Y	N	P	N	<u>P</u>
Landscaping (§ 35-511)	Y	Y	Y	Y	N	Y	Y	<u>P</u>
Streetscape Planting Standards (§ 35-512)	Y	Y	Y	Y	Y	Y	P	<u>P</u>

Tree Preservation (§§ 35-513 , 35-523)	Y	N	Y	Y	N	Y	Y	<u>P</u>
Fences and Walls (§ 35-514)	Y	Y	Y	Y	Y	N	N	<u>Y</u>
Lot Layout Regulations (§ 35-515)	Y	P	P	Y	P	P	P	<u>P</u>
Setback and Frontage Regulations (§ 35-516)	Y	P	P	Y	P	P	P	<u>P</u>
Building Height Regulations (§ 35-517)	Y	Y	Y	Y	Y	Y	Y	<u>P</u>
Edwards Aquifer Recharge Protection (§ 35-521)	Y	Y	Y	Y	Y	Y	Y	<u>Y</u>
Floodplain Development Standards (§ 35-504)	Y	Y	Y	Y	Y	Y	Y	<u>Y</u>
Outdoor Storage Standards (§ 35-525)	Y	Y	Y	Y	Y	Y	Y	<u>P</u>
Minimum Parking Standards (§ 35-526(b))	Y	N	Y	Y	N	N	P	<u>P</u>
Off-Street Truck Loading Requirements (§ 35-527)	Y	Y	Y	Y	Y	Y	Y	<u>Y</u>

Right –of –Way, Part II, Chapter 29 Article IV. Excavations

Section 29-117 Permit Required

(3) All sums paid to the city pursuant to this chapter, shall be deposited in a separate fund or funds and shall be expended only for the repair resurfacing. Rehabilitation, reconstruction, or other improvements of city streets [and facilities within the right-of-way](#) where excavation has occurred after the effective date of this ordinance from which this article derives.

(4) The proposed location, depth, and other characteristic of any facilities for which the permit is issued shall be subject to approval of the director, and all backfilling, compaction, and pavement restoration performed for any excavation shall comply with the requirements of this chapter. [Any repair or reconstruction of Low Impact Development storm water facilities shall comply with section 35-210.](#)

Section 29-120 Excavation to be under supervision of director.

(b) The ROW user shall protect from damage, utility conduits, sewer conduits, water conduits, [LID BMPs part of an approved storm water management plan](#), lawns, shrubbery, trees, fences, structures, or other property at, near or encountered in his work. The ROW user shall determine the boundary of the right-of-way.

(c) All excavations and other construction in the streets shall be conducted so as to interfere as little as practicable with the use of the rights-of-way and with the use of private property, in accordance with any lawful and reasonable direction given by or under the authority of the governing body of the city under the policy and regulatory powers of the city necessary to provide for public convenience. The ROW user shall protect from damage, utility conduits, sewer conduits, water conduits, [LID BMPs part of an approved storm water management plan](#), lawns, shrubbery, trees, fences, structures, or other property at, near or encountered in his work. The ROW user shall not trespass upon private property. The ROW user shall determine the boundary between public right-Of-way and private property.

(e) The city reserves the right to lay, or allow to be laid, electricity, sewer, gas, water and other pipe lines or cables and facilities, [LID BMPs as part of an approved storm water management plan](#), as well as drainage pipes and channels.....

UDC Article V Development Standards

Sec. 35-504 Storm Water Management

(b) Storm Water Management Program

(1) Regional Storm Water Management Program (RSWMP)

A. The City of San Antonio has determined that regional storm water management is preferable to site specific storm water [mitigation in mitigating drainage and flooding impacts from large storm events \(i.e. the 5-year, 10-year, 25-year and greater storm events\)](#). The regional storm water management program provides for the administration, planning, design, construction, and operational management of regional storm water facilities (RSWF) [to address such drainage and flooding impacts](#). 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 protection ~~enlargement, channelization~~, and improved conveyance structures. The regional storm water management program allows developers to participate in the program rather than constructing the on-site detention controls required by this section, where the resulting use of a RSWF will not produce a significant adverse impact to other properties due to the increased runoff from the proposed development. [The RSWMP used conjunctively with the LID/NCDP use pattern, section 35-210, can best address multiple impacts from the full range of storm events.](#)

B. ...(Note: The remainder of subsection (b)(1) continues as is.)

(2) On-Site Detention and Water Quality (including Low Impact Development Features).

(i)

[\[Approximately 95 percent\] \[The majority\] of rainfall in San Antonio occurs in storm events less than the 5-year storm event. These storms have the greatest impact on water quality and channel erosion. The City of San Antonio has determined that the most effective way to address water quality and channel erosion impacts from storm water runoff in these smaller storms is through on-site Low Impact Development/Natural Channel Design Protocol \(LID/NCDP\) storm water management approaches found in section 35-210. The LID/NCDP use pattern, used conjunctively with the RSWMP can best address multiple impacts from the full range of storm events.](#)

(ii)

On-site storm water management features must be privately owned and shall be maintained by the community association or property owner. A maintenance schedule shall be submitted to the public works department and approved by the director of public works prior to approval of construction plans. The City of San Antonio will have the right to do periodic inspections of privately owned and maintained detention facilities to ensure that the maintenance schedule is being implemented.

(iii)

Where a detention facility accepts flows from public facilities such as city rights-of-way the detention facility will be considered a detention facility serving a public purpose and will be dedicated to the city upon completion and a drainage easement will be dedicated to provide for access to the facility. When a regional detention facility accepts flow from an area exceeding three hundred (300) acres, the facility shall be considered serving a public purpose and shall be dedicated to the city

Table 506-4 footnotes

Table 506-4 applies only to the following development options: Commercial Center (section 35-204); Commercial Retrofit (section 35-206), Traditional Neighborhood development (section 35-207), ~~and~~

Transit –oriented development; [and Low Impact Development/Natural Channel Design Protocol \(section 35-210\)](#).

Section 35-523, Tree Preservation (i)(13)

Use of Landscaped Low Impact Development (LID) Practices. A canopy cover credit of one and one-half (1.5) times the existing canopy cover of trees shall be provided for areas where tree preservation is maintained in conjunction with LID practices such as the use of structured soils including infiltration trenches, bioswales, micro-bioretenion areas and where such locations receive appropriate amounts of storm water runoff. To receive 1.5 times credit, the landscaped LID must be approved by application of [section 35-210](#) and [35-504](#) standards. Such LID areas may also be used to comply with the buffer and/or landscape requirements of [section 35-510](#) and [section 35-511](#).

UDC Definitions

Riparian Buffer. [Vegetated areas, including buffer strips, adjacent to the stream bank that help to shade and partially protect a stream, creek or tributary from the impact of adjacent land uses. Riparian buffers act as a biofilters by reducing pollutant runoff, erosion, and sedimentation.](#)

Effective Impervious Area. [Impervious area in catchment that is directly connected to stream channels \(i.e., precipitation falling on that area is effectively transported to the stream\) \(U.S. EPA\)](#)

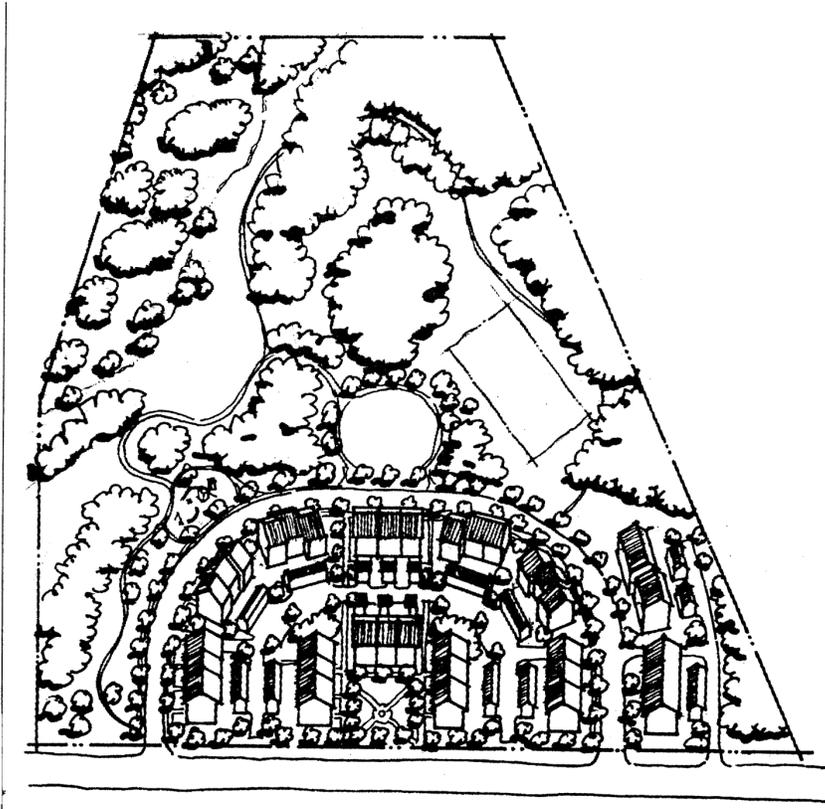
Ephemeral stream. [A stream or drain that flows only during and for short periods following precipitation and flows in low areas that has a well-defined channel.](#)

Intermittent stream. [A stream that flows only during wet periods of the year or thirty to ninety percent of the time, and flows in a continuous, well-defined channel.](#)

Low impact development. [A stormwater management and land development strategy that emphasizes conservation and the use of on-site natural features integrated with engineered, small-scale hydrologic controls to more closely reflect pre-development hydrologic functions.](#)

Natural channel design protocol. [Restorative practices for natural channels, earthen engineered channels, and corrective actions for existing engineered channels designed to create stable stream conditions; improve or restore connections between streams and their floodplains; improve habitat; improve water quality; and provide storage within the floodplain to retain and attenuate flood flows.](#)

Perennial stream. [A stream that flows throughout a majority of the year or greater than ninety percent of the time, and flows in a well-defined channel.](#)



2

3 *STATEMENT OF PURPOSE*

4 *Conventional subdivisions typically produce little open space except floodplains and steep slopes.*
5 *Common open space areas in conventional subdivisions is often unusable or is devoted only to specific*
6 *purposes, such as golf courses. Most open space in conventional subdivisions is contained in private*
7 *yards with no common access or maintenance. Further, private open space typically involves involve*
8 *lawns and landscaping which require heavy maintenance and water demands. Accordingly, the purpose*
9 *of this section is to provide flexibility in site design in order to allow developers to preserve common open*
10 *space and natural resources. The specific purposes of this section are:*

- 11 • *To protect the public health, safety and general welfare by avoiding surface and ground water*
12 *pollution, contaminated runoff, air quality contamination, and urban heat islands which result from*
13 *pavement and the clearing of natural vegetation.*
- 14 • *To protect and preserve natural resources such as wetlands, streams, lakes, steep slopes,*
15 *woodlands, and water recharge areas.*
- 16 • *To reduce infrastructure and housing costs by reducing the engineering and construction costs*
17 *produced by conventional subdivision design, which generally requires more pavement, wetland*
18 *crossings, grading of trees and natural areas, and maintenance from lawn and landscaping*
19 *maintenance.*
- 20 • *To protect property values by allowing open space design features which enhance the marketability*
21 *of development.*
- 22 • *To provide design flexibility.*

1 • To promote development ~~with on soils which are most suitable for~~ urban densities, while preserving
2 soils that are primarily adaptable to other uses such as woodlands, wildlife habitat, and agricultural
3 uses.

4 The conservation subdivision use pattern implements the following policies of the master plan:

5 • ~~Applicability~~ Natural Resources, Policy 1d: ~~Policy 1d:~~ Encourage retention of the 100-year
6 floodplains as natural drainageways without permanent construction, unnecessary straightening,
7 bank clearing or channeling.

8 • Natural Resources, Sub-Policy 1.1d: Encourage the ecological management of floodplains and
9 promote their use as open space, such as greenways, parks, wildlife habitat, and pedestrian-friendly
10 linkage corridors.

11 ~~Commentary: A conservation subdivision is distinguishable from a resource protection district.~~
12 ~~Resource protection districts are established in article III to protect agricultural operations and natural~~
13 ~~resource industries (see section 35-310.02). They are mapped districts within which uniform~~
14 ~~regulations governing use and density apply, and must be established through the legislative~~
15 ~~rezoning process (see section 35-421). A conservation subdivision is a form of development~~
16 ~~involving unique standards for lot layout which are designed to maximize the preservation of natural~~
17 ~~resources and open space. A conservation subdivision is established through the platting process.~~
18 ~~While a conservation subdivision may be platted within a resource protection district, the concepts~~
19 ~~are distinguishable.~~

20 (a) **Applicability.** A conservation subdivision may be permitted in ~~any zoning district excluding the~~
21 ~~following: zoning districts: FR, RP, RE, R-20, RD, R-6, and G, "D", "I-1", "I-2", "MXD", or "IDZ".~~
22 Within the ETJ, landowners have the option to develop consistent with the criteria of this ordinance
23 according to 35-201(b)(2) of this chapter

24 (b) **Processing Procedures.**

25 (1) **Generally.** A conservation subdivision shall be processed in accordance with the subdivision
26 procedures of this chapter. Variances shall be processed as set forth in subsections (2) and (3),
27 below, except for applications within the Edwards Recharge Zone District (ERZD) or utility
28 conversion districts.

29 (2) **Variances—Incorporated Areas.** Within the incorporated areas of the city:

30 A. A variance to the requirements of subsection (c) shall be processed in accordance with
31 section 35-482, Zoning Variances, of this chapter.

32 B. A variance to the requirements of subsections (b) and (d) through ~~(n)~~(o) shall be processed
33 in accordance with section 35-483, Subdivision Variances, of this chapter.

34 (3) **Variances—Extraterritorial Jurisdiction.** Within the ETJ, variances shall be processed in
35 accordance with section 35-483, Subdivision Variances, of this chapter.

36 (4) Adjusted tract acreage or developable area shall be calculated by deducting the Conservation
37 Area from the total tract acreage. Per Table 203-1, the by-right density allowed on the total tract
38 shall be allowed on the adjusted tract acreage along with the density bonus allowance for the
39 Conservation Area. The minimum Conservation Area shall be no less than 40% of the total tract
40 area.

41
42 (c) **Size and Location of Site.**

43 (1) ~~A There is no~~ minimum ~~or maximum~~ size of 20 acres is required for a conservation subdivision.
44 Should a parcel not be large enough to comply provided, however, that the minimum open
45 space requirements may limit the availability of this option for some landowners. Parcels which
46 cannot demonstrate compliance with the minimum open space standards on-site, a
47 Conservation Area on an adjoining parcel may be dedicated shall dedicate and maintained

provided that it is connected to the ~~maintain an open space system~~ Conservation Area on the parcel being developed. The Conservation Area open space dedication and management requirements in section 35-203(j) also apply to the ~~which is connected to an open space on the adjoining property.~~ ~~system on an adjacent site in accordance with the parks and open space standards of this chapter.~~

(2) Platted lots ~~located within subdivisions and planned unit developments (PUDs)~~ shall be located outside of the Conservation Area, which is protected from development. At least 60 percent of the Conservation Area shall be contiguous. For the purposes of this section, contiguous includes any Conservation Area areas bisected by a local street provided that a pedestrian crosswalk provides access to the Conservation Area on both sides of the street and the right-of-way area is not included in the calculation of minimum Conservation Area required. ~~primary and secondary conservation areas, which together constitute the total required open space. Both primary and secondary conservation areas shall be placed in undivided preserves, although the primary and secondary conservation areas are not required to be contiguous.~~

(3) Where feasible, the Conservation Area should adjoin any neighboring areas of Conservation Area, other protected areas and non-protected natural areas.

(d) **Uses and Density.**

(1) Permitted uses shall be governed by the applicable zoning district regulations, and the density provisions of Table 310-1 and the requirements of any applicable Master Development Plan.

(2) The minimum lot size requirements of the zoning district ~~design regulations~~ (section 35-310) shall not apply to a conservation subdivision.

(3) Flag lot restrictions (section 35-515(h)) shall not apply to a conservation subdivision.

(4) Within the city limits, density allowances applicable on the adjusted tract acreage are detailed in Table 203-1.

~~(3) In order to provide undivided open space in order to provide direct views and access, not less than twenty (20) percent of the lots within a conservation subdivision shall abut a primary or secondary conservation area.~~ Direct pedestrian access to the ~~open space~~ Conservation Area from all lots not adjoining the ~~open space~~ Conservation Area shall be provided through a continuous system of sidewalks and trails. The provisions of this subsection shall not apply to prime farmland or historic, archaeological or cultural features listed on city landmark registries, as they are vulnerable to trampling damage and disturbance.

Table 203-1

	RP	FR	RE / RD	R-20	R-6 / G
Density based on total tract area without allowance	1 dwelling per 10 acres	1 dwelling per 25 acres	1 dwelling per acre	2 dwellings per acre	7 dwellings per acre
Example per 100 acres	10 dwellings per 100 acres	4 dwellings per 100 acres	100 dwellings per 100 acres	200 dwellings per 100 acres	700 dwellings per 100 acres
Density based on total tract area with allowance at 40% or more conserved	.25 dwellings per acre	.5 dwellings per acre	1.4 dwellings per acre	2.8 dwellings per acre	7.5 dwellings per acre
Example per 100 acres	25 dwellings per 100 acres	50 dwellings per 100 acres	140 dwellings per 100 acres	280 dwellings per 100 acres	750 dwellings per 100 acres

	<u>RP</u>	<u>FR</u>	<u>RE / RD</u>	<u>R-20</u>	<u>R-6 / G</u>
<u>Density based on total tract area with allowance at 50% or more conserved</u>	<u>0.5 dwellings per acre</u>	<u>0.75 dwellings per acre</u>	<u>2 dwellings per acre</u>	<u>3 dwellings per acre</u>	<u>8 dwellings per acre</u>
<u>Example per 100 acres</u>	<u>50 dwellings per 100 acres</u>	<u>75 dwellings per 100 acres</u>	<u>200 dwellings per 100 acres</u>	<u>300 dwellings per 100 acres</u>	<u>800 dwellings per 100 acres</u>

(e) **Traffic Impact Analysis.** A conservation subdivision shall comply with the traffic impact analysis standards of this chapter.

(f) **Lot Layout.**

(1) **Alternative Lot Figurations.**

A. A conservation subdivision shall comply with the lot layout standards of this chapter, except as otherwise provided herein.

B. Lots within a conservation subdivision shall not be subject to the minimum frontage or minimum lot width requirements of the dimensional matrix (article III, Table 301-1).

C. The required Conservation Area must be directly accessible to the largest practicable number of dwelling units within the development. Non-adjoining lots must be provided with safe, convenient access to a Conservation Area.

~~C. Lots within one hundred (100) feet of a primary or secondary conservation area shall front on a conservation access street. Lots shall not front on a collector or higher order street.~~

D. No lot can be farther than a ¼-mile radius from the Conservation Area. This radius is measured in a straight line from the residential lot line, without regard for street, sidewalk or trail connections, to the nearest point of a Conservation Area.

E. Access to the Conservation Area must be provided either by an abutting street or easement not less than 20 feet in width.

~~F.D.~~ Lots may be arranged in any of the patterns set forth in Table 204-1, as defined in the lot layout standards. In Table 203-2~~4~~, an "asterisk" indicates that the lot configuration described in column (A) is permitted in the applicable zoning district (columns (B) through (C)), while a dash ("—") indicates that the lot configuration is not permitted.

Table 203-2~~4~~

(A)	(B)	(C)
Lot Configuration	RP, RE, R-20, <u>RD</u> , <u>FR</u>	<u>R-6, G</u> R-6, R-5, RM-6, RM-5, R-4, RM-4
Single-Family Detached Homes	*	*
Detached Eyebrow Homes	*	*
Attached Eyebrow Homes	—	*
Detached Patio Homes	*	*
Detached Homes with Shared Driveways	*	*

Detached Homes with Shared Courtyards	*	*
Detached Homes with Commons	* —	*
Detached Patio Homes	* —	*
Detached "Z" Lot Homes	* —	*
Detached Wide-Shallow Lot Homes	*	*
Attached Homes with Private Parking Courts	—	*
Attached Homes with Automobile Courtyards	—	*
Attached Homes with Park Circle	—	*
Attached Homes with Private Parking Courts	—	*
Stacked Quadrangle Homes	—	*
Stacked and Attached Homes with Parking Courts	—	*
Single-Family Attached and Multi-Family Stacked Homes with Park Square	—	*
Single-Family Attached Homes with Mid-Rise Cluster	—	*
Single-Family Detached and Attached Homes in a Traditional Block	—	* *
Traditional Neighborhood Cluster Street	—	*

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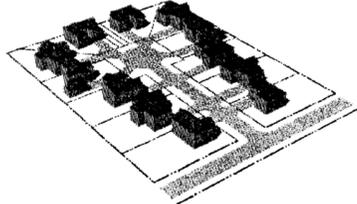
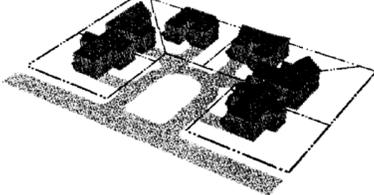
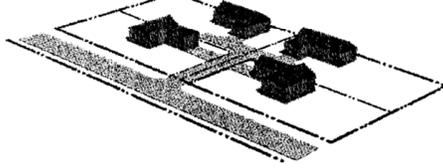
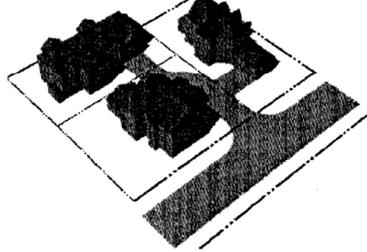
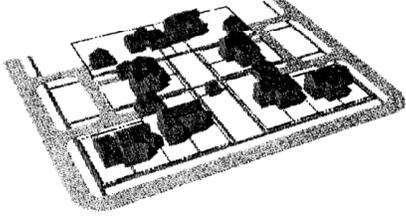
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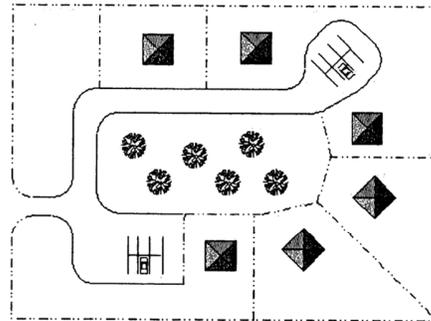
(2) **Definition and Alternative Development Standards.** The alternative lot configurations described in subsection (1) hereto shall have the meanings assigned below. Permissible deviations from the dimensional standards set forth in section 35-310 of this chapter are set below for some alternative lot configurations:

<p>Single-Family Detached Homes (see Definitions)</p> <p>A One-Family Dwelling that is not attached to any other Dwelling by any means and is surrounded by open space or yards.</p>	
<p>Detached “Eyebrow” Homes</p> <p>This configuration is an alternative to the cul-de-sac scheme in that homes are grouped around a common green area with two access points.</p>	
<p>Detached Homes With Shared Driveways</p> <p>This pattern permits the grouping of not more than four (4) homes on a shared driveway not exceeding fifty (50) feet in length. A Driveway is a private passageway for vehicles which leads directly to a residential garage.</p>	
<p>Detached Homes With Shared Courtyards</p> <p>A Courtyard is an open area adjacent to, or part of, a civic building or facility. Courtyards function as gathering places and may incorporate a variety of non-permanent activities such as vendors and display stands. See parks and open space standards, § 35-503, Table 503-2, of this chapter for standards applicable to Courtyards.</p>	
<p>Detached Homes With Commons</p> <p>This approach to clustering emphasizes open space by orienting the front doors of houses to a formal common area. The common area may include a Greenway, Close, Playground, Green, Park, or Parkway as set forth in the parks and open space standards (see § 35-503, Table 503-2).</p>	

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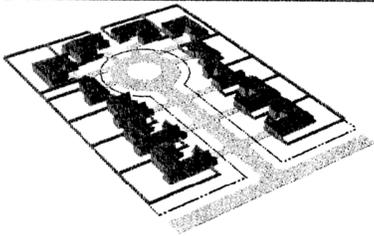
Cottage Homes

Cottage homes are small homes built around common, private open space, typically on smaller tracts. Cottage homes must conform to the requirements of § 35-373(d) of this chapter.



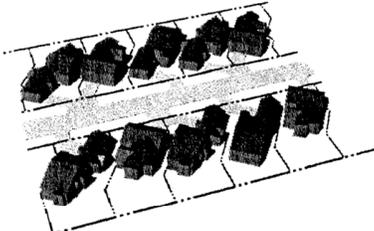
Detached Patio Homes or Garden Homes

A Patio Home or Garden Home is a single-family residential structure of one or two (2) stories which is constructed in such a manner that one, but not both, of the side exterior walls is constructed along one of the side property lines of each lot. The side setback shall be waived on one side property line.



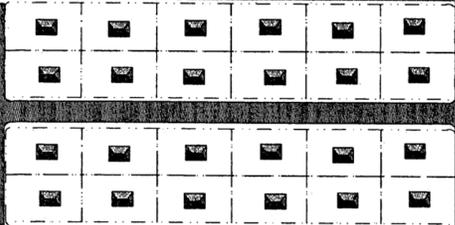
Detached "Z" Lot Homes

Detached "Z" lot homes are aligned along the diagonal axis of the lot, either perpendicular to the Street or at an angle (see Illustration). The minimum side setback requirements shall not apply.

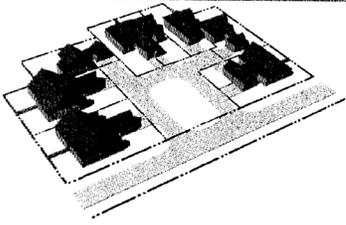
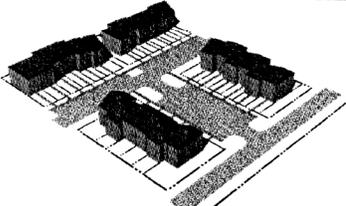
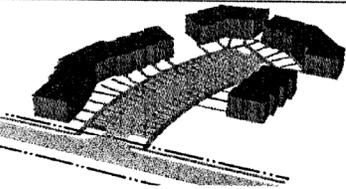
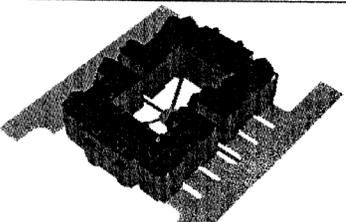
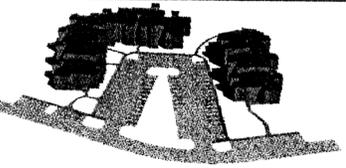


Detached Wide-Shallow Lot Homes

A wide-shallow lot has a frontage and lot width which exceeds its depth. The rear setback shall be waived for wide-shallow lot configurations.



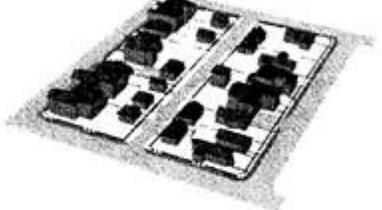
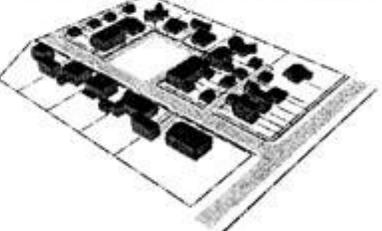
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<p>Attached "Eyebrow" Homes</p> <p>An Eyebrow Street includes Dwellings fronting a street which surrounds a Close. * The eyebrow street configuration may be used for duplexes or triplexes.</p> <p>* The Close shall include a landscaped island or a natural area which contains the same planting density as a Type "N" Buffer (see § 35-510 of this chapter)</p>	
<p>Attached Homes With Private Parking Courts</p> <p>This configuration involves townhouse groups with not more that six to eight units in a row.</p>	
<p>Attached Homes With Automobile Courtyard, Attached Homes With Park Circle, and Attached Homes with Private Parking Courts (see Illustration)</p> <p>A variation of the private courtyard scheme, this pattern provides a turnaround circle with a small park or open space area. The common area for the Automobile Courtyard configuration contains parking.</p>	
<p>Stacked Quadrangle Homes</p> <p>Quadrangles are Multi-Family Dwellings with at least two (2) stories and arranged in a continuous, rectangular form with an inner courtyard.</p>	
<p>Angled Stacked and Attached Homes With Parking Courts</p> <p>Angled Stacked and Attached Homes are Multifamily Dwellings with at least two (2) stories in height and aligned with a horizontal curve or "L" configuration. The Dwellings shall contain porches facing a walkway, courtyard with parking, or common Open Space.</p>	

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<p>Single-Family Attached and Multifamily Stacked Homes With Park Square</p> <p>This configuration involves a combination of Single-Family Dwellings, Duplexes, Rowhouses, or Multi-family Dwellings facing a Square, Green, or plaza.</p>	
<p>Single-Family Attached Homes With Mid-Rise Cluster</p> <p>This configuration includes a mix of townhouses with not more than one (1) apartment per block. The apartment frontage shall not exceed two-hundred (200) feet.</p>	
<p>Single-Family Detached and Attached Homes in Traditional Neighborhood Block</p> <p>This option includes a mix of single-family detached dwellings and townhouses or rowhouses fronting local streets with a connectivity ratio (see § 35-506(d)) of not less than 2.0. * Access shall be from a rear alley.</p> <p>* While Conservation Subdivisions are not subject to the Connectivity Standards, this form of development may be used as an option. If the application includes a Traditional Neighborhood Block, the applicant shall be subject to the Connectivity Standards.</p>	
<p>Traditional Neighborhood Cluster Street</p> <p>This option includes a mix of single-family detached dwellings and townhouses or rowhouses fronting local streets with a connectivity ratio (see § 35-506(d)) of not less than 2.0. * At least fifty percent (50%) of the blocks shall contain an Eyebrow Street with a Close. **</p> <p>* While Conservation Subdivisions are not subject to the Connectivity Standards, this form of development may be used as an option. If the application includes a Traditional Neighborhood Cluster Street, the applicant shall be subject to the Connectivity Standards.</p> <p>** The Close shall include a landscaped island or a natural area which contains the same planting density as a Type "N" Buffer (see § 35-510 of this chapter)</p>	

Graphics (excluding cottages and wide-shallow lots) above by LDR International. See National Association of Home Builders, *Site Planning & Community Design for Great Neighborhoods* (1993). Graphics for cottages and wide-shallow lots by Freilich, Leitner & Carlisle.

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(g) **Transportation.**

- (1) A conservation subdivision shall comply with the transportation standards of this chapter, unless otherwise provided, and the provisions of this subsection. The design of local streets shall comply with the [access to subdivision street](#) standards ~~for conservation access streets~~, as set forth in subsection 35-506(d), Table 506-3. The connectivity index for internal streets (subsection 35-506 (e)) shall not apply to local streets within a conservation subdivision.

1 (2) The conservation subdivision shall include a pedestrian circulation system designed to assure
2 that pedestrians can walk safely and easily on the site, between properties and activities or
3 special features within the neighborhood Conservation Area system, by complying with the
4 standards set forth herein. All sidewalks shall connect with other sidewalks or with trails, which
5 in turn shall connect to potential areas qualifying as ~~primary or secondary~~ Conservation Area on
6 adjoining undeveloped parcels or with existing open space on adjoining developed parcels,
7 where applicable.

8 (3) Streets shall not cross wetlands or existing slopes ~~exceeding equal to or greater than fifteen~~
9 ~~twenty (1520)~~ percent. Precautions should be taken on existing slopes fifteen (15) to twenty (20)
10 percent to avoid erosion during construction and after construction is completed.

11 (h) **Stormwater Management.** A conservation subdivision shall comply with the stormwater
12 management standards, section 35-504 of this chapter.

13 (i) **Utilities.**

14 (1) A conservation subdivision shall comply with the utilities standards, section 35-507 of this
15 chapter, except as provided in subsection (2), below.

16 (2) Where permitted by TCEQ Bexar County, a conservation subdivision may use a cluster system,
17 as defined in 30 TAC § 331.285.2 (which is hereby incorporated by this reference), to dispose of
18 on-site wastewater. The cluster system shall comply with the requirements of 30 TAC § 331
19 285.6, which is hereby incorporated by this reference. The drainfield or absorption area for the
20 cluster system may be located in a Conservation Area ~~primary conservation area or secondary~~
21 ~~conservation area~~, so long as the location is permitted by the Texas Commission on
22 Environmental Quality "TCEQ" (30 TAC chapter 331.285), the city department of health (chapter
23 34, article V, division 2 of the city code) within the incorporated areas of the city, ~~or the~~
24 ~~applicable Bexar County septic regulations in the extraterritorial jurisdiction~~, and complies with
25 the following to the extent permitted by state law and the applicable city or county regulations:

26 A. The absorption field is an underground drainage field or area ~~an absorption field~~ for spray
27 application irrigation purposes for a ~~land treatment~~ disposal system; or

28 B. The absorption field is a mound system (as defined in 30 TAC § 285.2) which is limited to
29 not more than ten (10) percent of the ~~required minimum open space~~ Conservation Area.

30 (j) Conservation Area.

31 (1) Preservation of Conservation Area. ~~(j) Parks and Open Space.~~ The minimum percentage of
32 land that shall be designated as permanent Conservation Area, not to be further subdivided,
33 and protected in perpetuity through at least one of the following legally binding instruments:
34 ~~through a conservation easement held by the city or by a land trust or conservancy~~, shall be as
35 specified herein. ~~Open space shall be comprised of two (2) types of land: "primary conservation~~
36 ~~areas" and "secondary conservation areas." All lands within both primary and secondary~~
37 ~~conservation areas are required to be protected by a permanent conservation easement,~~
38 ~~prohibiting further development, and setting other standards safeguarding the site's special~~
39 ~~resources from negative changes.~~

40 A. Fee simple dedication through a deed in perpetuity to a state, county, municipality, or local
41 public agency for the purposes of resource conservation and protection. No dedication of
42 Conservation Area to the city or county shall be effective, unless the city determines, it is
43 sole discretion that ownership of the Conservation Area is in the city's best interest, in
44 which case acceptance of such dedication must be made in accordance with such legal
45 documents, conditions, and procedures as approved by the city.

46 B. Held in common ownership as undivided proportionate interests by the members of a
47 mandatory homeowners or condominium association. Each member shall share equitably
48 the costs of maintaining, insuring and operating conservation land, and shall be
49 responsible for the implementation of the land management plan. If a mandatory

1 homeowners or condominium association will own the Conservation Area, the following
2 provisions, at a minimum shall be included in the bylaws or covenants:

- 3 (i) lien right for maintenance expenses and tax obligations;
- 4 (ii) responsibility for the insurance and taxes on the Conservation Area;
- 5 (iii) automatic compulsory membership in the association of all lot purchasers and their
6 successors;
- 7 (iv) a fair and uniform method of assessment and collection/payment for dues,
8 maintenance, and related costs;
- 9 (v) conditions and timing of transferring control of the association from the developer to
10 the lot owners;
- 11 (vi) equal access and right of use to all Conservation Area for all property owners;
- 12 (vii) perpetual and continued maintenance liability for the Conservation Area;
- 13 (viii) filing of all required covenants, declarations and restrictions with the county clerk;
- 14 (ix) provision for transfer of ownership to a qualified conservation organization in case of
15 the property owners' association dissolving;
- 16 (x) notice of the city's third party right to enforce its ordinance within the Conservation
17 Area.

18 C. A permanent conservation easement in favor of either:

- 19 (i) a land trust or similar conservation-oriented non-profit organization with legal
20 authority to accept such easements in accordance with the State of Texas Natural
21 Resources Code Section 183 - Conservation Easements. The organization shall be
22 bona fide and in perpetual existence and the conveyance instruments shall contain
23 an appropriate provision for retransfer in the event the organization becomes unable
24 to carry out its functions; or
- 25 (ii) a governmental entity with an interest in pursuing goals compatible with the purposes
26 of this ordinance. If the entity accepting the easement is not the city, then a third right
27 of enforcement favoring the city shall be included in the easement; or

28 D. A permanent restrictive covenant for conservation purposes in favor of a governmental
29 entity.

30 The Conservation Area shall be delineated on the plat as "Conservation Area" along with a
31 plat note: "in accordance with Section 35-203 - Conservation Subdivision." The instrument
32 for permanent protection shall include clear restrictions on the use of the Conservation
33 Area. These restrictions shall include all restrictions contained in this section, as well as
34 any further restrictions the Applicant chooses to place on the use of the Conservation Area.
35 The restrictions shall be reviewed for consistency with city policy and best management
36 practices for natural and cultural resource protection, and administratively approved by the
37 city attorney. The instrument shall be recorded at the county and the volume and page
38 number shall be noted on the subdivision plat.

39 (2) Ownership and Management of Conservation Area.

40 A. Ownership of Conservation Area. The applicant must identify the owner of the
41 Conservation Area who is responsible for maintaining the Conservation Area and facilities
42 located thereon. If a homeowners or condominium association is the owner, membership in
43 the association shall be mandatory and automatic for all owners of the subdivision and
44 their successors. If an association is the owner, it shall have lien authority to ensure the
45 collection of dues from all members. The responsibility for maintaining the Conservation
46 Area and any facilities located thereon shall be borne by the owner.

1 B. Management Plan. Applicant shall submit a plan for management of Conservation Area
2 that:

3 (i) allocates responsibility and guidelines for the maintenance and operation of the
4 areas and any facilities located thereon, including provisions for ongoing
5 maintenance and for long-term capital improvements;

6 (ii) estimates the costs and staffing requirements needed for maintenance and operation
7 of, and insurance for, the Conservation Area and outlines the means by which such
8 funding will be obtained or provided;

9 (iii) provides that any changes to the plan be approved by the Director; and,

10 (iv) provides for enforcement of the plan. The owner will assure all costs of enforcing the
11 plan. In the case of an association, the bylaws shall enable the association to place
12 liens on the property for non-payment of assessments.

13 C. Management Plan Guidelines. The plan shall be developed with the advice and assistance
14 of qualified environmental professionals, such as ecologists, biologists, geologists,
15 archeologists, and historic preservation experts to provide for the long-term management
16 of the Conservation Area. The plan shall identify goals and objectives for planned land
17 management activities for the areas. The plan shall provide the following minimum
18 requirements, in addition to those cited in 35-203(j)(2)B:

19 (i) Agricultural land. For all land within the Conservation Area to be maintained in
20 agricultural use, the plan shall describe activities or practices that will be
21 implemented which are consistent with United States Department of Agriculture
22 National Conservation Practice Standards (Texas). The Plan shall address the
23 current agricultural use and make provision for maintaining or enhancing future
24 agricultural use.

25 (ii) Significant wildlife habitat areas. For all land within the Conservation Area
26 considered significant wildlife habitat the plan shall describe activities or practices
27 that address at least three of the following: habitat control, erosion control, predator
28 control, providing supplemental supplies of water, providing supplemental supplies of
29 food, providing shelter, making wildlife census counts for non-threatened or
30 endangered species habitat (Guidelines for Qualification of Agricultural Land in
31 Wildlife Management Use, Texas Comptroller of Public Accounts Publication No. 96-
32 354) or as prescribed by a Texas Parks and Wildlife biologist for all endangered or
33 threatened species habitat.

34 (iii) Wetlands, watershed, and aquifer recharge features. The plan shall identify the
35 federal, state and locally regulated water resources and describe how permitting
36 approaches, activities, or management practices will ensure compliance with
37 regulations.

38 (iv) Historic, archeological or cultural features. The plan shall provide activities or
39 practices which are consistent with the Secretary of the Interior's Standards for the
40 Treatment of Historic Properties (Preservation, Rehabilitation, Restoration,
41 Reconstruction) and the Texas Antiquities Code for sustaining federal, state and
42 locally significant archeological sites and historic structures or properties and shall be
43 coordinated with the Texas Historical Commission or any local county or city
44 historical commissions or boards.

45 (v) Scenic views. The plan shall identify scenic viewing locations/areas and their
46 associated views and propose guidelines to assure they do not become obstructed
47 by development. The plan shall also describe management practices to maintain the
48 scenic views including tree pruning and vegetation clearing.

49 (vi) Woodlands. The plan must identify resources to be conserved and a description of
50 management activities based on the ecology of the woodlands, including but not

1 limited to pruning, thinning, debris removal, pest and disease control, invasive
2 species removal, and diversity of tree species (Reference: Forest Stewardship
3 Council - U.S. Forest Standard v. 1.0).

4 (vii) Slopes. The plan must include a description of management activities based on the
5 ecology of the steep slopes. All methods of erosion control may be considered,
6 including seeding, mulching, revegetation or reforestation, erosion control blankets or
7 wattles, or drainage dispersion using swales and dikes. Moderate slopes of fifteen
8 (15) to twenty (20) percent should also be identified as sensitive development areas
9 and precautions taken to avoid erosion during construction and after the
10 development is completed.

11 (viii) Golf courses. Per 35-203(j)(3)(L), golf course fairways and greens are not
12 considered passive recreation, however, areas within a golf course which are not
13 fairways, greens or other actively managed areas of the golf course and meet the
14 requirements for Conservation Areas outlined at section 35-203(j)(3) may be
15 considered Conservation Area. However, if a golf course is planned for the
16 subdivision, a Management Plan must identify management activities which will
17 ensure that 50 percent of all irrigation water is recycled or municipal reclaimed water.
18 In addition, the plan must describe management practices to promote
19 environmentally responsible operation and maintenance of the golf course consistent
20 with the US Golf Association guidance (Audubon International Environmental
21 Management Practices for Golf Courses).

22 (ix) Stormwater management practices. The plan must address the activities necessary
23 to properly operate and maintain all stormwater management practices utilized
24 onsite, within the Conservation Areas or elsewhere. Requirements for these
25 activities can be found at 35-210.

26 (x) Management area access roads. If any of the activities described in 35-203(j)(2)(C)
27 require vehicular access, the Management Plan shall describe how unpaved access
28 roads will be developed and maintained to minimize impacts.

29 D. Failure to Maintain. In the event the party responsible for maintenance of the Conservation
30 Area fails to maintain all or any portion in reasonable order and condition, the city may
31 enter the premises and take corrective action. The costs of such action shall be charged to
32 the owner, Homeowner's Association, or to the individual property owners that make up the
33 Homeowner's Association, and may include administrative costs and penalties. Such costs
34 shall become a lien on all subdivision properties.~~The parks and open space standards~~
35 ~~relating to maintenance, subsection 35-503 (35-503(e), shall apply to a conservation~~
36 ~~subdivision. No other requirements of the parks and open space standards shall apply to a~~
37 ~~conservation subdivision.~~

38 (3) ~~(1)~~ Primary Conservation Area. A minimum of ~~thirty-five (35)~~ forty (40) percent of the total
39 tract area shall be designated as Conservation Area. The following areas qualify as
40 Conservation Area, provided that the Stream Network Buffering described in (3) E.i. – iii. does
41 not exceed fifty (50) percent of the Conservation Area: ~~primary conservation areas. The~~
42 ~~following areas shall be designated as primary conservation areas~~

43 A. Wetlands;

44 ~~B. Woodlands;~~

45 B. Woodlands as well as trees identified as necessary for preservation in the section 35-523.

46 C. Sensitive aquifer recharge features;

47 D. High infiltration or highly erodible soils as defined in section 35-210 (j)(1).

48 E. Stream Network Buffering;

- 1 ~~D.~~ (i) All of the floodway and flood fringe within the 100-year floodplain, as shown on
2 official FEMA maps;
- 3 ~~E.~~ (ii) ~~All areas within one hundred (100) feet of the edge of the 100-year floodplain as~~
4 ~~delineated on the official FEMA maps and any letter of map revision;~~
- 5 (iii) All areas designated as floodplain preservation areas or floodplain buffer zones at
6 Sec. 34-912 or 34-913.
- 7 (iv) A buffer width a minimum average width measured from the top of bank of the stream
8 and determined based on the slope of the streamside area in accordance with the
9 table found in section 34-913 of this code for all perennial streams or intermittent
10 streams with a drainage area of greater than 100 acres. In all cases, a twenty-five
11 (25) feet wide streamside zone must be preserved. To reduce fragmentation, no
12 more than 10 percent of the buffer can be less than thirty-three (33) feet wide;
- 13 (v) A buffer with minimum average width of fifty (50) feet from the top of bank of any
14 perennial, intermittent streams with a drainage area of less than 100 acres or
15 ephemeral streams draining more than 40 acres. In all cases, a twenty-five (25) feet
16 wide streamside zone must be preserved and to reduce fragmentation, no more than
17 10 percent of the buffer can be less than thirty-three (33) feet wide;
- 18 (vi) All areas within twenty five (25) feet of the top of bank of any ephemeral stream
19 draining less than 40 acres; or
- 20 ~~F.~~ ~~All areas within one hundred (100) feet of the banks of any stream shown as a blue line on~~
21 ~~the USGS 1:24,000 (7.5 minute) scale topographic maps for Bexar County;~~
- 22 ~~F.G.~~ ~~Steep s~~ Slopes ~~(i.e., slopes~~ exceeding fifteen (15) ~~twenty-five (25)~~ percent). ~~Fifty percent of~~
23 ~~the area conserved due to moderate slopes (15 – 20 percent) will count as Conservation~~
24 ~~Area.~~
- 25 ~~G.~~ Significant wildlife habitat areas that propagate a sustaining breeding, migrating or
26 wintering population of indigenous wild animals, or state or federal threatened, protected
27 and endangered plant or animal species.
- 28 ~~H.~~ ~~Soils subject to slumping, as indicated on the medium-intensity maps contained in the~~
29 ~~county soil survey published by the USDA Natural Resources Conservation Service; and~~
- 30 ~~H.~~ ~~J.~~ Historic, archaeological or cultural features listed (or eligible to be listed) on national, state,
31 or city registers or inventories.
- 32 I. Agricultural land, including farmland or ranchland that is currently and principally devoted
33 to agricultural use to the degree of intensity typical for the area and has been used for
34 agriculture for at least five of the preceding seven years;
- 35 J. Scenic views into the property from existing public roads, key access points, public
36 amenities, and historic, archaeological or cultural features described in (3)(G).
- 37 K. Stormwater management features, including LID BMPs, stormwater ponds, and basins and
38 the areas which drain to LID features, excluding impervious surfaces.
- 39 L. Up to five (5) percent of a Conservation Area or 5 acres (whichever is less) may be
40 comprised of open air active recreation activities to include but not be limited to sports
41 playing fields, tennis courts, swimming pools, fishing and boating piers, archery ranges,
42 basketball courts, volley ball courts, picnic tables, barbeque grills, unpaved trails, exercise
43 stations, kiosks or pavilions, and provided that such activities do not disturb historic,
44 archaeological or cultural features listed (or eligible to be listed) on national, state, or city
45 registers or inventories. Golf course greens and fairways are not approved alternative uses
46 of Conservation Areas. The sites for these activities shall be designed in accordance with
47 Table 503-4.

1 The Conservation Area ~~These sensitive lands~~ shall be deducted from the total parcel acreage to
2 produce the "adjusted tract acreage". Per Table 203-1, the by-right density allowed on the total
3 tract shall be allowed on the adjusted tract acreage along with the density bonus allowance for
4 the Conservation Area, on which density shall be based. If the tract does not include sufficient
5 areas to reach the minimum set-aside requirement established herein, additional areas not
6 listed above shall be deducted from the total parcel acreage in order to meet the 40 percent
7 preservation requirement, unless Conservation Area is dedicated on an adjoining parcel. ~~all of~~
8 ~~the areas not qualifying as primary conservation areas shall be designated as "adjusted tract~~
9 ~~acreage."~~

10 (4) Alternative Uses of Conservation Areas.

11 ~~A.(2) Secondary Conservation Areas. In addition to the primary conservation areas, at least~~
12 ~~fifteen (15) percent of the total tract area shall be designated and permanently protected~~
13 ~~as secondary conservation areas. Although the secondary conservation areas may~~
14 ~~comprise more than fifteen (15) percent of the remaining land on a development parcel~~
15 ~~(after primary conservation areas have been deducted), no applicant shall be required to~~
16 ~~designate more than fifty (50) percent of the remaining land as within a primary or~~
17 ~~secondary conservation area. Secondary conservation areas typically consist of upland~~
18 ~~forest, meadows, pastures, and farm fields, which are part of the ecologically connected~~
19 ~~matrix of natural areas significant for wildlife habitat, water quality protection, and other~~
20 ~~reasons. Full density credit shall be allowed for land in this category so that their~~
21 ~~development potential is not reduced by this designation. Such density credit may be~~
22 ~~applied to other unconstrained parts of the site.~~

23 ~~Secondary conservation areas may include all or part of the following kinds of resources:~~

24 ~~A.—Areas with highly permeable ("excessively drained") soil;~~

25 ~~B.—Significant wildlife habitat areas not designated as a primary conservation area;~~

26 ~~C.—Prime farmland;~~

27 ~~D.—Historic, archaeological or cultural features listed (or eligible to be listed) on national, state~~
28 ~~or city registers or inventories not designated as a primary conservation area; or~~

29 ~~E.—Scenic views into the property from existing public roads.~~

30 ~~(3) Alternative Uses of Open Space.~~

31 ~~A.—The required open space may be used, without restriction, for underground drainage fields~~
32 ~~for individual or community septic systems, and for "spray fields" for spray irrigation~~
33 ~~purposes in a "land treatment" sewage disposal system. However, "mound" systems~~
34 ~~protruding above grade and aerated sewage treatment ponds shall be limited to no more~~
35 ~~than ten (10) percent of the required minimum open space.~~

36 ~~B.—Stormwater management ponds or basins may be included as part of the minimum~~
37 ~~required open space, as may Land within the rights-of-way of below and above-ground~~
38 ~~utilities or for underground pipelines. However, land within the rights-of-way high-tension~~
39 ~~power lines may be located in the Conservation Area, but shall not be counted toward~~
40 ~~included as comprising part of the minimum required Conservation Area open space.~~

41 (5) Prohibited Uses in Conservation Area.

42 A. Paved roads, parking lots and impervious surfaces, except as specifically authorized in 35-
43 203(j)(4) above;

44 B. Exploration or extraction of minerals and hydrocarbons by any surface mining method or
45 other method that may substantially impair or interfere with the values of the Conservation
46 Area.

47 C. Other activities as determined by the Applicant and recorded on the legal instrument
48 providing for permanent protection.

1 ~~(6) (4)~~ Connectivity. Conservation Areas, to the greatest extent feasible. ~~Passive open space~~ shall
2 abut existing open space land or Conservation Areas established on adjacent parcels, including
3 ~~passive~~ open space located in other subdivisions, public parks, or properties owned by or
4 leased ~~eased~~ to private land conservation organizations.

5 (7) Required Parkland. The provisions of Section 35-503(b) shall not apply to conservation
6 subdivisions.

7 (k) **Natural Resource Protection.** A conservation subdivision shall comply with the natural resource
8 protection standards of this chapter. In addition, the conservation subdivision shall comply with the
9 following standards:

10 (1) No ~~primary~~ Conservation Area shall be cleared, graded, filled, or subject to construction
11 provided, however, that rights-of-way for trails (see transportation standards); any streets
12 needed to provide access to the proposed subdivision; and water, sewer, electric, or cable lines
13 may be cleared, or other activities specifically authorized in J(4) above. The width of rights-of-
14 way for streets or trails shall be restricted to the minimum as designated in the transportation
15 standards (subsection 35-506 (d)).

16 (2) No building footprint ~~lot~~ may be planned ~~platted within woodlands located~~ on highly erodible
17 soils with slopes exceeding twenty (20) ~~ten (10)~~ percent.

18 (l) **Buffers, Screening, Landscaping, and Streetscape Planting and Tree Preservation.** A
19 conservation subdivision ~~within the incorporated areas of the city~~ shall comply with the landscaping,
20 screening ~~and~~ buffering, and streetscape planting standards of this chapter, with the following
21 exceptions:

22 (1) Local streets, lanes, alleys, and trails within a residential conservation subdivision shall be
23 exempt from streetscape planting standards.

24 (2) Conservation Area shall not require irrigation; however, if irrigation is used, the system must
25 comply with the irrigation standards of this chapter.

26 (m) **Parking.** In order to encourage design flexibility, to preserve open space, and to minimize
27 impervious surfaces, a conservation subdivision shall not be subject to the minimum parking
28 requirements of the parking standards (subsection 35-526(b)) of this chapter. A conservation
29 subdivision shall be subject to the maximum parking requirements of the parking standards of this
30 chapter.

31 (n) **Outdoor storage.** A conservation subdivision shall comply with the outdoor storage standards of this
32 chapter.

33 (o) Application Requirements.

34 (1) Site Analysis Map Required. Concurrent with the submission of a master development plan or
35 subdivision plat, an applicant shall prepare and submit a site analysis map. The purpose of the
36 site analysis map is to ensure that the important baseline site features have been adequately
37 identified prior to the creation of the site design, and that the proposed Conservation Area will
38 meet the requirements of this article. The site analysis map shall include the following features:

39 A. Property boundaries;

40 B. All streams, rivers, lakes, wetlands and other hydrologic features;

41 C. Topographic contours of no less than 10-foot intervals in compliance with Sec. 35-B101
42 Table B101-1;

43 D. The planned location of protected Conservation Area.

44 E. Conservation Area labeled by criteria type identified with the advice and assistance of
45 qualified environmental professionals, such as ecologists, biologists, geologists,
46 archeologists, and historic preservation experts;

47 F. General vegetation characteristics;

- 1 G. General soil types:
- 2 H. Existing roads and structures; and,
- 3 I. Potential connections with existing greenspace and trails.
- 4 (2) Conservation Area Management Plan Required. A Conservation Area management plan shall
5 be prepared and submitted prior to the issuance of a site clearance permit.
- 6 (3) Instrument of Permanent Protection Required. A copy of the recorded instrument of permanent
7 protection, such as a conservation easement or permanent restrictive covenant, shall be placed
8 on the Conservation Area prior to the issuance of a site clearance permit.

9

10 (Ord. No. 96564 § 1; Ord. No. 100126 § 2) (Ord. No. 101816, § 2, 12-15-05) (Ord. No. 2010-11-18-
11 0985, § 2, 11-18-10)

1 Sec. 35-210 Low Impact Development and Natural Channel Design Protocol (LID/NCDP)

2
3 STATEMENT OF PURPOSE

4 Low Impact Development and Natural Channel Design Protocols (LID/NCDP) use high quality
5 green features that enhance the beauty of a development site and also protect water quality, decrease
6 downstream erosion, improve water conservation, and preserve natural areas. LID/NCDP green features
7 can be used for multiple purposes on site (e.g., landscaping, buffering, parkland, irrigation) to achieve
8 more effective and attractive site design. By integrating storm water management to address multiple
9 objectives, LID/NCDP will improve the quality of life, community health and resilience, and safety of the
10 Citizens of San Antonio. Accordingly, the purpose of this section is to provide site design flexibility,
11 development incentives, and strategies to implement LID/NCDP. The specific purposes of this section
12 are:

- 13 • To provide a voluntary permitting and regulatory basis for site design and development which
14 incorporates LID/NCDP.
- 15 • To protect and enhance property values by preserving and creating high quality green features.
- 16 • To reduce impervious area its effects, and the costs associated with increased storm water runoff
17 and infrastructure.
- 18 • To protect and preserve environmentally sensitive features.
- 19 • To use both natural areas and engineered storm water controls that mimic natural functions, with a
20 goal of replicating the predevelopment hydrology, including groundwater recharge.
- 21 • To more fully address the range of impacts caused by storm water runoff, including increased
22 overland pollution, channel erosion, nuisance flooding, and elevated stream temperature caused by
23 frequent, smaller storm events.
- 24 • To help address total maximum daily load requirements for existing impaired streams in the city and
25 prevent future degradation of streams.
- 26 • To implement existing city policies which call for the use of LID/NCDP techniques, including but not
27 limited to SA2020, Master Plan, and Complete Streets policies.

28 The LID/NCDP use pattern implements the following policies of the master plan:

29 Natural Resource Goals

30 Goal 1 Preserve the unique, rare, and significant features of San Antonio's natural environment

- 31 • Sub-Policy 1.a.2. Water. Encourage the conservation of the City's surface and ground water
32 resources through public education programs and information programs and protective
33 regulations.
- 34 • Policy 1.b. Develop and implement a management plan for land use activities which include
35 the best management practices, based on scientific study that will protect the recharge and
36 drainage zones of the Edwards Aquifer from pollution.
- 37 • Sub-policy 1.b.3. Support new development designs that incorporate street, drainage and
38 lot layouts which reduce storm runoff, pollutant loading, and the need for landscape irrigation.
- 39 • Sub-policy 1.b.4. Adopt urban drainage standards which reduce nonpoint source pollution
40 and minimize downstream flooding.
- 41 • Sub-policy 1.b.10. Establish standards for vegetation clearing and maintenance.

1 • Sub-policy 1.b.11. Maximize open space and minimize impervious cover through all
2 available means.

3 • Policy 1.c. Work with elected representatives, other governing bodies, and public interest
4 groups to develop a comprehensive management plan for water resources including the
5 development of additional sources of clean water for the San Antonio area.

6 • Policy 1.d. Encourage retention of the 100-year floodplains as natural drainage ways
7 without permanent construction, unnecessary straightening, bank clearing or channeling.

8 • Sub-policy 1.d.1. Encourage the ecological management of floodplains and promote their
9 use as open space, such as greenways, parks, wildlife habitat, and pedestrian-friendly
10 linkage corridors.

11 • Sub-policy 1.d.2. Adopt strong storm water management practices throughout the drainage
12 area which include site specific measures such as:

- 13 – on-site storm water retention and detention;
- 14 – reduction in impervious cover;
- 15 – natural bank contouring;
- 16 – floodplain preservation and buffering;
- 17 – preservation of riparian habitat;
- 18 – storm water harvesting sites for reuse purposes.

19 Goal 2 Integrate environmental quality protection into all phases of local planning and policy
20 implementation

21 • Policy 2.a. Establish a strong natural resources protection policy for San Antonio.

22 • Sub-policy 2.a.1. Support the preservation and improvement of the current quality of San
23 Antonio's air, land, and water resources and revise current City codes, regulations and
24 practices to reflect this policy.

25 • Policy 2.d. Develop ordinances which preserve integrity of the natural settings of
26 neighborhoods, communities, open spaces and parks, and develop clear procedures for their
27 enforcement.

28 Goal 3 Achieve a sustainable balance between the conservation, use and development of San
29 Antonio's natural resources

30 • Policy 3.a. Develop programs to attract environmentally sensitive industry to San Antonio
31 and to encourage local industry to adopt water conserving and minimal impact technologies
32 in their operations.

33 • Sub-policy 3.a.4. Provide incentives for companies to reduce water and energy
34 consumption, and to reuse or recycle water.

35 • Policy 3.c. Develop incentive programs to reduce energy and water consumption.

36 • Sub-policy 3.c.6. Expand programs to encourage individuals and businesses to replace high
37 water-using vegetation with water saving landscapes.

38 (a) **Applicability.** The provisions of this section shall apply to any voluntary application meeting the
39 requirements of subsections (b) through (o) of this section and which is designated as a "Low Impact
40 Development and Natural Channel Design Protocol (LID/NCDP) Plan" by the applicant.

1 Within the city of San Antonio and its extraterritorial jurisdiction (ETJ), the LID/NCDP Plan shall be
2 based on the San Antonio River Basin LID Technical Guidance Manual and/or the Natural Channel
3 Design Protocol – San Antonio, Texas Region as amended.

4 The Unified Development Code continues to be applicable to issues not covered in this section,
5 except where these would conflict with the LID/NCDP use pattern, in which case the conflict shall be
6 resolved in favor of the LID/NCDP use pattern as long as the LID/NCDP does not create an adverse
7 impact to adjacent property owners or drainage structures or interfere with public safety and
8 emergency response.

9 **(b) Processing Procedures.**

10 (1) **Generally.** A Low Impact Development and Natural Channel Design Protocol Plan is a voluntary
11 Use Pattern application and shall be processed as part of a plat, tree affidavit, building permit
12 Master Plan Development, and other development review applications.

13 (2) **Incentives.** To encourage multifunctional LID best management practices (BMPs) such as tree
14 and natural area preservation, bioretention areas, vegetated swales, planter boxes, permeable
15 pavement, rainwater harvesting systems, and other approved LID BMPs, a LID/NCDP shall be
16 eligible for the following incentives as approved by the Director of the Transportation and Capital
17 Improvements Department or designee.

18 **A. Credit and Offset Incentives**

19 The applicant shall receive credits and offsets for LID/NCDP according to the following table:

20
21 **Table 210-1**

<u>Credit/Offset⁽¹⁾</u>	<u>Multiplier</u>
<u>Stream Buffer or Stream Restoration to Parkland Acre⁽²⁾</u>	<u>1.5</u>
<u>LID BMP to Landscape Area Acre</u>	<u>1.5</u>
<u>LID BMP to Tree Canopy⁽³⁾</u>	<u>1.5</u>
<u>Stream Restoration to Tree Canopy</u>	<u>1.25</u>
<u>LID BMP to Streetscape Tree⁽⁴⁾</u>	<u>1</u>
<u>Linear Park to Parkland Acre⁽⁵⁾</u>	<u>1.5</u>
<u>LID BMP Drainage Area to Parkland Acre⁽⁶⁾</u>	<u>1.5</u>
<u>Density Bonus⁽⁷⁾</u>	<u>10%</u>

22 (1) A minimum of 60 percent of the Water Quality Volume must be managed by LID BMPs to be eligible for these credits and offsets. A single
23 family residential lot, not part of a larger development, is ineligible for the storm water fee and FILO fee discount; however a single-family
24 dwelling is eligible for the other incentives in this section, as applicable.

25 (2) May meet a maximum of 50 percent of the site's parkland requirement.

26 (3) For areas where tree canopy preservation is maintained in conjunction with LID practices, the tree canopy offset is 1.5. See 210(k)(3).

27 (4) Up to 30 percent of new required landscaping trees in the Right-of-Way may be met by installing a landscape LID storm water BMP if part
28 of an approved storm water management plan. See 210(k)(5).

29 (5) May meet a maximum of 50 percent of the site's parkland requirement. See 210(i).

30 (6) Includes only permeable area draining to the BMP. Must provide multiple uses such as recreation and trails. May meet a maximum of 20
31 percent of the site's parkland requirement. See 210(i).

32 (7) A LID/NCDP may increase by 10 percent density allowed in table 310-1 of this chapter. See 210(c)(1)

33
34 **B. Fee Based Incentives**

35 (i) **Storm Water Fee Discount** – The storm water fee discount available for incorporating
36 the use of LID/NCDP is specified in section 34-235.

- (ii) Storm Water Fee In Lieu Of (FILO) Discount – Per Table 210-2 below, a minimum credit of five (5) percent of the required FILO payment, based on section 35-C109, may be designated for parcels that manage seventy (70) percent of the Water Quality Volume or greater.
- (iii) Permeable pavement shall not be counted as impervious cover if designed to store the 2-year, 24-hour storm event as specified by Section 35-504 Stormwater Management.
- (iv) Future modification or dissolution of an approved LID/NCDP integrated storm water plan or its associated operation and maintenance agreement may require reimbursement of any fee based incentives provided, and discontinuance of any ongoing fee based incentives per subsection (n)(6) (A) and (B),
- (v)

Table 210-2

	Percent of Water Quality Volume Managed⁽¹⁾			
	<u>70%</u>	<u>80%</u>	<u>90%</u>	<u>100%</u>
Credit/Offset				
FILO Fee Discount				
<u>Meets LID Performance Standard</u>	<u>5%</u>	<u>10%</u>	<u>15%</u>	<u>20%</u>
<u>Meets Detention Requirements or Increases Channel Storage through NCDP</u>	<u>Cumulative Reduction in Flow Sliding Scale – see 210(j)(1)(B)</u>			

(1) Water Quality Volume is defined as the runoff volume resulting from the first 1.5 inches of rainfall falling on the developed portions of the site.

(3) **Variances.** Within the incorporated areas of the city and the ETJ, variances shall be processed in accordance with section 35-483 of this chapter.

(4) Application Requirements.

A. Minimum Water Quality Volume Requirements. In order to be considered a LID/NCDP and be eligible for incentives in table 210-1 of this section, a minimum of sixty (60) percent of the required water quality volume resulting from the increase in impervious area for the site, including all of the parking and street areas, must be managed to meet the Performance Standards in (g)(2) below.

B. Concept Plan and Preliminary Plan Review and Preliminary Development Plan Review. The Development Services Plan Review Division and applicant may have a preliminary plan review (PPR) meeting on a concept plan for the post-construction storm water management system to be used in the proposed development project. For plat and Master Plan Development applications, the Land Development Division and applicant may have a Preliminary Development Plan Review (PDPR) meeting on such concept plan. The PPR and PDPR meetings should not be considered a detailed code review of plans. The purpose of the PPR and PDPR meeting is to discuss the post-construction storm water management measures necessary for the proposed project, as well as to discuss and assess constraints, opportunities, and potential approaches to storm water management designs before formal site design engineering is commenced. In advance of the meeting, the applicant should submit a Preliminary Plan Review or Preliminary Development Plan Review request form to the Development Services Department Plan Review Division or Land Development Division, as applicable.

Along with the PPR and PDPR request form, the applicant should submit a written or graphic concept plan of the post-construction storm water management system and include: existing natural drainage areas and natural areas to be preserved and/or enhanced; preliminary

1 selection and location of proposed structural and non-structural storm water controls,
2 including LID and NCDP elements; location of existing and proposed conveyance systems
3 such as swales and storm drains; location of floodplain/floodway limits; relationship of site to
4 upstream and downstream properties and drainage; and preliminary location of any proposed
5 riparian area modifications such as bridge or culvert crossings.

6 C. Owner's or their design team including engineer, architect and landscape architect are
7 encouraged to schedule a no cost preliminary LID/NCDP Review (PLR) by submitting a PLR
8 Request form to the stormwater unit at the San Antonio River Authority. The owner or design
9 team shall provide the same concept plan information requested for the PPR in (b)(4)B
10 above. This meeting shall be scheduled before the site layout is performed for roads, lots,
11 easements, and before infrastructure alignments have been developed. The PLR meeting
12 may be attended by city of San Antonio Transportation and Capital Improvements staff.

13 D. Requirements of a LID/NCDP Integrated Storm Water Plan. The LID/NCDP integrated storm
14 water plan required by this section shall contain architectural, landscape architecture and
15 engineering drawings, maps, assumptions, calculations and narrative statements as needed
16 to adequately describe the proposed development or redevelopment of the tract and the
17 measures planned to comply with the LID/NCDP performance standards in subsection (g)(2)
18 below. The plan must also meet the requirements of the current Storm Water Engineering
19 Review Team checklist. Plan content may vary to meet the needs of specific site
20 requirements. Guidelines for the LID/NCDP integrated storm water plan preparation may be
21 obtained from the Director of the Transportation and Capital Improvements Department or
22 designee or on the Transportation and Capital Improvements Department website. One copy
23 of the approved LID/NCDP integrated storm water plan shall be kept on file at the job site.

24 All construction of LID and NCDP storm water management measures addressed by this
25 section should conform to applicable best management practices outlined in two guidance
26 documents: San Antonio River Basin LID Technical Guidance Manual and Natural Channel
27 Design Protocol, San Antonio, Texas Region. These guidance documents may be updated or
28 revised periodically based on new information and new approved technologies. These
29 sources are recommended for guidance for LID/NCDP applicants. Choice of specific LID and
30 NCDP measures is at the option of the applicant.

31 A single family residential lot, not part of a larger development, is exempt from the full
32 LID/NCDP integrated storm water plan requirements in this section. However, a plan for a
33 single family residential lot must be provided and include the following: a brief project
34 summary including the location, description of existing property, and the proposed
35 development; calculations that show the development adheres to the LID performance
36 standards in subsection (g)(2); and an exhibit showing the site boundary, proposed locations
37 of building, driveway, parking and other impervious area footprints. The plan must show the
38 proposed locations of storm water BMPs and the positive overflow pathways for storms
39 exceeding the flow rate and volume managed by the BMPs.

40 E. Restrictions on Property Usage. Dedications to preserve conservation areas and open space
41 (floodplains, buffer zones, greenbelts, open space, park dedication, etc.) if applicable to a
42 site, shall be platted according to existing platting requirements and procedures of this
43 chapter. The location of all such designated natural areas and parkland shall be referenced
44 on the final plat. The plat and the LID/NCDP integrated storm water plan shall be referenced
45 in the city's approved LID/NCDP deed recordation affidavit, which along with the legal
46 description, shall be recorded with the county clerk upon final plat approval.

47 Land within the rights-of-way of below and above ground utilities or roads shall not count
48 toward the site's buffer zone, open space, parkland or other conservation area requirements.
49 The following guidelines are recommended for minimizing disturbance of conservation and
50 open space area:

- 51 – Coordinate in the placement of public and private utilities lines to minimize site
52 disturbance;

- 1 – Use site fingerprinting to identify appropriate buildable areas in locating utilities, roads,
- 2 and trails;
- 3 – To the extent feasible, co-locate utilities and trails in designated pathways;
- 4 – For utilities parallel to streams, locate utilities as far from the stream as possible; and
- 5 – If crossing a stream, construct utility lines so as to minimize impacts to the stream banks
- 6 and streambed.

7 Once a LID/NCDP integrated storm water plan has been approved for the site, within sixty
8 (60) days the applicant shall submit a deed recordation affidavit referencing the LID/NCDP
9 integrated storm water plan, including a description of all of the structural engineered BMPs,
10 designated conservation areas and other non-structural BMPs used to meet the LID
11 performance standards, along with the LID/NCDP storm water plan's operation and
12 maintenance agreement. If the owner intends to modify the recorded LID/NCDP, a LID/NCDP
13 integrated storm water plan modification must be submitted to the city for review and
14 approval, and the conditions of subsection (n)(6) shall apply. Depending on the nature of the
15 plan modification, the owner may also be subject to replatting the parcel.

16 F. Improvement Security

17 LID/NCDP storm water control measures shall be recognized similar to other site
18 improvements (e.g. drainage infrastructure, streets, etc.). As such, a performance agreement
19 shall be required and adhere to the procedures and the guarantees of performance specified
20 in section 35-437 of this chapter.

- 21 G. Record Drawings and Final Approval. Upon completion of a LID/NCDP BMP project, and
22 before a temporary certificate of occupancy or field acceptance of public or private
23 infrastructure improvements that are part of LID/NCDP integrated storm water plan shall be
24 granted, the applicant shall conduct a post-construction site inspection and verify that the
25 completed project is in accordance with the approved storm water plan and designs. Before a
26 final certificate of occupancy, or release of the performance bond for construction of public or
27 private infrastructure improvements, the designer of record shall submit actual record
28 drawings for all structural storm water management facilities and flow paths after final
29 construction is completed. See Section (m)(4) for detailed requirements of the record
30 drawings.

- 31
- 32 (c) Density. A LID/NCDP shall comply with the density standards of this chapter, except as follows:

- 33 (1) Density Incentives. To reduce impervious area, optimize LID/NCDP site design, and provide
34 incentives for LID/NCDP, a LID/NCDP may increase by ten (10) percent the density allowed in
35 table 310-1 of this chapter.

- 36 (d) Traffic Impact Analysis. A LID/NCDP shall comply with the traffic impact analysis standards of this
37 chapter.

- 38 (e) Lot Layout. A LID/NCDP shall comply with the lot layout standards of this chapter except as follows:

- 39 (1) Setback, Side Yard, and Rear Yard Incentives. In order to accommodate LID BMPs and
40 optimize LID/NCDP site design, required setback, side yards, and rear yards in table 310-1 of this
41 chapter may be reduced as long as such reductions meet fire code standards. The reductions
42 may not compromise public safety such as the sight distance triangles defined in section 35-
43 506(d)(5) of this chapter.

- 44 (f) Transportation.

45 A LID/NCDP shall comply with the transportation standards of this chapter except as follows:

- 46 (1) Minimum Pavement Width and Street Design. Applicants shall adhere to the Traditional Street
47 Design Standards in section 35-506, tables 506-4 and 506-4A of this chapter.

- 48 (2) Credit for LID Practices in the Street Right-of-Way. Vegetated LID storm water management
49 features may be located within the Right-of-Way medians, planting strips, curb extensions, or

1 other permeable surface within the street Right-of-Way; permeable pavement may be used for
2 sidewalks per (f)(6) below. The applicant may construct vegetated LID BMPs in the privately
3 maintained area of the street right-of-way and receive LID performance standards and detention
4 credits for such BMPs. For the latter, a sliding scale based on the cumulative reduction in flow
5 for the Water Quality Storm, 2-year storm, 5-year storm, 25-year storm and 100-year storms will
6 be applied. To receive a credit, the BMPs must be adjacent to the applicant's development
7 property, must be privately maintained, and must have a long-term maintenance agreement.
8 Use of swales with curb is allowed by right in zones RP, RE, RD, and FR, and allowed with
9 conditional approval in zones R20, O-1, MI-1, and MI-2.

- 10 (3) **Curb and Edge Treatment.** Where a portion of a project or public improvement has been
11 designed specifically as a LID storm water management feature, saw tooth curb edge treatment
12 is encouraged as part of LID/NCDP.
- 13 (4) **Separation of LID Practices and Utilities.** For LID BMPs installed in the right-of-way, care
14 must be taken to allow the co-placement and separation of utilities in such a way as to avoid
15 utility damage during construction. The applicant shall adhere to the street cross sections in the
16 San Antonio River Basin LID Technical Guidance Manual for appropriate placement and
17 installation of BMPs in the street right-of-way.
- 18 (5) **Use of Permeable Pavement for On-Street Parking.** The applicant shall adhere to the
19 approved list of permeable pavement materials that may be used for on-street parking areas in
20 the San Antonio River Basin LID Technical Guidance Manual, as may be updated periodically.
- 21 (6) **Sidewalks.** In order to reduce effective impervious area, an approved permeable pavement may
22 be used for sidewalks as long as the materials meet ADA requirements. The applicant shall
23 adhere to the approved list of permeable pavement materials that may be used for sidewalk
24 areas in the San Antonio River Basin LID Technical Guidance Manual as may be updated
25 periodically.
- 26 (7) **Special Purpose Medians.** Designers are encouraged to incorporate BMPs into dividers
27 constructed for aesthetic purposes such as at entrances for subdivisions and landscaping
28 features. LID storm water BMPs shall be designed according to specifications in the San Antonio
29 River Basin LID Guidance Manual. The minimum width for such special purpose dividers with
30 LID BMPs shall be in accordance with section 506(n)(2) of this chapter. No vegetation shall be
31 placed in the median that will obstruct the drivers' sight distance defined in section 35-506(d)(5)
32 of this chapter.
- 33 (8) **Traffic Calming Devices.** Traffic calming devices approved for use in LID/NCDP developments
34 include curb bump outs with LID/BMPs or curb extensions with LID BMPs. Such LID BMPs shall
35 be designed according to the San Antonio River Basin LID Guidance Manual.
- 36 (g) **Storm Water Management.** A LID/NCDP application shall comply with the storm water management
37 standards, section 35-504, of this chapter except as follows.
- 38 (1) **Integrated Storm Water Management.** After accounting for storm water quality and volume
39 credits from Environmentally Sensitive Site Design per subsection (j), Natural Resource
40 Protection and Tree Preservation, applicants shall use LID structural BMPs or a combination of
41 LID and conventional BMPs to meet the balance of LID Performance Standards required in (g)(2)
42 below. Depending on what is appropriate for the site, the applicant may choose the combination
43 of Environmentally Sensitive Site Design techniques and LID structural BMPs to meet the LID
44 performance standards. Approved LID structural BMPs, as well as design and maintenance
45 guidance for each BMP, may be found in the San Antonio River Basin LID Technical Guidance
46 Manual.
- 47 (2) **LID Performance Standards.**
- 48 A. For the purposes of this section,
- 49 (i) Development - buildings, roads and other structures; construction; and excavation,
50 dredging, grading, filling and clearing or removing vegetation associated with residential,

1 recreational, commercial, industrial or institutional construction, which increases impervious
2 area and the storm water runoff rate, volume, and pollutant loading compared to pre-
3 development conditions.

4 (ii) Redevelopment - any rebuilding and development on a site that has an existing
5 developed use or on a vacant urban infill site that has no existing developed use, but was
6 previously developed.

- 7
- 8 B. For new development, the Water Quality Volume (WQV) shall be defined as the runoff
9 volume resulting from the first 1.5¹ inches of rainfall falling on the developed portions of the
10 site. The storm water management system shall be designed to remove eighty (80) percent
11 of the average annual post development total suspended solids (TSS) load and sixty (60)
12 percent of the annual bacteria load through a combination of infiltration, filtering, and settling.
13 To maintain groundwater recharge and protect streams from increased erosion, the system
14 must also reduce the volume and flow rate to pre-development conditions using a
15 combination of storage, infiltration, and evapotranspiration and, if necessary, onsite reuse.
- 16 C. Per subsection (b)(4)A, a minimum of sixty (60) percent of the water quality volume must be
17 managed to be considered a LID/NCDP development. If less than one-hundred (100) percent
18 of the water quality volume will be managed, the designer will give first priority to managing
19 the runoff volume from all of the parking and street areas within the development area. The
20 water quality, volume, and flow rate LID performance standards above are presumed to be
21 met if the storm water management system is sized and designed to manage a minimum of
22 sixty (60) percent of the WQV using the guidance in the San Antonio River Basin LID
23 Technical Guidance Manual.
- 24 D. A redevelopment site shall be subject to a reduced LID performance standard: the storm
25 water management system will be sized and designed based on the runoff volume resulting
26 from the first 1.181 inches of rainfall from rebuilt areas and newly developed areas on the
27 site. The applicant shall be eligible for incentives to treat storm water from the
28 redevelopment site according to the table 210-1 and 210-2.

29 **(3) Special LID Requirements for Karst Areas Outside the Edwards Aquifer Recharge Zone.**

- 30 A. Mapping Requirements. The applicant shall identify and locate karst features and submit a
31 map with the concept plan and storm water management plan for the proposed development
32 project. The map shall display, according to the best information available, topographic and
33 geologic information and features (including, but not limited to, faults and fractures along
34 waterways and sinkholes), and proposed and existing stream buffer preservation areas.
- 35 B. Easement Requirements. Any existing karst swales, sinkholes, or solution features should be
36 surveyed and permanently recorded on the plat or deed. Features collecting drainage for
37 watersheds in excess of five thousand (5,000) square feet should be set aside in an
38 easement with a buffer or reserve area on the development plats so that all future
39 landowners are aware of the presence of solution features or sinkholes on their property.

40 **(4) Special LID BMP Requirements/Considerations for Historic Areas.**

- 41 A. Landscaping: Removal of existing landscaping or sod areas and replacing them with
42 vegetated LID BMPs is allowed where not removing character defining landscaping elements
43 and with Historic Design Review Commission approval and a Certificate of Appropriateness.
- 44 B. Hardscaping: Removal of existing hardscaping and replacing it with pervious pavement
45 treatments is allowed where not removing character defining hardscaping elements.

¹ A 1.5” storm is equivalent to the 90th percentile storm calculated using the methodology developed by the EPA in report 841-B-09-001. The daily rainfall total for the period of record at the San Antonio International Airport was used to calculate the 90th and 85th percentile storms referenced in this section.

1 (5) **Manufactured Products for Storm Water Management.** In addition to the BMPs included in
2 the San Antonio River Basin LID Technical Guidance Manual, several proprietary manufactured
3 products have been adopted by the Texas Commission on Environmental Quality (TCEQ) to
4 meet the minimum eighty (80) percent TSS removal required by this chapter. These devices
5 shall not be accepted to meet the volume reduction requirement of subsection (g)(2), but will be
6 allowed for pre-treatment, filtering, trash removal and oil and grease removal as the first
7 structural BMP in a treatment train. Devices that have not been approved by TCEQ may be
8 acceptable to the Director of the Transportation and Capital Improvements Department or
9 designee only if they meet the Technology Acceptance and Reciprocity Partnership (TARP)
10 guidelines.

11 A. Pre-Treatment and Trash Removal Applications

- 12 (i) Hydrodynamic Separators. Hydrodynamic separators utilize cyclonic motion of storm
13 water to physically remove sediments and floatable materials. They do not provide
14 volume or rate reduction; therefore their most appropriate application is upstream of
15 BMP practices that can provide these functions. Hydrodynamic separators are
16 particularly well suited for providing pretreatment in areas of high sediment loading for
17 BMPs whose primary function is filtration or infiltration, as they can reduce maintenance
18 frequency and extend the life of the downstream BMP.
- 19 (ii) Screens and Trash Racks. Screening devices that capture large floatable debris are
20 recommended for all inlets that drain into preserved/restored streams or BMPs. These
21 devices provide a single point for collection and disposal of trash that would otherwise
22 be dispersed into natural areas.

23 B. Enhanced Filtration

- 24 (i) Cartridge Filters. Cartridge filters that rely on structurally enclosed media to filter storm
25 water and remove pollutants may be used in applications where LID structural BMPs
26 described in the LID Design Manual are determined to be infeasible or not in the best
27 interest of the city according to the Director of Transportation and Capital Improvements
28 or designee. Cartridge filters shall not be used in areas with high sediment loading
29 unless hydrodynamic separator pretreatment is installed. Cartridge filters may be used
30 as part of a treatment train but do not retain the volume defined as the performance
31 standard in subsection (g)(2).
- 32 (ii) High Rate Filter Media. Customized high rate filter media may be utilized to meet partial
33 water quality performance goals if LID BMPs designed using the San Antonio River
34 Basin LID Technical Guidance Manual are infeasible or not in the best interest of the city
35 according to the Director of Transportation and Capital Improvements or designee. High
36 rate filter media applications may include tree boxes, tree filters, or any filter system that
37 treats but does not retain the volume defined as the performance standard in subsection
38 (g)(2). The WQV defined in section (g)(2) must pass through the high rate filter media
39 and achieve the pollutant removal targets. Treating the WQV using high rate media does
40 not equate to meeting the volume reduction requirement in subsection (g)(2).

41 (h) **Utilities.** See utilities standards, section 35-507, of this chapter. Also see subsections (b)(4)D,
42 Restrictions on Property Usage, and (f)(4), Separation of LID Practices and Utilities, above.

43 (i) **Parks and Open Space.** Where LID practices such as bioretention areas, rain gardens, and swales
44 are part of an approved LID/NCDP integrated storm water plan, the non-impervious areas which drain
45 to these practices and which serve multiple uses such as trails, open space, and recreation, shall be
46 counted toward the site's required parkland requirements of this section and may be constructed in
47 designated parkland area. LID practices meeting a minimum of sixty (60) percent of the performance
48 standard in subsection (g)(2) will receive 1.5 credit acres towards parkland requirements up to twenty
49 (20) percent of the site's parkland requirements. The parkland dimensional requirements in table 503-
50 2 may be reduced up to ten (10) percent to accommodate use of LID BMPs. For sites with LID BMPs
51 meeting a minimum of sixty (60) percent of the performance standard in subsection (g)(2) linear trails
52 may receive 1.5 parkland credit acres up to fifty (50) percent of site's required parkland area, if such

1 trails are connected to a portion of the development's remaining parkland area via a pedestrian way.
2 Such linear trails may deviate up to ten (10) percent from dimension requirements in table 503-2 of
3 this chapter.

4 (j) **Natural Resource Protection and Tree Preservation.**

5 (1) **Environmentally Sensitive Site Design.**

6 A. For LID/NCDP, the applicant shall begin the design process with a site analysis to determine
7 the degree to which the following features exist on the site and the feasibility of their
8 preservation or enhancement:

9 (i) High Value Soils. Preservation of high infiltration soils is encouraged. For the purposes
10 of this ordinance, high infiltration soils are defined as all soils with infiltration rates
11 greater than one inch per hour.

12 (ii) Trees. At a minimum meet the current tree preservation requirements of section 35-523
13 of this chapter. Also see subsection (k) below.

14 (iii) The applicant shall perform a NCDP geomorphic assessment according to (j)(2) of this
15 section.

16 (iv) Stream Network Buffering. To the extent that any of the following stream network
17 elements exist on a site, at a minimum, the LID/NCDP shall preserve

18 1. A riparian buffer with a minimum average width of 25 feet from the top of bank for all
19 Jurisdictional Waters of the U.S. and;

20 2. All of the floodway and flood fringe within the regulatory 100-year floodplain, as
21 shown on official FEMA maps, and any Letter of Map Revision (LOMR);

22 3. A riparian buffer with minimum average width of fifty (50) feet from the edge of the
23 regulatory 100-year floodplain as delineated on the official FEMA maps and any
24 Letter of Map Revision (LOMR). To reduce fragmentation, no more than ten (10)
25 percent of the buffer can be less than thirty-three (33) feet wide;

26 4. A riparian buffer with a minimum average width measured from the top of the bank
27 and determined based on the slope of the streamside area in accordance with the
28 table methodology found in section 34-913 of this code for all perennial streams or
29 intermittent streams with a drainage area of greater than 100 acres. In all cases, a
30 twenty-five (25)-foot-wide riparian buffer zone must be preserved. To reduce
31 fragmentation, no more than ten (10) percent of the buffer can be less than thirty-
32 three (33) feet wide;

33 5. A riparian buffer with minimum average width of fifty (50) feet from the top of bank of
34 any perennial, intermittent streams with a drainage area of less than one-hundred
35 (100) acres or ephemeral streams draining more than forty (40) acres. In all cases, a
36 twenty-five (25)-foot-wide riparian buffer zone must be preserved. To reduce
37 fragmentation, no more than ten (10) percent of the buffer can be less than thirty-
38 three (33) feet wide;

39 6. All areas within twenty five (25) feet of the top of bank of any ephemeral stream
40 draining less than forty (40) acres; and

41 7. The applicable stream buffer requirements of this chapter's Tree Preservation and
42 Floodplain requirements, or applicable recharge protection provisions in section 34-
43 920 Recharge Feature Protection and Buffer Zone, whichever is most stringent.

44 For sites meeting a minimum of sixty (60) percent of the performance standard in
45 subsection (g)(2), the applicant shall receive 1.5 parkland area credit acres for meeting
46 the stream network buffering requirement as long as the buffer area contains trail
47 access; this credit may meet up to fifty (50) percent of the site's parkland requirements.
48 Any stream network buffering area on the site which overlaps with a linear trail area

1 shall receive 1.5 parkland area credit acres (i.e., there shall be no double counting of
2 credits for overlapping areas).

3 (v) Wetlands. Wetlands shall be preserved according to existing federal, state, and local
4 regulations.

5 (vi) Habitats of Threatened and Endangered Species. Habitats of threatened and
6 endangered species shall be preserved according to existing federal, state, and local
7 regulations.

8 (vii) Steep Slopes. At a minimum, meet the steep slope protection requirements in the Tree
9 Preservation section 35-523 of this chapter. Steep slopes are defined by section 35-523
10 as including any slope exceeding twenty percent or one-foot vertical for every five feet
11 horizontal. Slopes greater than 15% percent should be evaluated for erodibility using the
12 Natural Resources Conservation Service erodibility index.

13 (viii) Karst, cracks, and caves. At a minimum meet TCEQ protection requirements for the
14 Edwards Aquifer Recharge Zone and (g)(3) of this section.

15 (ix) Other unique historical or environmental features. Such features shall be presented to
16 the city on a case-by-case basis for evaluation of tree canopy area credit of up to 1.5
17 times the acreage of dedication.

18 B. Offsetting Storm Water Detention, Water Quality, and Volume Requirements.

19 Environmentally Sensitive Site Design practices that manage the increased runoff due to
20 development may be evaluated using standard hydrologic approaches required for the
21 LID/NCDP integrated storm water plan. Environmentally Sensitive Design site practices shall
22 also be credited toward meeting the site's LID Performance Standard.

23 (i) Minimize cutting and/or filling. Minimize cutting and/or filling alongside roads and within
24 residential areas. Except where otherwise required in other zoning districts or use
25 pattern areas, when cutting is required (i.e., roadsides, around building footprints), use
26 structural controls (retaining walls, stacked stone, etc.) to create slopes. Reduced
27 cutting minimizes alteration of natural drainage and reduces clearing of native
28 vegetation and compaction of soils. In fill areas that require structural controls,
29 underground storage can be used to reduce or eliminate detention ponds or provide
30 capture and reuse volume to meet the LID performance standards. Maintain natural
31 drainage divides and drainage channels; avoid crossing or filling drainage channels or
32 disturbing riparian zones.

33 (ii) Design grading and minimize land disturbance to encourage sheet flow and lengthen
34 storm water flow paths through vegetated areas.

35 (iii) Place streets/roads as close to existing grade as possible.

36 C. Establish clearing, grading and stockpiling limits. The San Antonio River Basin LID
37 Technical Guidance Manual provides site design principles to identify protected areas and
38 minimize impacts to existing vegetation and soils. Grading plans shall clearly identify limits
39 of construction areas and include a 10-foot buffer between areas of disturbance and
40 protected areas, BMPs or building and any environmentally sensitive area as identified in
41 subsection (j)(1)A. Allowable stockpile areas shall be identified in areas that will be paved or
42 disturbed during subsequent construction (See Construction Sequencing, subsection
43 (m)(2)).

44 (2) Natural Channel Design Protocol.

45 A. Restorative practices for natural channels. All channels draining more than twenty (20) acres
46 within an Environmentally Sensitive Site Design plan should be evaluated for

47 (i) Protection if the channel is stable and functioning properly, or

48 (ii) Restoration if the channel is unstable.

1 For the purposes of this section, channels should be evaluated using a Geomorphic
2 Assessment as defined in the Natural Channel Design Protocol, San Antonio, Texas
3 Region, as amended, to determine the degree of instability. Streams that are restored
4 and that establish a minimum 25-foot riparian vegetated buffer will be credited at 1.25
5 times the tree canopy and will receive 1.5 credit acres for parkland, up to fifty (50)
6 percent of the site's parkland requirements.

7 B. Earthen engineered channel design to reduce erosion and maintenance. Engineered
8 channels that are necessary to convey local and or offsite flows shall be designed either as
9 vegetated swales or as multi-stage flood control channels (see Natural Channel Design
10 Protocol, San Antonio, Texas Region as amended). Vegetated channels that incorporate
11 natural linear flood storage may be credited toward detention requirements to the degree
12 that they reduce flood flows but may not be credited towards buffering, tree canopy or park
13 requirements. Detention credits will be based on standard flood routing engineering methods
14 for storm water management in section 35-504 of this chapter or the San Antonio River
15 Basin Regional Modeling Standards for Hydrology and Hydraulic Modeling.

16 C. Restoration credit for existing engineered channels. Existing engineered channels that are
17 armored using either concrete or rock rubble may be redesigned using NCDP to increase
18 open space, reduce maintenance cost, and decrease stand-alone detention requirements.
19 Existing earthen channels that are unstable may be redesigned to incorporate vegetation,
20 channel forms and reduced shear stress to improve water quality and reduce flooding.
21 Restoration typically will create wider floodplains, more green space and enhanced riparian
22 zones which may be credited toward the tree preservation and parkland requirements of this
23 chapter. As part of a LID/NCDP integrated storm water plan, channels will be credited as
24 flow reduction and water quality features based on scientifically-based benefits. Such
25 benefits shall be documented in the LID/NCDP integrated storm water plan.

26 D. Recommended natural channel design protocols may be found in Natural Channel Design
27 Protocol, San Antonio, Texas Region (2013), which may be updated from time to time.

28 (3) Identifying locations for LID BMPs. After the applicant has determined the feasibility of
29 Environmentally Sensitive Site Design, the applicant shall determine lot layout, transportation
30 and street design, utilities, and parking as specified in subsections (e), (f), (h), and (l) herein,
31 identifying appropriate locations on site for incorporating structural LID BMPs into the landscape,
32 building, parking, and streetscape areas.

33 (k) Bufferyards, Landscaping, Streetscape, and Tree Preservation.

34 (1) Multi-functional LID BMPs. To encourage multifunctional LID BMPs and NCDP and provide
35 incentives for their use, bioretention areas, vegetated swales, planter boxes, rainwater harvesting
36 systems, NCDP, and other approved vegetated LID BMPs may be used to meet landscaping,
37 buffering, streetscape, and tree preservation required in this chapter and may be constructed in
38 designated landscape, buffering, streetscape, and tree preservation areas if part of an approved
39 LID/NCDP integrated storm water plan for the site. The dimensional and plant standards for
40 landscaping areas, landscape strips, and walls in this chapter may accommodate LID and NCDP
41 features if part of an approved LID/NCDP integrated storm water plan for the site.

42 (2) Landscape Credit Incentive. In accordance with section 35-523(i)(13), LID areas may be used
43 to comply with landscape requirements of section 35-511. For an LID/NCDP Plan meeting a
44 minimum of sixty (60) percent of performance standards in subsection (g)(2), areas with LID
45 BMPs will receive 1.5 credit acres for landscaping requirements of this chapter. Irrigation
46 requirements of this chapter shall not apply to LID BMPs that use native plants. If an irrigation
47 system is not installed, the landscape plan shall provide a detailed alternative irrigation plan and
48 schedule for the establishment and maintenance of the landscape. It is recommended that
49 commercial properties direct air conditioning condensate into BMPs for irrigation as needed and
50 to meet the requirements in section 34-274.

51 (3) Tree Preservation Offset. In accordance with 35-523 (i)(13), a canopy cover offset of 1.5 times
52 the existing canopy cover of trees shall be provided where tree preservation is used in

1 conjunction with LID practices. To receive 1.5 times credit, the landscape LID practice must be
2 approved based on the standards of this section and section 35-504 and must meet a minimum
3 of sixty (60) percent of the performance standard in subsection (g)(2).

4 (4) **Bufferyards Credit.** In accordance with 35-523 (i)(13), LID may be used to comply with
5 bufferyard requirements of section 35-510. For LID/NCDP, the city shall allow vegetated LID
6 BMPs in buffer types A, B, and C. LID BMPs shall be allowed in the first ten (10) feet of
7 bufferyards D, E and F, as measured from the interior of the site. The minimum plant materials
8 required in table 510-2 shall be met in the overall bufferyard area. The permanent irrigation
9 requirements of this chapter shall not apply to LID BMPs that use native plants and meet a
10 minimum of sixty (60) percent of the performance standard in subsection (g)(2) for the bufferyard
11 drainage area; however, a LID/NCDP that does not install a permanent irrigation system shall
12 provide a detailed alternative irrigation plan and schedule for the establishment and maintenance
13 of the bufferyard vegetation.

14 (5) **Tree Preservation and Streetscaping.** Tree preservation in the right-of-way area is encouraged
15 in LID/NCDP developments. As an alternative to the streetscaping requirements for new
16 landscape trees in the right-of-way, up to twenty (20) percent of the new required landscaping
17 trees may be offset by installing a vegetated LID storm water BMP if part of an approved
18 LID/NCDP integrated storm water management plan, except in areas zoned as a corridor overlay
19 district or form-based zoning district. A maintenance plan must be approved for the LID BMPs in
20 the right-of-way.

21 (I) **Parking.** A LID/NCDP shall comply with the parking standards of this chapter except as follows.

22 (1) **Parking Space.** To minimize impervious area, use of minimum vehicle spaces allowed in tables
23 526-3a and 526-3b of this chapter is encouraged except where preservation of woodlands or
24 significant stands of trees is desired; in such cases, per section 35-526(b)(6), the Director of the
25 Transportation and Capital Improvements Department or designee may waive up to fifty (50)
26 percent of the minimum parking spaces required by table 526-3. Permeable pavement is
27 encouraged for vehicle spaces above the minimum requirement, and as stipulated in section (I)(3)
28 below. Use of shared off-street parking facilities is encouraged, as practicable, according to
29 section 35-526(g) of this chapter.

30 (2) **Dimensions.** To reduce impervious area, a LID/NCDP may reduce parking dimensions using
31 one of the following options.

32 A. Use of the parking space dimensions in table 210-3 below is allowed as an alternative to the
33 requirements of Table 526-1 of this chapter.

34 **Table 210-3**

<u>Angle</u>	<u>Width</u>	<u>Curb Length</u>	<u>1-way aisle</u>	<u>2-way aisle</u>	<u>Stall Depth</u>
<u>30 degrees</u>	<u>8'- 6"</u>	<u>17'</u>	<u>12'</u>	<u>NA</u>	<u>15'</u>
<u>45 degrees</u>	<u>8'- 6"</u>	<u>12'</u>	<u>12'</u>	<u>NA</u>	<u>17'</u>
<u>60 degrees</u>	<u>8'- 6"</u>	<u>9'- 9"</u>	<u>16'</u>	<u>20'</u>	<u>17'-6"</u>
<u>90 degrees</u>	<u>8'- 6"</u>	<u>8'- 6"</u>	<u>25'</u>	<u>25'</u>	<u>18'</u>

35
36 B. Up to forty (40) percent of the required parking spaces may be designated for use by
37 compact vehicles with minimum dimensions of eight (8) feet in width and sixteen (16) feet in
38 length. Compact vehicle parking shall be identified by individually marking each parking
39 space surface with lettering a minimum of six (6) inches in size.

40 (3) **Use of Permeable Pavement.** To reduce effective impervious cover and protect shade trees,
41 permeable pavements may be used in low-traffic portions of the off-street parking area, including
42 all marked parking stalls and infrequently used fringe parking areas. The applicant shall adhere

1 [to the approved list of permeable pavement materials that may be used for off-street parking](#)
2 [areas in the San Antonio River Basin LID Technical Guidance Manual.](#)

- 3 (4) **[Parking Area Landscaping, Buffering, and Shading.](#)** [To encourage multifunctional LID BMPs](#)
4 [and provide incentives for their use, bioretention areas, vegetated swales, planter boxes,](#)
5 [rainwater harvesting systems, NCDP, and other vegetated BMPs may be used to meet parking](#)
6 [area landscaping requirements in this chapter and may be constructed in designated landscape](#)
7 [areas if part of an approved LID/NCDP integrated storm water management plan for the site.](#)

- 8 (m) **[Construction Activities and Reporting Requirements.](#)** [Construction of LID systems requires a high](#)
9 [standard of care to avoid damage or alterations of the existing site conditions that could deteriorate or](#)
10 [compromise the structural and non-structural LID BMPs. The following provides guidance on factors](#)
11 [to consider and plan for during site construction. Additional guidance on construction practices is](#)
12 [provided in the San Antonio River Basin LID Technical Guidance Manual. The LID/NCDP Plan shall](#)
13 [adhere to Chapter 34 Storm Water Compliance for Construction Activity, except as follows:](#)

14 (1) **[Environmentally Sensitive Construction.](#)**

- 15 A. [The contractor shall minimize over excavation to reduce unnecessary stockpiling and hauling](#)
16 [of spoil material.](#)
- 17 B. [Top soil to be reused on site shall be stripped and stockpiled in an area identified on the](#)
18 [plans. Top soil shall not be mixed with rock, rubble, construction debris or spoil materials.](#)
- 19 C. [Maintain a ten \(10\)-foot buffer between disturbance, LID BMPs or building and any](#)
20 [environmentally sensitive area as identified in subsection \(j\)\(1\).](#)

21 (2) **[Construction Sequencing.](#)**

- 22 A. [The contractor shall abide by the limits of disturbance shown on the site plan and may not](#)
23 [clear underbrush, store materials, or park equipment, construction vehicles, and contractor](#)
24 [vehicles outside of the construction limits identified on the plan. Construction traffic \(foot](#)
25 [and/or vehicular traffic\) must be kept off all protected areas during and after construction.](#)
- 26 B. [The contractor shall place construction fencing at the limits of construction and around the](#)
27 [tree dripline of all preserve areas prior to beginning clearing operations. The areas protected](#)
28 [by construction fencing shall not be cleared, trenched, modified or otherwise disturbed](#)
29 [without written approval of the designer of record for the LID/NCDP integrated storm water](#)
30 [management plan. Field modifications to construction fencing are not at the discretion of the](#)
31 [contractor.](#)
- 32 C. [Locations identified on the plans as temporary sediment basins and overflow points for](#)
33 [temporary erosion control measures shall be constructed prior to mass clearing or grading of](#)
34 [the site.](#)
- 35 D. [Stockpiles shall be located only in areas designated on the site plan and surrounded by](#)
36 [sediment protection measures. Stockpiles not being actively worked shall be covered with](#)
37 [tarps or plastic sheeting to reduce erosion of fine particles that would enter structural BMPs.](#)
- 38 E. [Pervious BMP areas shall be protected from compaction caused by construction equipment.](#)
39 [To that end, excavation should be performed from the center of the pervious BMP area](#)
40 [outward to the edges with equipment that can reach into the excavation area. Bulldozers,](#)
41 [loaders, bobcats and other excavation equipment that cannot reach into the excavation shall](#)
42 [not be used for the final three vertical feet. Excavated materials must be placed away from](#)
43 [and out of the limits of the pervious areas. Materials must be stockpiled only in the areas](#)
44 [identified on the plans.](#)
- 45 F. [Erosion control and site stabilization. In addition to meeting the requirements of Chapter 34](#)
46 [Division 5 and 35-504 \(e\) of this chapter, the contributing drainage area must be stabilized](#)
47 [prior to directing water to the structural BMP. Structural BMPs and environmentally sensitive](#)
48 [areas should be fully protected from sediment intrusion by approved erosion and sediment](#)
49 [control systems as defined in section 34-806.](#)

- 1 G. Temporary erosion control systems shall remain in place and be maintained until construction
2 is complete and accepted by the designer of record or city's inspector and the contributing
3 drainage area has been stabilized.
- 4 H. It is advisable to divert runoff from the first few run-off producing storms away from pervious
5 improvements to reduce the initial input of fines leftover from construction activities and
6 tracked on the impervious surfaces.
- 7 I. After structural BMPs are in place and temporary erosion controls are removed, performance
8 of the systems shall be observed by the Registered Design Professional in Responsible
9 Charge (RDPiRC) or certified inspector during and after storms exceeding 0.5 inches to
10 check that installed components are operating as designed.

11 **(3) Construction Inspection**

- 12 A. Critical inspection points and required documentation. Before, during, and after construction,
13 owners are required to check that the structural BMPs are constructed in accordance with the
14 plans and specifications. A pre-construction meeting(s) with the owner, designer, inspector
15 and contractor shall be performed prior to any work being performed on site. The meetings
16 should cover critical items and stages of construction to ensure that the contractor's
17 interpretation of the plans and specifications are consistent with the designer's intent.
- 18 B. Material Submittals. The contractor shall provide the RDPiRC or certified inspector a sample
19 of all BMP media, liner, fabric, mulch, aggregate, or mix design. The contractor may not order
20 materials until the designer of record has approved said material as meeting the project plans
21 and specifications.
- 22 C. Verification of construction. An RDPiRC or certified inspector, retained by the owner of the
23 land, will provide observation of the monitoring, testing, and/or sampling of the various
24 construction activities for the LID system. In addition, the Owner will verify that the sampling,
25 monitoring, and testing for the major elements of the BMP construction are in compliance
26 with the established design requirements before the next sequential item for construction is
27 initiated.
- 28 D. Special Inspections. The RDPiRC or certified inspector shall check that excavation limits and
29 elevations and grades are consistent with the plans. Any deviations from the plans must be
30 approved in writing by the RDPiRC. The record drawing construction phases listed below
31 should be surveyed by a registered professional land surveyor and submitted for entry to the
32 local BMP maintenance tracking database (or facility maintenance records).
- 33 (i) Final excavation depth is completed.
- 34 (ii) Structural components and subgrade complete installation.
- 35 (iii) Piping, underdrains, overflows and liners are installed.
- 36 (iv) Final grades are reached and inlet elevations are set.
- 37 E. Verification testing must be performed under direction of the RDPiRC or certified inspector at
38 the intervals and locations indicated in the specifications. Nonconforming results must be
39 brought to the designer's attention immediately. Test locations should be selected by
40 exercising professional judgment that the testing and sampling represent the construction
41 activity.
- 42 F. The RDPiRC or certified inspector shall observe and verify that the pretreatment structures (if
43 applicable) are installed and working appropriately.
- 44 G. The RDPiRC or certified inspector shall prepare a periodic report for each twenty-five (25)
45 percent of the construction period when materials or their placement are being monitored,
46 sampled, or tested.
- 47 (i) The RDPiRC or certified inspector shall prepare, sign and retain onsite a weekly
48 summary report until construction is complete. The periodic reports, test data,

1 photographic records, and test results will be included in the monthly summary report. If
2 the period of the completion is less than one month, the summary reports will be
3 prepared every other week.

4 (ii) Photographs shall be included in the monthly or bi-weekly summary report to provide a
5 visual record of work progress, testing activity, and construction work. The photographs
6 shall include:

- 7 1. General location, date and time of the photograph;
- 8 2. Description of the item photographed;
- 9 3. Direction of view (north, south, east, or west); and
- 10 4. Name and initials of photographer.

11 **(4) Record Drawings and Final Agency Acceptance.**

12 A. Upon completion of a project, the applicant shall conduct a post-construction site inspection
13 and verify that the completed project is in accordance with the approved storm water plan
14 and designs. Before a final certificate of occupancy, the designer of record shall submit
15 record drawings for all structural storm water management facilities and flow paths after final
16 construction is completed.

17 B. Testing: The flow paths for structural BMPs managing storm water from streets or parking
18 lots shall be verified by releasing water from a water truck onto the pavement and
19 determining if water enters the structural BMPs as designed. Ten percent of the water quality
20 volume for the BMPs or 500 gallons for each BMP, whichever is smaller, shall be used to
21 perform the flow-path test. This process can also be performed during a rain event of an
22 intensity or duration that will verify the flow paths and entrance into the structural BMPs as
23 outlined above. As an alternative, the owner may hire a registered professional surveyor to
24 verify the flow paths of all inlets, outlets, and impervious surfaces draining to a BMP. The
25 surveyor must provide the as-built information to the RDPiRC as part of the record drawings
26 per (m)(4)D below.

27 C. The applicant shall use the Post Construction Inspections Compliance form which can be
28 obtained from the Director of the Transportation and Capital Improvements Department or
29 designee or on the Transportation and Capital Improvements Department website.

30 D. The record drawings shall show the final design specifications for all storm water
31 management facilities and the field locations, size, depth, and planted vegetation of all
32 facilities or practices, as installed. Record drawings shall also show final lines and grades as
33 measured by a registered professional land surveyor in (m)(3)D above. The engineer of
34 record for the storm water management facilities shall verify that the record drawings of storm
35 water facilities or practices substantially comply with the approved LID/NCDP integrated
36 storm water plan and the requirements of this ordinance.

37 E. A final inspection of and written approval by the Director of the Transportation and Capital
38 Improvements Department or designee shall be performed before the record drawings may
39 be approved by the city.

40 F. The RDPiRC shall verify that construction was consistent with the plans by reviewing
41 inspection reports and the record drawing survey.

42 G. Construction Activity Operation and Maintenance. The contractor shall prepare and submit an
43 acceptance report to the owner. The acceptance report shall contain the following:

- 44 (i) Material testing results;
- 45 (ii) Record drawings including any deviations from or alterations to the original plans;
- 46 (iii) Weekly summary reports; and

1 (iv) Documentation or certificates of contractor, subcontractor, supplier, or installer warranties
2 or guarantees.

3 (n) **Maintenance.**

4 (1) **Maintenance Required.** The owner of each private structural storm water management practice
5 installed pursuant to this ordinance shall maintain and operate it for a minimum of ten (10) years
6 from the date of as-built verification so as to preserve and continue its function in controlling
7 storm water quality and quantity at the degree of function for which the BMP was designed.

8 (2) **Post Construction Observation.** The owner of a tract of land for which a LID/NCDP plan has
9 been approved, through their RDPIRC, certified inspector, or authorized designee, shall perform
10 at least quarterly inspections of the structural storm water management practices during the first
11 year after the construction of the LID/NCDP improvements.

12 (3) **Annual Maintenance Inspection Report.** The person responsible for maintenance of any
13 structural storm water management practice installed pursuant to this ordinance shall submit to
14 the Director of the Transportation and Capital Improvements Department or designee an
15 inspection report from a registered design professional licensed by the State of Texas for
16 performing inspection services in their area of competence. The inspection report shall contain all
17 of the following:

- 18 – Name and address of the land owner or designee;
- 19 – The recorded book and page number of each lot of each structural storm water management
20 practice;
- 21 – A statement that an inspection was made of all structural storm water management practices;
- 22 – The date the inspection was made;
- 23 – A statement that all inspected structural storm water management practices are performing
24 properly and are in compliance with the terms and conditions of the approved maintenance
25 agreement required by this ordinance; and
- 26 – The original signature and seal of a registered design professional licensed by the State of
27 Texas and competent to perform BMP inspections.

28 All inspection reports shall be documented on forms supplied by the Director of the
29 Transportation and Capital Improvements Department or designee or on the Transportation and
30 Capital Improvements Department website. An original inspection report shall be provided to
31 Director of the Transportation and Capital Improvements Department or designee beginning one
32 year from the date of the as-built verification and each year thereafter on or before the
33 anniversary date of the as built verification.

34 A single family residential lot, not in a subdivision, is not required to submit annual inspections
35 reports.

36 (4) **Operation and Maintenance Agreement General.** Prior to the conveyance or transfer of any lot
37 or building site to be served by a structural storm water management practice pursuant to this
38 ordinance, and prior to the issuance of any permit for the development or redevelopment of a site
39 requiring a structural storm water management practice pursuant to this ordinance, the applicant
40 or owner of the site must execute an operation and maintenance agreement that shall be binding
41 on all subsequent owners of the site, portions of the site, and lots or parcels served by the
42 practices for a minimum of ten (10) years from the date of as-built verification. Until transference
43 of all property, sites, or lots served by the structural storm water management practice, the
44 original owner or applicant shall have primary responsibility for carrying out the provisions of the
45 operation and maintenance agreement.

46 The operation and maintenance agreement shall require the owner or owners to maintain, repair,
47 and if necessary, reconstruct the structural storm water management practice and shall state the
48 terms, conditions, and schedule for maintenance. In addition, the operation and maintenance
49 agreement shall grant to the city a right of entry in the event that the Director of the
50 Transportation and Capital Improvements Department or designee has reason to believe it has
51 become necessary to inspect, monitor, maintain, repair, or reconstruct the structural storm water

1 management practice; however, in no case shall the right of entry, of itself, confer an obligation
2 on the city to assume responsibility for the storm water management practice.

3 The operation and maintenance agreement must be approved by the Director of the
4 Transportation and Capital Improvements Department or designee prior to permit approval; the
5 applicant shall submit a deed recordation affidavit referencing the LID/NCDP integrated storm
6 water plan's operation and maintenance agreement along with the LID/NCDP integrated storm
7 water plan and a provide a copy to the Director of the Transportation and Capital Improvements
8 Department or designee within fourteen (14) days following its recordation.

9 (5) **Special Operation and Maintenance Agreement for Homeowners' Associations or Other**
10 **Associations.** For all storm water management practices required pursuant to this ordinance that
11 are to be owned and maintained by a homeowners' association, property association, or similar
12 entity, the required operation and maintenance agreement shall be referenced within the
13 Restrictive Covenants of the HOA and include all of the following provisions:

14 A. Acknowledgement that operation and maintenance agreements run with the land and impose
15 pro rata liability upon individual lot owners. The developer and association agree that the
16 operation and maintenance agreement runs with the land and shall be binding upon
17 themselves, their respective successors and assigns, including individual lot owners within
18 the Subdivision, for a minimum of ten (10) years from the date of as-built verification. Any
19 liability imposed against an individual landowner shall be pro-rated on a per lot basis as
20 determined by the fraction of total lot(s) owned by the individual lot owner.

21 B. The Developer, Association, their respective successors and assigns, including individual lot
22 owners within the subdivision, agree to regularly and routinely inspect, clean, and maintain
23 the structural storm water management practices and otherwise keep it in good repair, at
24 their own cost and expense, in accordance with the Operation & Maintenance Manual
25 approved with the construction documents, for a minimum of ten (10) years from the date of
26 as-built verification.

27 C. The Developer, Association, their respective successors and assigns, including individual lot
28 owners within the subdivision, agree to repair or replace structural storm water management
29 practices within thirty (30) days of notification of deficiency by the city.

30 D. The Developer, Association, their respective successors and assigns, including individual lot
31 owners within the subdivision, agree that in the case of failure to correct deficiencies they
32 will reimburse the city for its cost and expenses incurred in the process of repairing any
33 failed storm water management practices installed pursuant to this agreement.

34 E. The Covenant of the Subdivision establishing the Association states that the Association is
35 obligated to inspect, clean, maintain, and repair the LID BMPs for a minimum of ten (10)
36 years from the date of as-built verification, the Association has adopted the operation and
37 maintenance agreement as an obligation of the Association, and that a funding mechanism,
38 such as an escrow account, is in place whereby individual lot owners within the subdivision
39 pay a regular fee to the Association for the inspection, cleaning, maintenance, and repair of
40 the storm water management practice(s).

41 F. Upon the initial sale of any lot within the Subdivision and prior to closing on such sale, the
42 Developer shall give a copy of the operation and maintenance agreement to the potential
43 buyer.

44 (6) **Dissolution or Modification of the LID/NCDP Integrated Storm Water Plan and the**
45 **Operation and Maintenance Agreement**

46 A. Dissolution or Modification of the LID/NCDP Integrated Storm Water Management Plan or
47 Operation and Maintenance Agreement within the Minimum Ten-Year Maintenance Period

48 (i) If the applicant or owner wishes to dissolve the LID/NCDP integrated storm water plan
49 or operation and maintenance agreement within the minimum ten (10) year maintenance
50 period, the following conditions apply:

- 1 – Dissolution of the LID/NCDP integrated storm water plan shall be defined as
- 2 – meeting less than sixty (60) percent of the performance standard in subsection
- 3 – (g)(2) and/or an associated operations and maintenance agreement.
- 4 – The applicant or owner must notify the Director of Transportation and Capital
- 5 – Improvements Department or designee of its desire to dissolve the LID/NCDP
- 6 – integrated storm water plan or operation and maintenance agreement.
- 7 – The applicant or owner must demonstrate no downstream impacts of the modified
- 8 – storm water plan if the site received on-site detention credits; if downstream impacts
- 9 – are projected to occur, the applicant or owner shall abide by the applicable current
- 10 – local, state, or federal regulations to implement controls to mitigate those impacts.
- 11 – The applicant or owner must meet the parkland, landscaping, and tree preservation
- 12 – requirements of the ordinance in effect on the date when the city was notified of the
- 13 – desire to dissolve the plan and/or agreement.
- 14 – The applicant or owner loses all ongoing fee-based incentives.
- 15 – The applicant or owner must reimburse to the city all fee-based incentives accrued
- 16 – to-date, prorated based on the years of service of the BMPs. The applicant or owner
- 17 – shall pay a minimum penalty of ten (10) percent of the fee-based incentives accrued
- 18 – to date. The applicant must reimburse the city within thirty (30) days of receiving the
- 19 – assessment of incentives and penalties. If such assessment is not paid within thirty
- 20 – (30) days, the matter will be referred to the city attorney's office to enforce
- 21 – compliance subject to subsection (p).
- 22 (ii) If the applicant or owner discontinues the LID/NCDP integrated storm water plan or
- 23 – maintenance responsibilities and does not petition the city for dissolution of the plan or
- 24 – the operation and maintenance agreement, all of the above conditions apply; in addition
- 25 – the owner shall be subject to a civil penalty per subsection (p) below. The maximum civil
- 26 – penalty for a violation may be up to the maximum allowed by law.
- 27 (iii) If the owner or applicant is proposing to modify the LID/NCDP integrated storm water
- 28 – plan and/or operations and maintenance agreement in such a way as to meet at least
- 29 – sixty (60) percent of the performance standard in subsection (g)(2), the above conditions
- 30 – do not apply. However, a revised LID/NCDP integrated storm water plan, record
- 31 – drawings, and deed recordation affidavit must be submitted to the city and approved in
- 32 – accordance with subsections (b)(4)(D) and (F) and (m)(4).
- 33 (iv) If the owner or applicant is proposing a modification which is an enhancement of the
- 34 – existing LID/NCDP integrated storm water plan and/or operations and maintenance
- 35 – agreement, the Director of the Transportation and Capital Improvements Department or
- 36 – designee shall determine if a revised LID/NCDP integrated storm water plan, record
- 37 – drawings, and deed recordation affidavit must be submitted to and approved by the city
- 38 – based on the type and degree of modification proposed. Incentives corresponding to the
- 39 – modified LID/NCDP integrated storm water plan will be effective at the time of the
- 40 – acceptance of the enhanced LID/NCDP elements by the Director of Transportation and
- 41 – Capital Improvements or designee.
- 42 B. Dissolution or Modification of the Operation and Maintenance Agreement after the Minimum
- 43 – Ten-Year Maintenance Period.
- 44 (i) If the owner wishes to dissolve the operation and maintenance agreement after the
- 45 – minimum ten (10)-year maintenance period, the following conditions apply:
- 46 – Dissolution of the operations and maintenance agreement shall be defined as
- 47 – meeting less than sixty (60) percent of the performance standard in subsection
- 48 – (g)(2) and/or an associated operations and maintenance agreement.
- 49 – The owner must notify the Director of Transportation and Capital Improvements of
- 50 – its intent to dissolve the operation and maintenance agreement.
- 51 – The owner loses all ongoing fee-based incentives.

- 1 – The owner must demonstrate no downstream impacts if the site received on-site
2 detention credits or provide mitigation in accordance with current local, state, and
3 federal regulations.
- 4 – The applicant or owner must meet the parkland, landscaping, and tree preservation
5 requirements of the ordinance in effect on the date the city was notified of intent to
6 dissolve the plan and/or agreement.

7

8 (ii) If the owner discontinues maintenance responsibilities and does not notify the city that it
9 is dissolving the storm water plan or operation and maintenance agreement, all of the
10 above conditions apply; in addition the owner shall be subject to a civil penalty per
11 subsection (p) below. The maximum civil penalty for a violation may be up to the
12 maximum allowed by law.

13 (iii) If the owner or applicant is proposing a modification which meets at least sixty (60)
14 percent of the performance standard in subsection (g)(2) and/or is an enhancement of
15 the existing operations and maintenance agreement, the Director of the Transportation
16 and Capital Improvements Department or designee shall determine if a revised
17 LID/NCDP integrated storm water plan, record drawings, and deed recordation affidavit
18 must be submitted to and approved by the city based on the type and degree of
19 modification proposed. Incentives corresponding to the modified LID/NCDP integrated
20 storm water plan will be effective at the time of the acceptance of the enhanced
21 LID/NCDP elements by the Director of Transportation and Capital Improvements or
22 designee.

23

24 (o) **Post Construction Inspections.**

25 (1) **Inspections Prescribed by the Storm Water Operation and Maintenance Agreement.**

26 Inspections shall be conducted as prescribed by the storm water operation and maintenance
27 agreement. After the structural BMPs are established including the vegetation establishment
28 period, performance of the system should be observed by the RDPiRC or a certified inspector
29 during and after run-off producing storms to check that installed components are operating as
30 designed.

31 (2) **Additional Inspections by the City.** Inspections may be conducted by the city on a reasonable
32 basis, including but not limited to routine inspections; random inspections; and inspections based
33 on complaints or other notice of possible violations. Inspections may include but are not limited to
34 reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and
35 water in LID BMPs according to the San Antonio River Basin LID Guidance Manual and the
36 operation and maintenance agreement.

37 (3) **Right of Entry for Inspections.** When any new drainage control facility or LID BMP is installed
38 on private property, or when any new connection is made between private property and a public
39 drainage control system, the property owner shall grant to the city the right to enter the property
40 at reasonable times and in a reasonable manner for the purpose of inspection. This includes the
41 right to enter a property when the city has a reasonable basis to believe that a violation of this
42 ordinance is occurring or has occurred in accordance with subsection (p) below.

43 (p) **Compliance.**

44 Compliance with the requirements of this section shall be enforced through sections 35-490 through
45 35-492 of this chapter.