PIMA COUNTY
DEVELOPMENT SERVICES

TO: Honorable Board of Supervisors

FROM: Arlan M. Colton, Planning Director

DATE: March 4, 2015

SUBJECT: **Co8-14-01 STORMWATER HARVESTING SYSTEMS ZONING CODE TEXT AMENDMENT**

The above referenced Zoning Code Text Amendment is scheduled for the Board of Supervisors' **TUESDAY, MARCH 17, 2015** hearing.

REQUEST: For a **text amendment of the Pima County Zoning Code** to add definitions, standardize terminology, and provide guidance, regulation and incentive for the voluntary use of stormwater harvesting systems in landscape bufferyards and off-street parking areas.

OWNER: N/A

AGENT: N/A

DISTRICT: ALL

STAFF CONTACT: Mark Holden

PUBLIC COMMENT TO DATE: As of February 18, 2015, staff has received no comments from the public regarding the proposed Zoning Code Text Amendment.

PLANNING AND ZONING COMMISSION RECOMMENDATION: APPROVAL (9-0; Commissioner Bain was absent)

STAFF RECOMMENDATION: APPROVAL

AC/MH/ar
Attachments

PIMA COUNTY
DEVELOPMENT SERVICES

BOARD OF SUPERVISORS MEMORANDUM

FOR MARCH 17, 2015 MEETING OF THE BOARD OF SUPERVISORS

TO: HONORABLE BOARD OF SUPERVISORS

FROM: Arlan M. Colton, Planning Director
Public Works-Development Services Department-Planning Division

DATE: **March 4, 2015**

ADVERTISED ITEM FOR PUBLIC HEARING

ZONING CODE TEXT AMENDMENT

Co8-14-01 **STORMWATER HARVESTING SYSTEM ZONING CODE AMENDMENT**
AN ORDINANCE OF THE BOARD OF SUPERVISORS OF PIMA COUNTY, ARIZONA; RELATING TO ZONING; AMENDING THE PIMA COUNTY CODE BY AMENDING CHAPTER 18.03 (GENERAL DEFINITIONS); CHAPTER 18.07 (GENERAL REGULATIONS AND EXCEPTIONS); CHAPTER 18.09 (GENERAL RESIDENTIAL AND RURAL ZONING PROVISIONS); CHAPTER 18.39 (GENERAL COMMERCIAL STANDARDS); CHAPTER 18.73 (LANDSCAPING, BUFFERING AND SCREENING STANDARDS); AND, CHAPTER 18.75 (OFF-STREET PARKING AND LOADING STANDARDS) TO ADD DEFINITIONS, STANDARDIZE TERMINOLOGY, AND PROVIDE REGULATIONS, STANDARDS AND INCENTIVES FOR THE USE OF STORMWATER HARVESTING SYSTEMS, AND TO RENUMBER SUBSEQUENT SECTIONS ACCORDINGLY. On motion, the Planning and Zoning Commission voted 9-0 to recommend **APPROVAL** (Commissioner Bain was absent). Staff recommends **APPROVAL**.
(ALL DISTRICTS)

Planning and Zoning Commission Public Hearing Summary (January 28, 2015)

Staff presented information from the staff report to the commission. Staff stated that the text amendment would provide new definitions to the zoning code related to elements of stormwater harvesting; standardize the use of the term throughout the code; provide the general use, guidance and regulation for these systems; and, promote their voluntary use in landscape bufferyards and off-street parking areas through incentives.

A commissioner asked about the legality of stormwater ownership by private citizens. Staff responded that the Regional Flood Control District addressed this issue in the drafting of the text amendment, and that the amendment only covers stormwater collected on private property. The commissioner asked if stormwater in a street is owned by private citizens. Another commissioner opined that this is a legal question that goes beyond the relevance of the text amendment. Staff reiterated that proposed stormwater harvesting deals only with collection on private property.

A commissioner asked if an accounting of water supplied by stormwater harvesting as compared to other sources would be integrated in the text amendment. Staff responded that the text amendment is not that detailed, but that this could be a first step toward updating related portions of the zoning code once the Comprehensive Plan update (Pima Prospers) is approved.

The commissioner followed up with a comment that local experts estimate that adding to our existing water supply will cost between ten to one-hundred times more than the current cost for water supply, and that water harvesting is going to become much more economically important to the region.

A commissioner asked if collecting stormwater from the street is in fact illegal. Staff responded that some local jurisdictions allow stormwater harvesting from the street onto private property.

No members of the public asked to speak on the issue and the commission moved to close the public hearing. Commissioner Neeley made a motion to **APPROVE** the zoning code text amendment; Commissioner Poulos seconded.

Upon a voice vote, the motion to **APPROVE** passed (9-0; Commissioner Bain was absent).

PUBLIC COMMENTS

Staff has received no public comment regarding the text amendment. Review and comment was solicited from various county departments (Development Services, Transportation, Environmental Quality, Office of Sustainability and Conservation, Wastewater Reclamation, Flood Control); local jurisdictions (Tucson, Marana, Oro Valley, Sahuarita); Arizona state departments (Water Resources, State Lands); local water utilities; real estate, engineering, architecture, landscape architecture, building, and economic development firms; and, local water harvesting experts (Watershed Management Group, University of Arizona Desert Water Harvesting Initiative, PAG Stormwater Management Workgroup).

AC/MH/ar
Attachments

c: Chris Poirier, Assistant Planning Director
Co08-14-01 File

PIMA COUNTY DEVELOPMENT SERVICES DEPARTMENT
PLANNING DIVISION
STAFF REPORT TO THE PLANNING AND ZONING COMMISSION

PUBLIC HEARING
January 28, 2015

Co8-14-01 STORMWATER HARVESTING SYSTEMS ZONING CODE TEXT AMENDMENT

STATUS / AGENDA ITEMS	**Planning and Zoning Commission Public Hearing** Zoning Code Amendment
DESCRIPTION	AN ORDINANCE OF THE BOARD OF SUPERVISORS OF PIMA COUNTY, ARIZONA; RELATING TO ZONING; AMENDMENG THE PIMA COUNTY CODE BY AMENDING CHAPTER 18.03 (GENERAL DEFINITIONS); CHAPTER 18.07 (GENERAL REGULATIONS AND EXCEPTIONS); CHAPTER 18.09 (GENERAL RESIDENTIAL AND RURAL ZONING PROVISIONS); CHAPTER 18.39 (GENERAL COMMERCIAL STANDARDS); CHAPTER 18.73 (LANDSCAPING, BUFFERING AND SCREENING STANDARDS); AND, CHAPTER 18.75 (OFF-STREET PARKING AND LOADING STANDARDS) TO ADD DEFINITIONS, STANDARDIZE TERMINOLOGY, AND PROVIDE REGULATIONS, STANDARDS AND INCENTIVES FOR THE USE OF STORMWATER HARVESTING SYSTEMS, AND TO RENUMBER SUBSEQUENT SECTIONS ACCORDINGLY. (ALL DISTRICTS)
INITIATION	Planning and Zoning Commission
PUBLIC COMMENT	None received

STAFF RECOMMENDATION
Staff recommends **APPROVAL** of the proposed Pima County Zoning Code text amendment.

STAFF REPORT
This text amendment provides definitions for elements of *stormwater harvesting systems* and standardizes use of terminology in other chapters and sections of the zoning code. The amendment also provides the general use, guidance and regulation for these systems, and standards and incentives for their use specifically in landscaped off-street parking areas and bufferyards.

Currently the zoning code includes a definition and land use regulations for *rainwater harvesting systems* that use roofs, gutters, downspouts, cisterns and tanks to collect and store

precipitation, generally for later use. In contrast, *stormwater harvesting systems* collect precipitation that has reached the ground (from pavement, impervious surfaces, disturbed areas) and promote its infiltration into the soil. These systems may include natural systems that collect and use stormwater as close to its source as possible (referred to as *green infrastructure* and *low impact development*), and may also employ earthworks (berms, swales, basins) and structures (check dams, rock mulch, permeable paving) to harvest stormwater.

Stormwater harvesting systems can reduce runoff and soil erosion by slowing water velocity and promoting on-site infiltration. Harvested stormwater can provide a low-cost sustainable source of irrigation in landscaping that helps reduce use of groundwater. In the desert southwest, healthy landscaping can create shade and lessen urban heat island, provide wildlife habitat, improve air quality, and add beauty to developed areas. Plants and soils in stormwater harvesting areas can absorb and filter various pollutants picked up by runoff (petroleum products, pesticides, pet waste, sediment) and improve stormwater quality through the process of *bioretention*. Also, stormwater harvesting can reduce the need for and cost of constructing and maintaining flood control structures.

Stormwater harvesting presents an opportunity to tap a generally underutilized resource, and in recent years there has been a shift regionally and locally toward the increased use of rainwater and stormwater harvesting systems. Leadership in Energy and Environmental Design (LEED) and other sustainable design and building standards identify the collection, storage and use of precipitation as a best practice, especially in arid areas with limited rainfall. The Pima Association of Governments passed a resolution in June 2012 supporting low impact development and green infrastructure for stormwater management. The Pima County Regional Flood Control District is testing a "first flush" requirement in new developments, for retention of the first half-inch of precipitation from rainfall events. Also, the City of Tucson and Pima County are drafting a joint *Low Impact Development and Green Infrastructure Guidance Manual* to provide instruction for rainwater and stormwater harvesting. There are numerous other publications and online sources for rainwater and stormwater harvesting: EPA's *Green Infrastructure in Arid and Semi-Arid Climates*; the University of Arizona Water Resources Research Center's *Desert Water Harvesting Initiative*; City of Tucson's *Water Harvesting Guidance Manual*; and, Watershed Management Group's *Green infrastructure for Southwestern Neighborhoods*, to name a few.

The proposed Zoning Code text amendment will add the definitions (Chapter 18.03) for *stormwater harvesting system* to the zoning code, in addition to a number of other related terms. The amendment will also standardize usage where the general term *water harvesting* is currently used in the code in the Conservation Subdivisions (Chapter 18.09.100), General Commercial Standards (Chapter 18.39), and other sections.

Amendment of the General Regulations and Exceptions (Chapter 18.07) will provide the purpose, guidance and requirements for stormwater harvesting systems. Specifically, systems will be required to collect stormwater on-site to be drained into landscape areas in bufferyards and off-street parking areas, while not impeding cross-site drainage and allowing flow between stormwater harvesting elements. Stormwater harvesting systems will be reviewed in conjunction with site improvement plan review.

The Landscape, Buffering and Screening Standards (Chapter 18.73) include a new stormwater harvesting option. As incentives, when stormwater harvesting systems meet Chapter 18.07 requirements and cover at least three-quarters of the required bufferyard area:

- height of required walls in Bufferyards A-D may be reduced to 3½ feet (Bufferyards E-J screen industrial areas and substations and wall height will remain the same), and

- density of canopy trees required by the Landscape Design Manual may be reduced by 50% for all bufferyards (from 6-25 trees per 100 linear feet of bufferyard) – required density of other landscape plant types remains the same

Additionally, when walkways and sidewalks under Amenity Landscaping Requirements (Chapter 18.73.050) use pervious pavement, pavers, bricks or similar water-permeable surface, and required landscaped traffic islands use stormwater harvesting:

- the ten percent amenity landscaping area requirement may be reduced by half

In Off-Street Parking and Loading Standards (Chapter 18.75), the proposed text amendment revises some existing requirements:

- parking lot landscape planters no longer require raised edges, but must provide some form of barrier to protect landscaping and allow in-flow of stormwater, and

- emphasize design that helps maximize shade of paved areas

Chapter 18.75 also includes a new stormwater harvesting option. As an incentive, when three-quarters of a site's required landscape planters and screening areas for off-street parking meet the stormwater harvesting requirements:

- length of screening walls required for off-street parking areas under Site Improvement Standards may be reduced by half, provided shortened walls are strategically placed to provide needed screening

Staff solicited comment on the proposed text amendment from regular local, county and state agency and jurisdiction reviewers, but also from local water utilities, non-profit groups and specialists involved in water harvesting, local real estate, engineering and landscape architecture, development, home building, and economic development firms (see list in Appendix A). Recommendations from comments have been incorporated into the amendment.

During review of the proposed text amendment, we received comments that offering reduced parking would be an incentive; however, the Zoning Code already offers this through the Individual Parking Reduction Plan or Landscape Increase parking modification. Of the proposed incentives, reduction of required structures was identified as an efficient incentive: besides reducing project design and construction costs, space that would be otherwise occupied by structures can be devoted to stormwater harvesting. Also, we received comments that the reduction of required canopy trees in bufferyard areas was counterintuitive, resulting in reduced shade and screening. The tree density allowed under the incentive should still provide adequate coverage (3-5 canopy trees per 100 linear feet in Bufferyards A-D).

Respectfully submitted,

Mark Holden,
Principal Planner

cc: Co8-14-01 file

Appendix A – Stormwater Harvesting Systems Zoning Code Text Amendment, Review Distribution List

American Institute of Architects (AIA), Tucson Chapter
Arizona Builders Alliance, Tucson Chapter
Avra Water Co-op, Inc.
City of Tucson, Office of Integrated Planning
Coalition for Sonoran Desert Protection
Community Water Company of Green Valley
Cypress Civil Development (Engineering)
Diamond Ventures
Flowing Wells Water
Farmers Water Company
Green Valley Water Company
Lago del Oro Water Company
Metropolitan Pima Alliance (MPA)
Metro Water District
Norris Design (Planning and Landscape Architecture)
Pima Association of Governments (PAG), Stormwater Management Workgroup
Pima County Department of Environmental Quality
Pima County Department of Transportation
Pima County Regional Flood Control District
Ray Water Company
Rick Volk Real Estate
Sonoran Permaculture Guild
Southern Arizona Homebuilders Association (SAHBA)
Tucson Association of Realtors (TAR)
Tucson Metropolitan Chamber of Commerce
Tucson Regional Economic Opportunities (TREO)
Tucson Water
U of AZ Water Resources Research Center, Desert Water Harvesting Initiative
Vail Water Company
Watershed Management Group

Pima County Code Title 18 - ZONING
DRAFT TEXT AMENDMENT - Stormwater Harvesting Systems
January 21, 2015

(Note: proposed additions to the Zoning Code are underlined, text to be removed is ~~struck-out~~, and portions of the code are included to provide context.)

Chapter 18.03 - GENERAL DEFINITIONS

18.03.020 - Definitions.

G. Definitions "G."

7. Green infrastructure (GI): practices that use or mimic natural systems and processes to promote infiltration, evapotranspiration, and harvesting of stormwater for retention and use in the landscape, generally by using vegetation and soil to manage stormwater where it falls.

L. Definitions "L."

15. Low impact development (LID): a land development or re-development approach that preserves or restores on-site natural systems and hydrologic functions, and reduces impervious or disturbed areas to manage stormwater as close to its source as possible.

S. Definitions "S."

21. Stormwater harvesting system: A system for the on-site collection and retention of precipitation that has reached the ground, collected from paved, impervious or disturbed surfaces. System elements may consist of:
    a. earthworks (including but not limited to depressed landscape areas, basins, berms, swales);
    b. structures (including but not limited to curbs with inlets, scuppers or cuts, gabions, check-dams, permeable paving, rock mulch); and
    c. other green infrastructure and low impact development elements to slow and disperse stormwater and promote its infiltration into the soil.

U. Definitions "U."

2. Urban heat island: a developed urban or suburban area that is significantly warmer (2°-10° F or 1°- 6° C) than surrounding rural areas due to the retention of heat by un-shaded buildings and paved surfaces. Urban heat islands can increase energy demands, air conditioning costs, air pollution and greenhouse gas emissions, and heat-related illness and mortality.

Chapter 18.07 - GENERAL REGULATIONS & EXCEPTIONS

18.07.030 - Land use regulations.

S. Stormwater Harvesting System.

1. Purpose. The use of stormwater harvesting systems can:
   a. Increase on-site stormwater infiltration to reduce run-off and soil erosion;
   b. Improve stormwater quality by absorption, filtration and uptake of pollutants into natural systems;
   c. Provide a low-cost, sustainable source of irrigation to augment and reduce use of groundwater resources;
   d. Support landscaping to create shade, lessen urban heat island, improve air quality and beautify local development;
   e. Provide wildlife habitat and preserve and enhance existing riparian corridors; and
   f. Reduce the burden on and cost of building public stormwater control structures.
2. Stormwater harvesting systems are permitted in all zones, subject to the requirements and exceptions of this subsection:
   a. Design, installation and use of stormwater harvesting systems should use as guidance, where applicable, Pima County Code Title 16-Floodplain Management, the Regional Flood Control District Manual "Design Standards for Stormwater Detention and Retention," the City of Tucson / Pima County "Low Impact Development-Green Infrastructure Guidance Manual," and other accepted stormwater harvesting principles and guidelines for arid climates approved by the Floodplain Administrator and Planning Official.
   b. Stormwater harvesting shall be reviewed in conjunction with site improvement plan review.
   c. Stormwater harvesting systems shall be designed to:
      1) Collect stormwater from all on-site paved, impervious or disturbed surfaces, but may also collect off-site non-regulatory stormwater;
      2) Drain directly into bufferyards, off-street parking, and other required landscape and screening areas, as well as detention basins and areas that augment existing riparian habitat; and
      3) Allow the flow of stormwater between harvesting elements across the site – walls, hardscaping, and other structures shall also be designed to facilitate stormwater flow.

Chapter 18.09 - GENERAL RESIDENTIAL AND RURAL ZONING PROVISIONS

18.09.100 - Conservation Subdivision.

F. Conservation natural area standards. The planning official, or the planning official's designated representative qualified in such matters, shall review the subdivision's conservation natural area to ensure that it protects natural area connections and important habitat features. A conservation subdivision shall comply with the following standards:

2. Grading and conservation natural areas.

k. Site development shall include reduction of ~~stormwater~~ runoff by means of stormwater harvesting ~~(swales, basins, gabions, mulches, etc.)~~, erosion control through benign grade stabilization, and careful siting of improvements to minimize negative impacts in conformance with ~~permaculture~~ accepted local green infrastructure and low impact development practices and concepts.

Chapter 18.39 - GENERAL COMMERCIAL STANDARDS

18.39.030 - Large Scale Retail Establishment.

C. Development Standards.

3. Landscape and screening:

c. The landscaping plan shall include stormwater harvesting features ~~for water~~ to be used in the development;

18.39.050 - Neighborhood Shopping Center.

C. Development Standards.

4. Landscape and screening:

b. The development shall provide for stormwater harvesting with the features shown on the landscape plan submittal; and

18.39.060 - Small Shopping Center.

C. Development Standards.

3. Landscape and screening:

b. The development shall include stormwater harvesting features ~~for water~~ to be used in the development;

Chapter 18.73 - LANDSCAPE, BUFFERING AND SCREENING STANDARDS

18.73.010 - Purpose and scope.

A. The purpose of this chapter is to provide landscaping requirements and performance standards which:

2. Conserve groundwater resources in conformance with the Arizona Groundwater Code, Title 45, Chapter 2, by:

b. Helping ~~control and~~ utilize stormwater, and control and reduce runoff,

18.73.030 - Performance standards.

C. Stormwater Harvesting Option.

1. Stormwater harvesting in bufferyards. When stormwater harvesting systems meet requirements in 18.07.030(S)(2) and cover at least three-quarters of the required bufferyard area:

a. The height of walls required in the Landscape Design Manual for Bufferyards A through D only may be reduced to three and one-half feet; and

b. The density of canopy trees required in the Landscape Design Manual for all bufferyards may be reduced by 50 percent.

18.73.050 - Amenity landscaping requirements.

C. Stormwater Harvesting Option.

1. Amenity landscaping reduction for stormwater harvesting. The ten percent amenity landscaping requirement may be reduced by half when the following stormwater harvesting elements are installed:

a. All pedestrian walkways and sidewalks shall use accepted porous / pervious pavement, pavers or bricks, or similar water-permeable surface; and

b. All landscaped traffic islands shall meet stormwater harvesting requirements for landscape planters in 18.75.040(F).

Chapter 18.75 - OFF-STREET PARKING AND LOADING STANDARDS

18.75.040 - Development standards.

B. Site Improvement Standards.

1. Slope and Grading. The finished slope and grade of off-street parking and loading facilities shall conform with county standards inclusive of the requirements of Chapter 18.81 (Grading) and the Manual.
2. Drainage. In addition to county drainage requirements, stormwater ~~drainage flow~~ shall be considered a resource and be designed to benefit landscaped areas on the development site. Erosion control measures shall be designed and implemented to control drainage flow from hard-surfaced areas onto abutting soil surfaces.
3. Landscaping. In accordance with the requirements of Chapter 18.73 (Landscaping Standards):
    a. A minimum of ten percent of the gross parking area shall be devoted to amenity landscaping (refer to Chapter 18.73, Landscaping Standards);
    b. ~~Raised~~ Landscaping planters no less than four feet wide shall be placed at the ends of parking rows to define driveways with at least one tree per parking aisle and appropriate ground cover.
    c. Signage, landscaping and screening materials shall not obstruct sight distances or vehicle turning movements.
    d. When single parking rows occur, canopy trees shall be placed every four un-shaded parking stalls ~~in planters having a minimum of four sides with no dimension less than four feet.~~ When double aisles of parking occur, canopy trees shall be placed every eight un-shaded parking stalls.
    e. When the placement of trees in the required location among single or double row parking stalls is made impracticable by the location of a building, access area, drainage area or similar site constraint, the required parking area trees in the problem area may be reduced to one tree for every ten spaces in a four-foot wide median planter the length of the parking spaces. The remainder of the required trees may be placed within the bufferyard, stormwater harvesting area, retention/detention area or other landscaped area of the site.
    f. Parking canopy structures may be used for all parking stalls. All parking canopy structures must be constructed with a heat reflective roofing material. Where used, photo voltaic cells or other solar technology may substitute for the heat reflective roofing material.
4. Screening. Screening (refer to Chapter 18.73, Landscaping Standards) shall buffer parking areas from the following general land uses:
    a. Residential Areas. Parking facilities adjacent to property zoned, planned or used for residential purposes shall be separated from such property by a minimum five-foot wide landscaped buffer, which shall consist of either a minimum six-foot high decorative masonry wall or fence, permanently maintained vegetation, earth berms, or a combination of these elements. An opaque screen is required to

provide noise, light, and access barriers between the dissimilar uses. If a wall or fence is used, at least fifty percent of the required vegetation shall be maintained on the external side of the wall or fence to provide visual relief when viewed from the residential side. Refer to Chapter 18.73 (Landscaping Standards) for specific requirements.

b. Streets. Parking facilities containing ten or more spaces, any of which abut a public right-of-way, shall be separated from the street right-of-way by a minimum five-foot wide landscaped buffer, as listed above, consisting of a minimum three and one-half foot high wall, earth berms, plant material or combination thereof. Refer to Chapter 18.73, Landscaping Standards, for specific requirements. The objective of this screening is visual relief; a fifty percent visual screen is acceptable. Landscaping within public rights-of-way requires a use permit and license agreement from the department of transportation and flood control district prior to installation.

c. Screening areas for off-street parking may use the landscape bufferyard stormwater harvesting option found in 18.73.030(C).

5. Any lights used to illuminate parking spaces and drives shall be in accordance with the county outdoor lighting code (Title 15).

6. Emergency and Service Vehicle Access. All parking areas shall be designed to permit free access by emergency and service vehicles commonly in use by public and private emergency and service operators.

7. Shading. Required landscape planters, and canopy trees in particular, should be designed and installed with an emphasis on maximizing shading of paved surfaces. Linear planters should be installed as near as possible to north-south orientation to maximize shade.

E. Parking Lot Improvements Standards.

1. Pavement Marking. Parking spaces in paved parking areas shall be permanently marked with striping in accordance with the Manual on Uniform Traffic Control Devices.

2. Barriers.

a. Parking areas and spaces shall be provided with bumper barriers, wheel stops or wheel stop curbing, designed in conformance with the manual to prevent parked vehicles from extending beyond the property lines, damaging ~~adjacent landscaping,~~ walls or buildings, or overhanging sidewalk areas. Wheel stops or wheel stop curbing shall be located three feet from the front of the parking space.

b. Landscape planters shall be provided with a protective barrier (wheel stops, bollards, non-continuous curbing, or similar hardscaping) to prevent vehicles from damaging landscaping.

3. Paving. All open parking areas shall be paved with a durable asphalt, concrete, stone, tile or brick surface, in conformance with the manual and consistent with pavement design principles and engineered according to soil conditions and wheel loads.

F. Stormwater Harvesting Option.

1. Stormwater harvesting in off-street parking. Landscape planters for stormwater harvesting in off-street parking areas shall meet requirements in 18.07.030(S)(2), and shall also have:

   a. At least the same number, area and dimensions, and density of canopy trees and other vegetation as landscape planters required in 18.75.040(B)(3);

   b. Surface gradually depressed a minimum of 6 inches below the surrounding paved grade;

   c. Protected edges, headers or other means to prevent undermining and erosion by in-flowing stormwater; and

   d. Curbing with inlets, scuppers, notches or cuts, depressed curbing, wheel stops, bollards, or similar non-continuous protective barrier to prevent vehicles from damaging landscaping and allow the flow of stormwater into planters.

2. When at least three-quarters of site's required parking area landscape planters and screening areas meet stormwater harvesting requirements in 18.75.040(F)(1):

   a. The length of walls required for screening in 18.75.040(B)(4) may be reduced by half, provided walls are spaced intermittently and strategically placed to provide needed screening.

MEMORANDUM

DEVELOPMENT SERVICES DEPARTMENT - PLANNING DIVISION

DATE: May 12, 2014

TO: Chairman and members of the Planning and Zoning Commission

FROM: Arlan Colton, Planning Director

SUBJECT: Request for Initiation of Zoning Code Text Amendment

Staff requests that the Planning and Zoning Commission authorize and initiate a revision to the Pima County Zoning Code to include definition, regulations, options to provide incentives for use, and standardization of terminology for stormwater harvesting systems.

Background:
The proposed amendments to the Zoning Code will provide direction and guidance for the use of stormwater harvesting systems. The Zoning Code currently defines and regulates the use of rainwater harvesting systems (i.e., components that capture, convey and store water collected from roofs or catchment areas). The inclusion of stormwater harvesting systems in the Zoning Code will define and codify stormwater collection from parking lots and other impervious surfaces for irrigation use in bufferyards and landscaped areas. Use of stormwater can conserve groundwater resources, and reduce runoff and soil erosion.

Staff will be available to discuss the issues in more detail at the May 28th Planning and Zoning Commission meeting.

418 North Toole Avenue
Tucson, Arizona 85701
520.622.9565

NORRIS DESIGN
Planning | Landscape Architecture

November 17, 2014

Mark Holden, Senior Planner,
Pima County Development Services Department
Planning Division
201 N. Stone Ave
Tucson, Arizona 85701

RE: Zoning Code Amendment | Stormwater Harvesting

Dear Mark:
I appreciate the opportunity to present our support for the proposed code amendment to address stormwater harvesting in the Pima County Zoning Code. The amendments to the code are a welcome addition to the zoning code. The proposed stormwater harvesting requirements are balanced by reasonable incentives. As a consultant actively involved with the entitlement and design process in Pima County, we encourage the integration of water harvesting and stormwater harvesting features into projects. The proposed stormwater harvesting tools are widely accepted within the industry and ultimately reduce the overall irrigation demand. The incentives will encourage the implementation of the stormwater harvesting options to enhance projects in Pima County.

We request the Board of Supervisor's support of the proposed amendment for stormwater harvesting. Our team is supportive of the amendment and the associated design incentives.

Thanks for your time and consideration. Please contact me with any questions or if you need additional information at 520.622.9565 or sweaks@norris-design.com.

Respectfully,
Norris Design

Stacey Weaks, PLA, LEED AP

re: Pima County draft Zoning Code amendment for stormwater harvesting

James MacAdam James.MacAdam@tucsonaz.gov
Sent: Mon 09/29/2014 2:52 PM

Mark,
Thank you for soliciting input on this. I applaud your efforts to integrate and incentivize the use of stormwater harvesting in Pima County. Just a few comments. I have cc'ed Evan Canfield at RFCD because some of my comments address detention/retention requirements.

18.73.030.C. Stormwater Harvesting Option - bufferyards.
18.73.050.C. Stormwater Harvesting Option - Amenity landscaping requirement
Comments to both of these items:
Given that one of the primary purposes of stormwater harvesting in our region is the passive irrigation of vegetation, it seems counterproductive to incentivize its use through reduction in tree planting and landscaping requirements. If you are considering other incentives, a powerful one is to allow an increase in buildable area. This can be achieved indirectly by allowing the stormwater harvesting features to be counted towards detention/retention requirements. Perhaps this is something that is being addressed separately?

18.75.040.B.3.b. Landscaping planters - a requirement for depressed planting areas is only useful if 1) the site is graded to drain stormwater into the planters, and 2) curb openings or flush curbs are used to allow stormwater to enter in the right place. While this is common sense to you and me, I see examples all over town of these two principles being ignored and "water harvesting" areas that do not collect runoff or worse, actually drain it. These requirements need to be made clear in the code.

18.75.040.F. Stormwater Harvesting Option - Again, need grading to be designed to drain into planters. Also, consider counting stormwater harvesting towards detention/retention requirements. Another incentive could be a reduction in parking requirements?

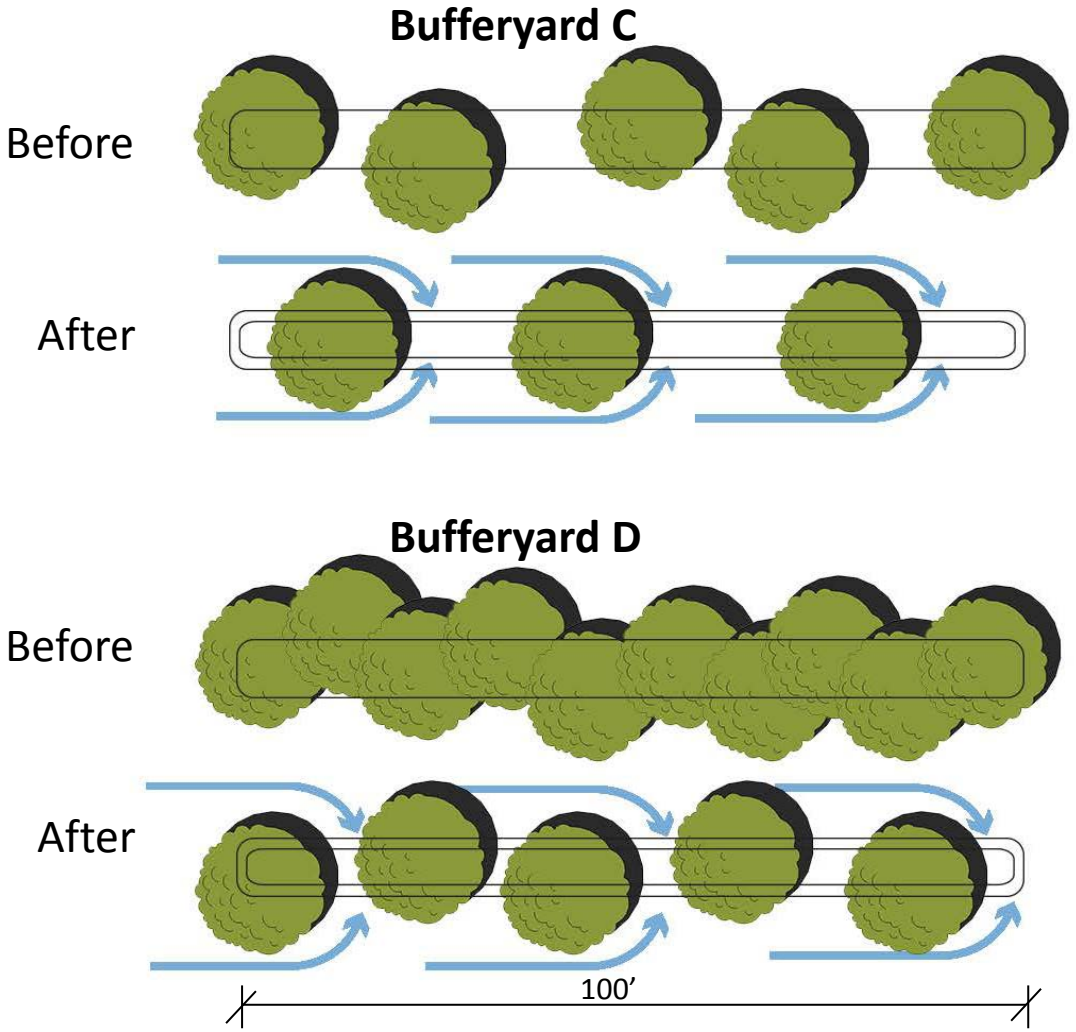
I hope these comments are helpful. I'm happy to discuss further if needed. I wish you good luck in this process!

Warm regards,
James

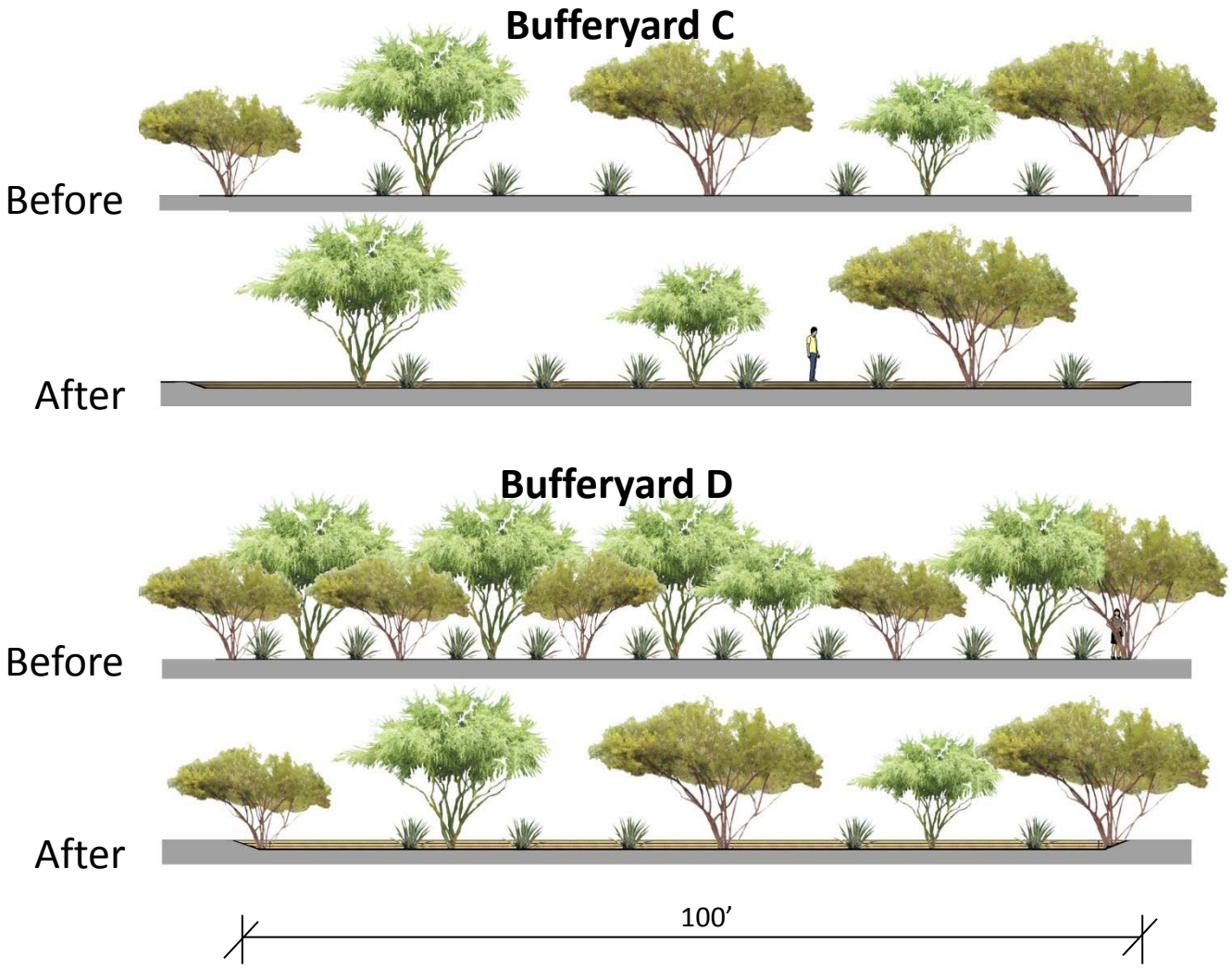
James MacAdam, LEED-AP

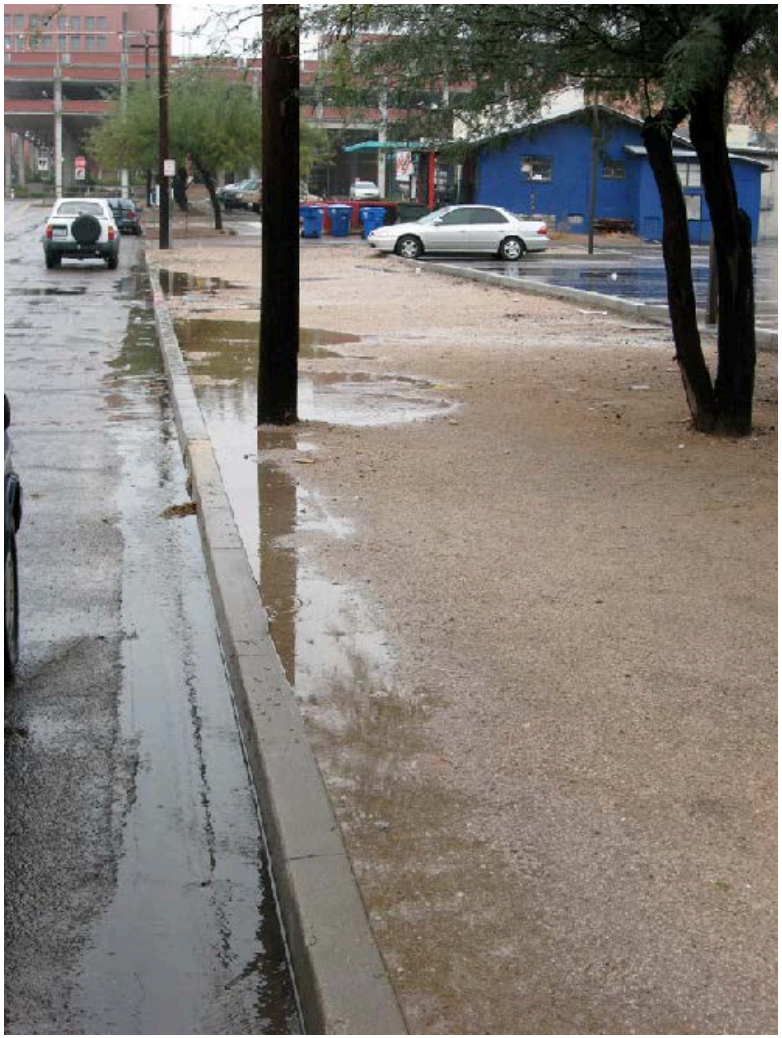
Policy and Planning Specialist
Office of Integrated Planning
City of Tucson
520.837.4068

Stormwater Harvesting Option



Stormwater Harvesting Option





Stormwater harvesting for parking lot / sidewalk landscaping (before / after)

Source: Watershed Management Group

Stormwater harvesting for parking lot / sidewalk landscaping (before / after)

Source: Watershed Management Group

Rather than raised beds (L), parking lot landscape planters designed to harvest stormwater (R)

Stormwater harvesting bufferyard on Craycroft Road

Stormwater harvesting bufferyard on Craycroft Road

Stormwater harvesting in parking lot landscaping

ORDINANCE 2015-_____

AN ORDINANCE OF THE BOARD OF SUPERVISORS OF PIMA COUNTY, ARIZONA, RELATING TO ZONING; AMENDMENG THE PIMA COUNTY CODE BY AMENDING CHAPTER 18.03 (GENERAL DEFINITIONS); CHAPTER 18.07 (GENERAL REGULATIONS AND EXCEPTIONS); CHAPTER 18.09 (GENERAL RESIDENTIAL AND RURAL ZONING PROVISIONS); CHAPTER 18.39 (GENERAL COMMERCIAL STANDARDS); CHAPTER 18.73 (LANDSCAPE, BUFFERING AND SCREENING STANDARDS); AND, CHAPTER 18.75 (OFF-STREET PARKING AND LOADING STANDARDS) TO ADD DEFINITIONS, STANDARDIZE TERMINOLOGY, AND PROVIDE PURPOSE, GUIDELINES, DESIGN STANDARDS, AND INCENTIVES FOR THE USE OF STORMWATER HARVESTING SYSTEMS AND TO RENUMBER SUBSEQUENT SECTIONS ACCORDINGLY.

THE BOARD OF SUPERVISORS OF PIMA COUNTY, ARIZONA FINDS THAT:

1. The Planning and Zoning Commission, at its May 28, 2014 hearing, initiated and authorized staff to amend the Pima County Code.

2. Pima County Comprehensive Plan, Water Resources Element Regional Plan Policies advocate water conservation through implementation of rainwater/storm water harvesting and reuse strategies, including the potential for a Zoning Code text amendment for enacting water conservation measures.

3. Pima County Board of Supervisors' Ordinance 2013-42 amended the Pima County Zoning Code to encourage green building and resource efficiency, specifically permitting the use of rainwater harvesting systems in all zones.

4. This ordinance updates the zoning code to include definitions, regulations, incentives for use, and standardization of terminology for stormwater harvesting systems.

5. This ordinance does not create new restrictions on the use of property, and this ordinance is not intended to, nor should it be construed to reduce any existing rights to use, divide, sell or possess private real property.

BE IT ORDAINED BY THE BOARD OF SUPERVISORS OF PIMA COUNTY, ARIZONA:

Section 1. Pima County Code Chapter 18.03, Section 18.03.020 is amended to add new definitions for "Green Infrastructure", "Low Impact Development", "Stormwater Harvesting System" and "Urban Heat Island" and to renumber subsequent sections accordingly, as follows:

Chapter 18.03
GENERAL DEFINITIONS

...

18.03.020 Definitions.

...

G. Definitions "G."

...

7. Green infrastructure (GI): practices that use or mimic natural systems and processes to promote infiltration, evapotranspiration, and harvesting of stormwater for retention and use in the landscape, generally by using vegetation and soil to manage stormwater where it falls.

~~7.~~ 8. Group home: ....

...

L. Definitions "L."

...

15. Low impact development (LID): a land development or re-development approach that preserves or restores on-site natural systems and hydrologic functions, and reduces impervious or disturbed areas to manage stormwater as close to its source as possible.

...

S. Definitions "S."

...

21. Stormwater harvesting system: A system for the on-site collection and retention of precipitation that has reached the ground, collected from paved, impervious or disturbed surfaces. System elements may consist of:

a. earthworks (including but not limited to depressed landscape areas, basins, berms, swales);

b. structures (including but not limited to curbs with inlets, scuppers or cuts, gabions, check-dams, permeable paving, rock mulch); and

c. other green infrastructure and low impact development elements to slow and disperse stormwater and promote its infiltration into the soil.

~~21.~~ 22. Story: ....

...

U. Definitions "U."

...

2. Urban heat island: a developed urban or suburban area that is significantly warmer (2°- 10° F or 1°- 6° C) than surrounding rural areas due to the retention of heat by un-shaded buildings and paved surfaces. Urban heat islands can increase energy demands, air conditioning costs, air pollution and greenhouse gas emissions, and heat-related illness and mortality.

...

Section 2. Pima County Code Chapter 18.07, Section 18.07.030 is amended to read as follows:

Chapter 18.07
GENERAL REGULATIONS AND EXCEPTIONS

...

18.07.030 Land use regulations.

...

S. Stormwater Harvesting System.

1. Purpose. The use of stormwater harvesting systems can:
   a. Increase on-site stormwater infiltration to reduce run-off and soil erosion;
   b. Improve stormwater quality by absorption, filtration and uptake of pollutants into natural systems;
   c. Provide a low-cost, sustainable source of irrigation to augment and reduce use of groundwater resources;
   d. Support landscaping to create shade, lessen urban heat island, improve air quality and beautify local development;
   e. Provide wildlife habitat and preserve and enhance existing riparian corridors; and
   f. Reduce the burden on and cost of building public stormwater control structures.
2. Stormwater harvesting systems are permitted in all zones, subject to the requirements and exceptions of this subsection:
   a. Design, installation and use of stormwater harvesting systems should use as guidance, where applicable, Pima County Code Title 16-Floodplain Management, the Regional Flood Control District Manual "Design Standards for Stormwater Detention and Retention," the City of Tucson / Pima County "Low Impact Development-Green Infrastructure Guidance Manual," and other accepted stormwater harvesting principles and guidelines for arid climates approved by the Floodplain Administrator and Planning Official.
   b. Stormwater harvesting shall be reviewed in conjunction with site improvement plan review.
   c. Stormwater harvesting systems shall be designed to:
      1) Collect stormwater from all on-site paved, impervious or disturbed surfaces, but may also collect off-site non-regulatory stormwater;
      2) Drain directly into bufferyards, off-street parking, and other required landscape and screening areas, as well as detention basins and areas that augment existing riparian habitat; and
      3) Allow the flow of stormwater between harvesting elements across the site – walls, hardscaping, and other structures shall also be designed to facilitate stormwater flow.

...

Section 3. Pima County Code Chapter 18.09, Section 18.09.100 is amended to read as follows:

Chapter 18.09
GENERAL RESIDENTIAL AND RURAL ZONING PROVISIONS

...

18.09.100 - Conservation subdivision.

...

F. Conservation natural area standards. The planning official, or the planning official's designated representative qualified in such matters, shall review the subdivision's conservation natural area to ensure that it protects natural area connections and important habitat features. A conservation subdivision shall comply with the following standards:

...

2. Grading and conservation natural areas.

...

k. Site development shall include reduction of ~~storm water~~ runoff by means of stormwater harvesting ~~(swales, basins, gabions, mulches, etc.)~~, erosion control through benign grade stabilization, and careful siting of improvements to minimize negative impacts in conformance with ~~permaculture~~ accepted local green infrastructure and low impact development practices and concepts.

...

Section 4. Pima County Code Chapter 18.39, Section 18.39.030, Section 18.39.050 and Section 18.39.060 are amended to read as follows:

Chapter 18.39
GENERAL COMMERCIAL STANDARDS

...

18.39.030 - Large Scale Retail Establishment.

...

C. Development Standards.

...

3. Landscape and screening:

...

c. The landscaping plan shall include stormwater harvesting features ~~for water~~ to be used in the development;

...

18.39.050 - Neighborhood Shopping Center.

...

C. Development Standards.

...

4. Landscape and screening:

...

b. The development shall provide for stormwater harvesting with the features shown on the landscape plan submittal; and

...

18.39.060 - Small Shopping Center.

...

C. Development Standards.

...

3. Landscape and screening:

...

b. The development shall include stormwater harvesting features ~~for water~~ to be used in the development;

...

Section 5. Pima County Code Chapter 18.73, Section 18.73.010, Section 18.73.030 and Section 18.73.050 are amended to read as follows and to renumber the subsequent sections accordingly:

Chapter 18.73
LANDSCAPE, BUFFERING AND SCREENING STANDARDS

18.73.010 - Purpose and scope.

A. The purpose of this chapter is to provide landscaping requirements and performance standards which:

...

2. Conserve groundwater resources in conformance with the Arizona Groundwater Code, Title 45, Chapter 2, by:

...

b. Helping ~~control and~~ utilize stormwater, and control and reduce runoff,

...

18.73.030 - Performance standards.

...

C. Stormwater Harvesting Option.

1. Stormwater harvesting in bufferyards. When stormwater harvesting systems meet requirements in 18.07.030(S)(2) and cover at least three-quarters of the required bufferyard area:
   a. The height of walls required in the Landscape Design Manual for Bufferyards A through D only may be reduced to three and one-half feet; and
   b. The density of canopy trees required in the Landscape Design Manual for all bufferyards may be reduced by 50 percent.

...

18.73.050 - Amenity landscaping requirements.

...

C. Stormwater Harvesting Option.
   1. Amenity landscaping reduction for stormwater harvesting. The ten percent amenity landscaping requirement may be reduced by half when the following stormwater harvesting elements are installed:
      a. All pedestrian walkways and sidewalks shall use accepted porous / pervious pavement, pavers or bricks, or similar water-permeable surface; and
      b. All landscaped traffic islands shall meet stormwater harvesting requirements for landscape planters in 18.75.040(F).

...

Section 6. Pima County Code Chapter 18.75, Section 18.75.040 is amended to read as follows and to renumber the subsequent sections accordingly:

Chapter 18.75
OFF-STREET PARKING AND LOADING STANDARDS

...

18.75.040 - Development standards.

...

B. Site Improvement Standards.

...

2. Drainage. In addition to county drainage requirements, stormwater ~~drainage flow~~ shall be considered a resource and be designed to benefit landscaped areas on the development site. Erosion control measures shall be designed and implemented to control drainage flow from hard-surfaced areas onto abutting soil surfaces.

3. Landscaping. In accordance with the requirements of Chapter 18.73 (Landscaping Standards):

...

   b. ~~Raised~~ Landscaping planters no less than four feet wide shall be placed at the ends of parking rows to define driveways with at least one canopy tree per parking aisle and appropriate ground cover.

...

d. When single parking rows occur, canopy trees shall be placed every four un-shaded parking stalls ~~in planters having a minimum of four sides with no dimension less than four feet~~. When double aisles of parking occur, canopy trees shall be placed every eight un-shaded parking stalls.

e. When the placement of trees in the required location among single or double row parking stalls is made impracticable by the location of a building, access area, drainage area or similar site constraint, the required parking area trees in the problem area may be reduced to one tree for every ten spaces in a four-foot wide median planter the length of the parking spaces. The remainder of the required trees may be placed within the bufferyard, stormwater harvesting area, retention/detention area or other landscaped area of the site.

...

4. Screening. Screening (refer to Chapter 18.73, Landscaping Standards) shall buffer parking areas from the following general land uses:

...

c. Screening areas for off-street parking may use the landscape bufferyard stormwater harvesting option found in 18.73.030(C).

...

7. Shading. Required landscape planters, and canopy trees in particular, should be designed and installed with an emphasis on maximizing shading of paved surfaces. Linear planters should be installed as near as possible to north-south orientation to maximize shade.

...

E. Parking Lot Improvements Standards.

...

2. Barriers.

a. Parking areas and spaces shall be provided with bumper barriers, wheel stops or wheel stop curbing, designed in conformance with the manual to prevent parked vehicles from extending beyond the property lines, damaging ~~adjacent landscaping,~~ walls or buildings, or overhanging sidewalk areas. Wheel stops or wheel stop curbing shall be located three feet from the front of the parking space.

b. Landscape planters shall be provided with a protective barrier (wheel stops, bollards, non-continuous curbing, or similar hardscaping) to prevent vehicles from damaging landscaping.

...

F. Stormwater Harvesting Option.

1. Stormwater harvesting in off-street parking. Landscape planters for stormwater harvesting in off-street parking areas shall meet requirements in 18.07.030(S)(2), and shall also have:

a. At least the same number, area and dimensions, and density of canopy trees and other vegetation as landscape planters required in 18.75.040(B)(3);
b. Surface gradually depressed a minimum of 6 inches below the surrounding paved grade;
c. Protected edges, headers or other means slopes to prevent undermining and erosion by in-flowing stormwater; and
d. Curbing with inlets, scuppers, notches or cuts, depressed curbing, wheel stops, bollards, or similar non-continuous protective barrier to prevent vehicles from damaging landscaping and allow the flow of stormwater into planters.

2. When at least three-quarters of site's required parking area landscape planters and screening areas meet stormwater harvesting requirements in 18.75.040(F)(1):
   a. The length of walls required for screening in 18.75.040(B)(4) may be reduced by half, provided walls are spaced intermittently and strategically placed to provide needed screening.

...

Section 7. That this ordinance is effective 31 days after its adoption.

Passed and adopted by the Board of Supervisors of Pima County, Arizona, on this _____ day of _____, 2015.

_____
Chair, Pima County Board of Supervisors

ATTEST:

_____
Clerk, Board of Supervisors

Approved As To Form:

12/26/15
_____
Deputy County Attorney

Approved:

_____
Executive Secretary
Planning and Zoning Commission