BOARD OF SUPERVISORS AGENDA ITEM REPORT

Requested Board Meeting Date: October 17, 2017

Title: P17TA00003 Rezoning Site Analysis - Preliminary Integrated Water Management Plan Requirements

Introduction/Background:

Pima County Rezoning Site Analysis policies include Attachment A: Preliminary Integrated Water Management Plan (PIWMP), which was added to the Comprehensive Plan Water Resources Element in 2008 (Resolution 2008-72), to ensure new development is using potable and renewable water supplies. The 2015 Comprehensive Plan Update, Pima Prospers, updated the Water Resources Element and related modification of the PIWMP is needed.

Discussion:

The PIWMP is being amended to implement previously adopted policy changes. This includes a reduction in the geographic coverage, removal of additional submittal requirements for large projects, inclusion of a modified Water Demand Calculator for local conditions, and updated Water Conservation Measures Tables. Over the last year staff has worked with stakeholders as directed by policy to develop the methods and measures proposed - this has included consultants, SAHBA, MPA, and the Community Water Coalition.

Conclusion:

The PIWMP amendment supports goals and policies in the Pima County Comprehensive Plan, 4.2 Water Resources Element, related to water conservation and protection of groundwater-dependent ecosystems. The proposed changes reduce the administrative burden on applicants while still accomplishing plan goals and policies.

Recommendation:

Staff and Planning and Zoning Commission recommend approval of the Rezoning Site Analysis PIWMP amendment.

Fiscal Impact:

n/a

Board of Supervisor District:

☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☒ **All**

Department: Regional Flood Control District Telephone: 724-4600

Contact: Dr. Greg Saxe Telephone: 724-4633

Department Director Signature/Date: 9/27/17

Deputy County Administrator Signature/Date: 9/29/17

County Administrator Signature/Date: C. Richard Bunn 9/29/17

PIMA COUNTY

DEVELOPMENT SERVICES

TO: Honorable Board of Supervisors

FROM: Chris Poirier, Planning Official
Public Works-Development Services Department-Planning Division

Tom Drazewski

DATE: September 25, 2017

SUBJECT: **P17TA00003 REZONING SITE ANALYSIS RELIMINARY INTEGRATED WATER MANAGEMENT PLAN SUBMITTAL REQUIREMENTS AMENDMENT**

The above referenced Site Analysis Policy Amendment is scheduled for the Board of Supervisors' **TUESDAY, OCTOBER 17, 2017** hearing.

REQUEST: Proposal for an **amendment of the Pima County** "Site Analysis Requirements," specifically for "Attachment A: Preliminary Integrated Water Management Plan," revising submittal requirements and review procedures for all rezoning applications that require the submittal of a site analysis in order to be in conformance with the Pima County Comprehensive Plan Water Resources element.

OWNER: N/A

APPLICANT: Pima County

DISTRICTS: ALL

STAFF CONTACT: Greg Saxe

PUBLIC COMMENT TO DATE: Staff sent the proposed revisions to stakeholders who regularly review text amendments and to a group of land use planning consultants who prepare rezoning requests. This included Southern Arizona Home Builders Assn. (SAHBA), Coalition for Sonoran Desert Protection, and the Community Water Coalition. They were asked to review and provide comments and/or speak at the Commission hearing. Several meetings and teleconferences followed along with development of a sensitivity analysis for the demand projection method. Comments received included addition of conservation measures, point adjustments, adjustments to the baseline demand calculation method, and general support for the changes with reservations regarding the mitigation point performance requirement calculation method.

PLANNING AND ZONING COMMISSION RECOMMENDATION: **APPROVAL** (4-1; Commissioners Becker, Gavin, Gungle, and Johns voted 'Yes'; Membrila voted 'No; Commissioners Bain, Cook, Mangold and Matter were absent).

STAFF RECOMMENDATION: APPROVAL.

TD/GS/MH/ar
Attachments

PIMA COUNTY

DEVELOPMENT SERVICES

BOARD OF SUPERVISORS MEMORANDUM

Subject: P17TA00003

FOR OCTOBER 17, 2017 MEETING OF THE BOARD OF SUPERVISORS

TO: HONORABLE BOARD OF SUPERVISORS

FROM: Chris Poirier, Planning Official Tom Drazkowski
Public Works-Development Services Department-Planning Division

DATE: **September 25, 2017**

ADVERTISED ITEM FOR PUBLIC HEARING

SITE ANALYSIS POLICY AMENDMENT

P17TA00003 PRELIMINARY INTEGRATED WATER MANAGEMENT PLAN SITE ANALYSIS REQUIREMENTS
PROPOSAL TO AMEND PIMA COUNTY'S "SITE ANALYSIS REQUIREMENTS," SPECIFICALLY FOR "ATTACHMENT A: PRELIMINARY INTEGRATED WATER MANAGEMENT PLAN," REVISING SUBMITTAL REQUIREMENTS AND REVIEW PROCEDURES FOR ALL REZONING APPLICATIONS THAT REQUIRE THE SUBMITTAL OF A SITE ANALYSIS IN ORDER TO BE IN CONFORMANCE WITH THE PIMA COUNTY COMPREHENSIVE PLAN WATER RESOURCES ELEMENT ADOPTED ON AUGUST 17, 2015 (C07-13-10; RESOLUTION 2015-062), AS PART OF THE COMPREHENSIVE PLAN UPDATE KNOWN AS PIMA PROSPERS. On motion, the Planning and Zoning Commission voted 4-1 to **APPROVAL** (Membrila voted 'No; Commissioners Bain, Cook, Mangold and Matter were absent). Staff recommends **APPROVAL**.
(ALL DISTRICTS)

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Planning and Zoning Commission Public Hearing Summary (August 30, 2017)

Staff presented information from the amendment to the commission. Staff stated that the amendment to the Site Analysis Requirements would ease the submittal burden on all applicants and implement water policy changes approved by the Board as part of the Pima Prospers Comprehensive Plan Update approved in August of 2015.

A commissioner asked about the area of applicability shown on the map and reference materials used. The following comments were offered by staff:

1) The areas impacted are shown on the displayed map.
2) Subsidence and springs data is from USGS, groundwater depth and trends from the Tucson Active Management Area Safe Yield Task Force and Arizona Department of Water Resources, and shallow groundwater data from a Pima Association of Governments study. Furthermore, that the best available data would always be used.

The commission opened the public hearing. Shawn Cote from SAHBA stated that they support the process and policy changes, appreciate the responsiveness of staff throughout the process and encourage staff to continue to work with stakeholders moving ahead. Chuck Martin of Rick Engineering, MPA and SAHBA, stated that achieving the required water conservation performance measure of 15 points has been challenging in the past, that there is a disparity for large projects in the demand calculation. He acknowledged that staff has been responsive to date and has been working with them for over a year, but stated that more analysis is needed, although many changes have been made at his recommendation which he appreciates. Specifically, he is concerned about the ability to offset large projects and that the performance measure is not linear. Carolyn Campbell, Director of the Coalition for Sonoran Desert Protection and Community Water Coalition stated that they support the changes as is, thank staff for involving them and suggested that if more changes are forthcoming stakeholder group should be convened. No one else came forward to speak and the commission closed the public hearing.

The Chairman offered the staff the opportunity to respond and staff commented that indeed the estimate used to establish the performance standard does increase proportionally with project size but that the proposed amendment allows the applicant to adjust inputs to reflect their proposal, decrease demand by preserving floodplain open space and meet conservation performance measures by doing so. Furthermore staff will continue to work with stakeholders during implementation.

Commissioner Gungle asked staff if a continuance was needed to resolve the calculator disparity and increase the level of confidence in it. Staff offered that proceeding would implement the policy changes and they would continue to work with stakeholders during implementation.

Commissioner Gavin made a motion to close the public hearing; Commissioner Membrila seconded.

Commissioner Gavin made a motion to recommend **APPROVAL** of the PIWMP Site Analysis Requirements amendment; Commissioner Membrila seconded.

Commissioner Johns stated he appreciated the effort to work with stakeholders to streamline while also meeting conservation goals. Commissioner Becker asked if the uncertainty should be addressed with a motion. The Planning Official responded that this is appropriate so that it is resolved prior going to the Board of Supervisors.

Commissioner Becker offered a friendly amendment to have staff continue to work with stakeholders on the water demand calculator and water conservation tables prior to the Board of Supervisors public hearing; Commissioner Membrila withdrew his second and Commissioner Becker seconded the amended motion.

Upon a roll call vote, the motion **PASSED** (4 – 1; Commissioners Bain, Cook, Mangold and Matter were absent).

TD/GS/MH/ar
Attachments

cc: Tom Drzazgowski, Principal Planner
P17TA00003 File

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

PUBLIC HEARING
August 30, 2017

P17TA00003	**SITE ANALYSIS PRELIMINARY INTEGRATED WATER MANAGEMENT PLAN SUBMITTAL REQUIREMENTS AMENDMENT**
STATUS / AGENDA ITEMS	**Planning and Zoning Commission Public Hearing** Zoning Code Amendment
REQUEST	Proposal by Pima County to amend Attachment A: PIWMP Requirements. (All Districts)
INITIATION	Planning and Zoning Commission
PUBLIC COMMENT	None received to date

STAFF RECOMMENDATION

Staff recommends **APPROVAL** of the proposed revisions to the site analysis requirements.

The site analysis is a requirement of certain rezoning applications per the zoning code. Specifically, Section 18.91.030.F. states "The site analysis consists of specific written and graphic requirements for inventory and analysis, and the subsequent preliminary development proposal for a site. Refer to written county policy concerning site analysis requirements." The Pima County Site Analysis Policy was adopted by Board of Supervisors resolution in July 1985 and last amended January 17, 2017. Attachment A the Preliminary Integrated Water Management Plan (PIWMP) Requirements were not updated at that time.

The revisions to the site analysis requirements are part of a larger effort to revise the rezoning review process to make it smoother and more expeditious. They also implement the policy direction provided in Pima Prospers. Further, the revisions provide staff guidance for how to estimate water demand increases associated with the request and when water conservation mitigation measures are adequate.

BACKGROUND

The Pima Prospers Water Resources Element Policy adopted by the Board of Supervisors in August of 2015 included changes to water resources related rezoning requirements. The Development Services Department and Flood Control District have worked with stakeholders including consultants active in the rezoning application process, SAHBA and the Community Water Coalition to revise the Site Analysis requirements to implement these policy changes.

The intent of both the policy and procedural changes is to reduce the administrative burden to applicants with projects that have minimal impacts to sensitive areas while ensuring projects with real potential impacts to Groundwater-Dependent Ecosystems and Subsidence Areas include sufficient mitigation to offset the increased demand associated with the project, if any.

The complexity and burden to the development community has been reduced by removing the requirement to estimate water demand and complete additional steps when specific demand thresholds have been exceeded. In addition, the geographic area of concern has been reduced. Specifically, the 20 and 50 acre foot per year water use thresholds for additional mitigation requirements has been removed along with reducing the buffer for sites and supply wells to Groundwater-Dependent Ecosystems from 5 miles to just 1 mile. Furthermore, projects served by a renewable and potable supply will need only to submit a will serve letter and commit to obtaining 15 points from the Water Conservation Measures table *at the time of development*.

The District will provide the water demand calculations using an amended version of the Arizona Department of Water Resources Demand Calculator. The calculator has been amended to allow for the identification of areas that have zero water use, including Natural Open Space Areas that are left undisturbed, and Retention/Detention Basins, Right of Way, and other Common Areas that will not have irrigation. Previously only a low water use option was available. Furthermore, the 50% turf assumption contained in the ADWR method has been reduced to 15% for all lots based upon local trends. By initially assuming that 15% of proposed project area will be low water use (xeriscape) common areas and that 15% of the developable area of each lot will be turf with the remainder xeriscape, the District believes the calculator will better reflect local conditions and will be used to establish an equal footing for estimating water demand under existing and proposed zoning. A fillable pdf is provided as part of this application should the applicant wish to adjust the acreages and assumptions used to reflect the proposal. The estimates provided by the District may be modified should the applicant provide better information. Furthermore, this proposed process defers the identification of Water Conservation Measures until the development review step. The Preliminary Integrated Water Management Plan will only need state the applicant's commitment to meet the Water Conservation Measure requirement at the time of development. While included as attachments to the Site Analysis Requirements for reference both the modified Water Demand Calculator and Water Conservation Tables may be modified by the District as needed.

For context on the revisions to the site analysis, it may be helpful to know how the existing rezoning review process compares with the currently-proposed changes to the rezoning review process.

The <u>existing</u> rezoning review process consists of these steps and requirements:

- All applicants submit a PIWMP with the Site Analysis. This includes identification of the service provider, demand projections, service connection plans and mitigating conservation measures.

- When a project is not served by renewable and potable water and the demand projection exceeds 50 acre feet per year additional requirements apply.

- Staff conducts a Water Resources Impact Assessment (WRIA) to determine whether or not there is an impact to Groundwater-Dependent Ecosystems.

- If it cannot be demonstrated that there is no impact there are additional submittal requirements, but not necessarily mitigation requirements.

Compared to the existing process, the proposed rezoning review process would do the following:

- Projects served by renewable and potable water submit a will serve letter and commit to obtain 15 points from the Water Conservation Measures table at the time of development. In conformance with changes already approved to the Site Analysis Requirements greater emphasis will be placed on the now required pre-application meeting to identify potential issues and establish a clear understanding of requirements. Staff will conduct a preliminary WRIA to the extent possible prior to the pre-application meeting.

- Once a complete Site Analysis has been submitted, staff will prepare the WRIA including water demand projections under existing and proposed zoning using the modified ADWR calculator in order to determine if additional conservation measures above the base level of 15 points are required and whether or not there may be an impact to shallow Groundwater-Dependent Ecosystems.

- When staff conducting the WRIA has determined there may be an impact to shallow Groundwater-Dependent Ecosystems and the project is not served by renewable and potable water the applicant may submit additional information to demonstrate there is no impact to Groundwater-Dependent Ecosystems. This demonstration may include additional analysis or conservation measures.

- When there may be an impact and additional Water Conservation Measures are required to offset the increase in demand two tiers of impact are proposed. When the site and wells that serve it are over one mile from Groundwater-Dependent Ecosystems or within a Subsidence Area, 1 additional point per annual acre foot demand increase is required. Within one mile of a groundwater dependent ecosystem 2 additional points per acre foot increase are required.

- As a condition of rezoning the applicant commits to obtain the required number of water conservation points **at the time of development.**

Stakeholder and Consultant Review

Staff sent the proposed revisions to the standard list of stakeholders who regularly review text amendments and to a group of land use planning consultants who prepare rezoning requests. This included SAHBA, Coalition for Sonoran Desert Protection, and the Community Water Coalition. They were asked to review and provide comments and/or speak at the Commission hearing. Several meetings and teleconferences followed along with development of a sensitivity analysis for the demand projection. Comments received included addition of conservation measures, point adjustments, adjustments to the baseline demand calculation method, and general support for the changes with reservations regarding the point calculation method.

Public Comment

To date, staff has not received any comments other than those stakeholders described above.

Proposed Requirements
In order to ensure that water is conserved region-wide and that additional measures are employed, where needed, to mitigate impacts to groundwater dependent ecosystems and other sensitive areas, the new process and proposed **Site Analysis Requirements** including Water Demand Calculator and Water Conservation Measures tables **that** would completely replace the current requirements if approved follow below.

Respectively Submitted,

Greg Saxe (PCRFCD Environmental Planning Manager) for Chris Poirier (Planning Official)
Development Services Department

PIMA COUNTY
DEVELOPMENT SERVICES

Rezoning Application Packet

FOR PROJECTS REQUIRING A SITE ANALYSIS

A site analysis shall be submitted for rezoning of any site that is:

- Greater than one acre in size to be developed for nonresidential uses;
- Greater than one acre in size to be developed at a residential density of four or more residences per acre; or
- Greater than five acres in size.
- Greater than one acre in size to be developed as a mixed use residential/nonresidential project.

Exception: Residential rezonings up to six acres shall not require a site analysis if the parcel is to be divided into no more than five parcels with not more than one residence on each parcel except when rezoning to SH (Suburban Homestead) for no more than two residences per acre.

SITE ANALYSIS POLICY ADOPTED BY THE BOARD OF SUPERVISORS
JULY 2, 1985*

*[Amended: March 3, 1987; June 22, 1988; April 4, 1989; May 16, 1995; October 2, 1996; March 3, 1998; March 16, 2010; January 17, 2017; _____]

ATTACHMENT A

Preliminary Integrated Water Management Plan Requirements

A Preliminary Integrated Water Management Plan (PIWMP) is required pursuant to the Pima County Comprehensive Plan. This requirement was initiated by the Board of Supervisors, under the Water Resources Element in 2008 (C07-07-04, Resolution 2008-72) and was subsequently revised in Pima Prospers, Chapter 4 Physical Infrastructure Connectivity, Section 4.2 Water Resources Element Goal 1 Policy 7, and Goal 3 Policy 8 (C07-13-10; Resolution 2015-62). This policy applies to all properties submitted for consideration of rezoning that require the submittal of a Site Analysis. The information to be submitted and how it will be evaluated is described below.

Water Resources Impacts Assessment conducted by staff shall include:

In the staff report, the Pima County Regional Flood Control District shall provide the following information for all rezoning cases:

a) Availability of renewable and potable water supplies;
b) Water use estimates for maximum build out-under existing and proposed zoning;
c) Current and projected depth of groundwater and groundwater trend data at the site or wells serving the site;
d) Proximity of site and wells serving the site to known or potential subsidence areas;
e) Proximity of site and wells serving the site to Groundwater Dependent Ecosystems; and
f) Hydrogeologic basin, including depth to bedrock.

Staff shall prepare the water use estimates using the modified version of the ADWR Demand Calculator attached hereto as a Quick Reference Guide. This Guide and the functioning spreadsheet shall be updated and made available by the Pima County Regional Flood Control District as needed.

The Preliminary Integrated Water Management Plan submitted by the applicant shall include:

1) All Rezoning Cases:

When the proposed site is served by a water system with a potable and renewable supply, the following two items will satisfy the PIWMP requirement:

a) A "will serve" letter by the water service provider.
b) A commitment to implement sufficient Water Conservation Measures at the development review stage to obtain 15 points on Table A for residential projects or Table B for commercial projects attached hereto for reference. This table shall be updated as new methods become known and the tables in use at the time of development shall be provided by the Flood Control District. The applicant MAY submit Table A or B with the Site Analysis.

The water providers considered to have potable and renewable supply are those that have CAP subcontracts listed in Central Arizona Water Conservation District's CAP

subcontracting status report. At this time, they are:

1. Community Water Company of Green Valley
2. Flowing Wells Irrigation District
3. Green Valley Domestic Water Improvement District
4. Town of Marana
5. Metropolitan Water District – Main Service Area
6. Town of Oro Valley
7. Spanish Trail Water Company
8. City of Tucson – Main Service Area
9. Vail Water Company

This list may be amended by ADWR and the list in effect at the time rezoning shall be consulted. For those providers with multiple physically separate supply and distribution networks the staff recommendation shall be based upon the availability of renewable and potable water within each component separately.

2) Not Served by Potable and Renewable Water Supply:

In cases where the rezoning site will not be served by potable and renewable water supply, the applicant shall also provide:

a) A description of where the proposed rezoning will occur geographically based upon its proximity to existing and planned renewable supply and potable water supply infrastructure and defined water service area boundaries.
b) A map showing the location of the development and all wells, existing and proposed, that may be used to supply water to the development, including ADWR well registry numbers for existing wells and the geographic relationship including distance to:
    a. subsidence areas;
    b. isolated basins; and
    c. groundwater-dependent ecosystems including:
        i. springs;
        ii. perennial streams;
        iii. intermittent streams; and
        iv. shallow-groundwater areas.

    This information is mapped on the Sonoran Desert Conservation Plan GIS database available at the following link and by request from the Pima County Regional Flood Control District.

    http://gis.pima.gov/maps/sdcp/

c) A commitment to implement additional Water Conservation if there is increased demand as demonstrated by the Water Supply Impact Review. The additional required Water Conservation Measures shall be based on 1 additional point per additional acre-foot of increased demand. The applicant MAY submit additional information regarding the calculation of the existing or proposed demand or may rely on the demand calculations provided by staff. The applicant MAY submit Table A or B with the Site Analysis.

3) Not Potable and Renewable Water Supply and Impacts a Sensitive Area:

In cases where the rezoning site or wells that serve the site draw water from areas that are

within one mile of a Groundwater-Dependent Ecosystem, or are within a subsidence area or isolated basin, the District will recommend denial of the rezoning unless the applicant either accepts additional Water Conservation Measures performance standards; or demonstrates that the development will not have an impact on Groundwater-Dependent Ecosystems. This demonstration *may* include:

a) An analysis of water level trends in the area from which groundwater will be withdrawn for the service to the development.
b) Existing site-specific geologic and hydrogeologic studies available for the area from which groundwater will be withdrawn to serve the project.
c) A hydrologic impact analysis to show how groundwater withdrawn for the development may impact ecological assets including employing pump tests and monitoring, and use avoidance strategies, including well site selection and screening of wells or a draw-down analysis for impact of water demand of the development on any proposed or existing wells within the 10-foot draw-down contour after five years of pumping at full build-out.

A commitment to implement additional Water Conservation Measures will be required if there is increased demand as demonstrated by the Water Supply Impact Review. The additional required Water Conservation Measures shall be based on 2 additional points per additional acre-foot of increased demand. The applicant MAY submit additional information regarding the calculation of the existing or proposed demand or may rely on the demand calculations provided by staff.

Determination:

Upon review of all available information, the following are the anticipated conditions of rezoning.

1) Served by Potable and Renewable Water Supply:

    a) Staff shall recommend a condition stating: "At the time of development the developer shall be required to select a combination of Water Conservation Measures from Table A or B such that the point total equals or exceeds 15 points and includes a combination of indoor and outdoor measures OR Commit to obtain LEED Certification with a minimum of six Water Use points." Use when applicable, "The Water Conservations Measures submitted with the Site Analysis are acceptable to satisfy the Demand off-set at the time of development. Alternative measures may be proposed at the time of platting"

2) Not Served by Potable and Renewable Water Supply:

    a) The rezoning site is greater than one mile from a groundwater-dependent ecosystem and the wells serving the site draw water from areas that are over one mile from a Groundwater-Dependent Ecosystem:

        i) Staff shall recommend conditions stating:

            a. "At the time of development the developer shall be required to select a combination of Water Conservation Measures from Table A or B such that the point total equals or exceeds XX points and includes a combination of indoor and outdoor measures". Use when applicable, "The Water Conservations Measures submitted with the Site Analysis are acceptable

to satisfy the Demand off-set at the time of development. Alternative measures may be proposed at the time of platting"

The XX in the case is 15 points plus one point for each additional acre-foot of increase in demand due to the requested rezoning.

b. "At the time of development the developer shall be required to submit written proof from the water provider that the wells are greater than one mile from a Groundwater-Dependent Ecosystem."

b) The rezoning site is within a subsidence area or the wells that serve the site draw water from a subsidence area:

i) Staff shall recommend conditions stating:

a. "At the time of development the developer shall be required to select a combination of Water Conservation Measures from Table A or B such that the point total equals or exceeds XX points and includes a combination of indoor and outdoor measures" Use when applicable, "The Water Conservations Measures submitted with the Site Analysis are acceptable to satisfy the Demand off-set at the time of development. Alternative measures may be proposed at the time of platting."

The XX in the case is 15 points plus one point for each additional acre-foot of increase in demand due to the requested rezoning

b. "At the time of development the developer shall be required to submit written proof from the water provider that the wells are outside the subsidence area."

c) The rezoning site or wells serving the site are within one mile of a Groundwater Dependent Ecosystem, or the wells serving the site are within an isolated basin:

i) Staff shall recommend a condition stating: "At the time of development the developer shall be required to select a combination Water Conservation Measures from Table A or B filled out such that the point total equals or exceeds YY points and includes a combination of indoor and outdoor measures". Use when applicable, "The Water Conservations Measures submitted with the Site Analysis are acceptable to satisfy the Demand off-set at the time of development. Alternative measures may be proposed at the time of platting."

The YY in the case is 15 points plus two points for each additional acre-foot of increase in demand due to the requested rezoning.

Definitions

Acre-Foot (or Acre-Feet)
An acre-foot is a unit of water volume that is equal to one foot of depth across an acre of land (43,560 square feet). One acre-foot of water is equals approximately 325,851 gallons of water. To convert to average daily water use in gallons to acre-feet, multiply the volume in gallons by 365 and divide by 325,851. A single family residence typically consumes about 1/3 acre-foot of water per year.

Drawdown
Drawdown is the drop in groundwater at the well from the static groundwater level to the level encountered when the well pump is being run.

Groundwater-Dependent Ecosystems
Groundwater-dependent ecosystems are shallow groundwater areas which include springs, perennial streams, intermittent streams and shallow groundwater areas as mapped on the Sonoran Desert Conservation Plan GIS database which can be found at:

http://www.dot.pima.gov/cmo/sdcpmaps/

Municipal Provider
As defined in Arizona Revised Statutes 45-561, a city, town, private water company or irrigation district that supplies water for non-irrigation use.

Preliminary Integrated Water Management Plan (PIWMP)
The Preliminary Integrated Water Management Plan is a document which details proposed water resources, reuse, replenishment, conservation and use of renewable water supplies for the proposed project for properties that are submitted for consideration of rezoning. The plan also establishes the anticipated water use and source of water for the proposed development.

Renewable & Potable Water
As defined in Resolution 2008-72, renewable and potable water means a quality of water that is suitable for essential human uses such as drinking, cooking or cleaning, and which is derived from a renewable source. Treated surface water including treated Central Arizona Project water is considered to be renewable and potable, but effluent and groundwater are not.

Renewable & Potable Water Supply
Such sources primarily include municipal water systems with Central Arizona Project water allotments. For purposes of implementing the PIWMP, use of groundwater may be considered compatible with Resolution 2008-72 under those circumstances where groundwater withdrawal is mitigated through re- charge in the same area of hydrologic impact. Renewable and potable supplies may include but are not limited to CAP subcontract, CAGRD membership, long-term storage credits, or other supplies wheeled through the CAP Canal such as mainstem Colorado River Water or other supplies delivered by the Central Arizona Water Conservation District. Additionally, effluent may be considered renewable and potable at such time as suitable authorization is granted by the Arizona Department of Environmental Quality.

Subsidence

Subsidence is the downward movement of the earth's surface, due to compaction of sediment generally as a result of the over-pumping of groundwater. For the purposes of this document it is the lowering of land surface by more than three inches as mapped by the U. S. Geological Survey.

Table A - Water Conservation Measures - Indoor and Outdoor Options for Single Family Subdivision Development (Water Conservation Measures: 15-point Minimum. All projects must include at least 2 outdoor options. For projects without a renewable and potable supply, 1 additional point per acre foot demand increase when site and supply well(s) is greater than 1 mile away or is within a subsidence area, or 2 additional points within one mile of a Groundwater - Dependent Ecosystem.)

Indoor Options

I-1	Install gray water plumbing lines per City of Tucson ordinance 10579, gray water lines labeled and stubbed out at or above grade	2	
I-2a	Install a manual or motion activated on-demand hot water circulation pumping system. All branches from the loop shall be less than or equal to 10 feet and less than or equal to 1/2 inch diameter.	3	
I-2b	Insulate all domestic hot water supply lines with R4 insulation.	1	
I-2c	Install tankless on demand hot water heater(s)	2	
I-3a	All toilets have a maximum flow rate of 1.28 gallons per flush, or flush valves have a maximum flow rate of 1.28 gallons per flush (e.g. EPA Watersense ™) OR	3	
I-3b	All toilets have a maximum flow rate of 1.1 gallons per flush, or flush valves have a maximum flow rate of 1.1 gallons per flush (e.g. EPA Watersense ™) OR	4	
I-3c	Install dual flush toilets with 1.6 gpf/.8 gpf or less water use	3	
I-3d	All lavatory sinks and showerheads have a maximum flow rate of 1.5 gpm. The total allowable shower compartment flow rate from all showerheads, rain systems, waterfalls, body sprays and jets at a given time shall be limited to 1.5 gallons per minute. (maximum flow rate of 1.5 gpm @ 80 psi of pressure) (e.g. EPA Watersense ™)	3	
I-4	If active rainwater harvesting system is installed, connect the rainwater tank to an appropriate distribution system serving the toilets	4	
I-5	Install new washing machine with water factor of 4.5 or less (e.g. EnergyStar)	2	
I-6	Install 1.5 gpm kitchen sink and dishwasher which uses less than 3.5 gallon/cycle (e.g. EPA Watersense ™/ EnergyStar)	3	
I-7	Install a leak detection system	1	
I-alt	Additional indoor measures may be proposed by applicant	#	
Sub-Total from Indoor Options		**31**	**0**

Outdoor Options

O-1a	Install active or passive on-lot rainwater harvesting system capable of capturing 0.5 inch of rainfall from 20% of total on lot impervious area.	2	
O-1b	Install on-lot rainwater harvesting system capable of capturing 0.5 inch of rainfall from 40% of total on lot impervious area.	4	
O-1c	Install on-lot rainwater harvesting system capable of capturing 0.5 inch of rainfall from 60% of total on lot impervious area.	6	
O-1d	Install on-lot rainwater harvesting system capable of capturing 0.5 inch of rainfall from 80% of total on lot impervious area.	8	
O-1e	Install on-lot rainwater harvesting system capable of capturing 0.5 inch of rainfall from 100% of total on lot impervious area.	10	
O-2	Install a grey water irrigation system	2	
O-3a	Use only native and/or drought-tolerant, low-water use plants for 25% of Landscape Area* landscaping plantings with a Water Use of 1 or 2, designed to be self-sustaining based upon water harvesting. The list of drought tolerant and native low-water use plants appropriate for Pima County is available at: http://www.azwater.gov/azdwr/WaterManagement/AMAs/documents/2010TAMA_apha_botanical_PLANTLIST.pdf OR	1.5	
O-3b	Use only native and/or drought-tolerant, low-water use plants for 50% of Landscape Area* landscaping plantings with a Water Use of 1 or 2, designed to be self-sustaining based upon water harvesting.	3	
O-3c	Use only native and/or drought-tolerant, low-water use plants for 75% of Landscape Area* landscaping plantings with a Water Use of 1 or 2, designed to be self-sustaining based upon water harvesting.	4.5	
O-3d	Use only native and/or drought-tolerant, low-water use plants for 100% of Landscape Area* landscaping plantings with a Water Use of 1 or 2, designed to be self-sustaining based upon water harvesting.	6	
O-4a	CC&Rs that restrict the use of non-native plants and turf grasses in front yards of lots	0.5	
O-4b	CC&Rs that restrict the use of non-native plants and turf grasses	1	
O-4c	CC&Rs that restrict construction of swimming pools, mister systems and other outdoor water features	1	
O-5a	Design for pervious driveway and walkway surfaces, 2 pts per 10,000 square feet	2	

O-6a	Irrigation system designed and installed by a certified professional (e.g. EPA Watersense ™)	1	
O-6b	Install an irrigation system with the following components: 1) Weather based irrigation controller or soil moisture sensor-based irrigation controller (e.g. EPA Watersense ™). Controller shall have two watering schedules posted at the controller: a) for the initial grow-in period and b) for the established landscape. Controller shall be set to irrigate during the hours of 10 p.m. to 8 a.m.; 2) Turf spray heads, if installed, shall only be used for turf and shall achieve a lower quarter distribution uniformity (DULQ) of 65 percent or greater and contain check valves to prevent gravity drainage of water from heads; 3) Separate sprinkler zones for beds, with plants grouped based on watering needs (hydro zoning); 4) Drip irrigation for all non-turf planting beds.	2.5	
O-7a	Maintain undisturbed buffer yards with native species landscaping with 50% of demand met with passive water harvesting	2	
O-7b	Maintain undisturbed buffer yards with native species landscaping with 100% of demand met with passive water harvesting	4	
O-8	At least 50% of first-flush retention volume located in off-lot distributed basins instead of within project-wide detention basin	2	
O-9a	Stormwater retention volume exceeds first flush retention volume by at least 20%	2	
O-9b	Stormwater retention volume exceeds first flush retention volume by at least 40%	4	
O-9c	Stormwater retention volume exceeds first flush retention volume by at least 60%	6	
O-9d	Stormwater retention volume exceeds first flush retention volume by at least 80%	8	
O-9e	Stormwater retention volume exceeds first flush retention volume by at least 100%	10	
O-10a	Avoid, other than incidental disturbances, Flood Control Resources Area through use of cluster development, conservation subdivision, or modified development standards.	5	
O-10b	Avoid, other than incidental disturbances, Flood Control Resource Area, developer mapped floodplains and Erosion Hazard Setback Areas through use of cluster development, conservation subdivision, or modified development standards.	10	
O-alt	Additional outdoor measures may be proposed by applicant	#	
Sub-Total from Outdoor Options		**98**	**0**

Infrastructure Options

Inf-1	Relocate or abandon active well(s) located in a shallow groundwater area.	**15**	
Inf-2	Relocate or abandon active well(s) located within a mile of a shallow groundwater area.	**7**	
Inf-3	Seal off perched aquifers and recent alluvium in wells to prevent cascading well	**7**	
Inf-4	Enhance native vegetation, including regulated riparian habitat, in on-site natural drainage patterns, using Low Impact Development and Green Infrastructure practices.	**3**	
Inf-5	Enhance groundwater recharge potential of detention basins in shallow groundwater areas	**5**	
Inf-alt	Additional infrastructure options may be proposed by applicant	**#**	
Sub-Total from Infrastructure Options		**37**	
PROJECT TOTAL		**129**	

Table B - Water Conservation Measures
Indoor and Outdoor Options for Commercial and Multi-Family Development
(Water Conservation Measures: 15-point Minimum. All projects must include at least 2 outdoor options. For projects without a renewable and potable supply, 1 additional point per acre foot demand increase when site and supply well(s) is greater than 1 mile away or is within a subsidence area, or 2 additional points if within one mile of a Groundwater - Dependent Ecosystem.)

Indoor Options

I-1a	Install gray water plumbing lines per City of Tucson ordinance 10579 to meet 25% of non-potable demands	2	
I-1b	Install gray water plumbing lines per City of Tucson ordinance 10579 to meet 50% of non-potable demands	4	
I-2a	All toilets have a maximum flow rate of 1.28 gallons per flush, or flush valves have a maximum flow rate of 1.28 gallons per flush (e.g. EPA Watersense ™)	3	
I-2b	All toilets have a maximum flow rate of 1.1 gallons per flush, or flush valves have a maximum flow rate of 1.1 gallons per flush (e.g. EPA Watersense ™)	4	
I-3	Multi-family lavatories and all kitchen sinks and showerheads have a maximum flow rate of 1.5 gpm. The total allowable shower compartment flow rate from all showerheads, rain systems, waterfalls, body sprays and jets at a given time shall be limited to 1.5 gallons per minute. (maximum flow rate of 1.5 gpm @ 80 psi of pressure) (e.g. EPA Watersense ™)	3	
I-4	Use waterless urinals throughout development	2	
I-5	Use of efficient water-cooled chiller	2	
I-6	Install on demand hot water heater(s)	2	
I-7	Install new efficient washing machine (water factor 4.5 or less), dishwasher (3.5 gallon per cycle or less), and food disposal (e.g. Energy Star) in each multi-family unit	2	
I-8	Install 1.5 gpm kitchen sink and dishwasher which uses less than 3.5 gallon/cycle (e.g. EPA Watersense ™/ EnergyStar) in each multi-family unit	3	
I-9	Install a leak detection system	2	
I-10	Install separate water meters for each multi-family unit	3	
I-alt	Additional indoor measures may be proposed by applicant	#	
Sub-Total from Indoor Options		**32**	**0**

Outdoor Options

O-1a	At least 25% of retention volume located in distributed basins instead of within a project-wide detention basin	1	
O-1b	At least 50% of retention volume located in distributed basins instead of within a project-wide detention basin	2	
O-1c	At least 75% of retention volume located in distributed basins instead of within a project-wide detention basin	3	
O-1d	At least 100% of retention volume located in distributed basins instead of within a project-wide detention basin	4	
O-2a	Stormwater retention volume exceeds first flush retention volume by at least 20%	2	
O-2b	Stormwater retention volume exceeds first flush retention volume by at least 40%	4	
O-2c	Stormwater retention volume exceeds first flush retention volume by at least 60%	6	
O-2d	Stormwater retention volume exceeds first flush retention volume by at least 80%	8	
O-2e	Stormwater retention volume exceeds first flush retention volume by at least 100%	10	
O-3	Re-use system for air conditioning condensate	3	
O-4a	Use only native drought-tolerant, low-water use plants for landscaping plantings with a Water Use of 1 or 2. The list of drought tolerant and native low-water use plants appropriate for Pima County is available at: http://www.azwater.gov/azdwr/WaterManagement/AMAs/documents/2010TAMA_apha_botanical_PLANTLIST.pdf	2	
O-4b	At least 50% of the parking spaces are adjacent to an 8 foot wide parking island planted with native drought tolerant trees that harvests and stores water from at a minimum the adjacent parking spaces.	2	
O-5	Prohibit the use of non-native plants and turf grasses.	1	
O-5b	Restrict construction of swimming pools, mister systems and other outdoor water features	1	
O-6a	Design for pervious driveway and walkway surfaces, 2 points per 10,000 square feet	2	

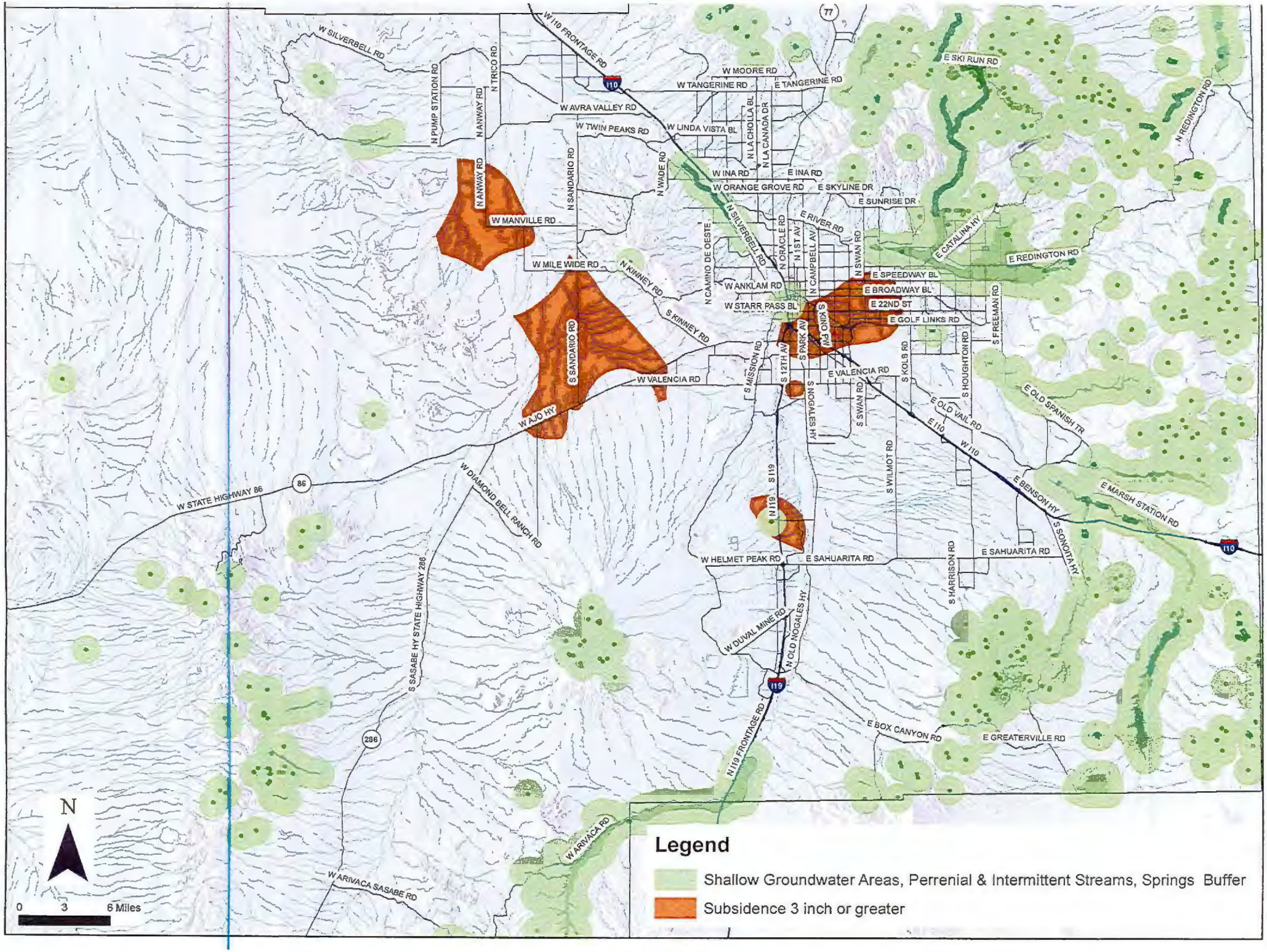
O-6a	Irrigation system designed and installed by a certified professional (e.g. EPA Watersense ™)	1	
O-6b alt	Install an irrigation system with the following components: 1) Weather based irrigation controller or soil moisture sensor-based irrigation controller (e.g. EPA Watersense ™). Controller shall have two watering schedules posted at the controller: a) for the initial grow-in period and b) for the established landscape. Controller shall be set to irrigate during the hours of 10 p.m. to 8 a.m.; 2) Turf spray heads, if installed, shall only be used for turf and shall achieve a lower quarter distribution uniformity (DULQ) of 65 percent or greater and contain check valves to prevent gravity drainage of water from heads; 3) Separate sprinkler zones for beds, with plants grouped based on watering needs (hydro zoning); 4) Drip irrigation for all non-turf planting beds.	2.5	
O-7a	Use only native and/or drought-tolerant, low-water use plants for 25% of the Landscape Area * landscaping plantings with a Water Use of 1 or 2, designed to be self-sustaining based upon water harvesting OR	1.5	
O-7b	Use only native and/or drought-tolerant, low-water use plants for 50% of Landscape Area* landscaping plantings with a Water Use of 1 or 2 designed to be self-sustaining based upon water harvesting.	3	
O-7c	Use only native and/or drought-tolerant, low-water use plants for 75% of Landscape Area* landscaping plantings with a Water Use of 1 or 2, designed to be self-sustaining based upon water harvesting.	4.5	
O-7d	Use only native and/or drought-tolerant, low-water use plants for 100% of Landscape Area* landscaping plantings with a Water Use of 1 or 2, designed to be self-sustaining based upon water harvesting.	6	
O-8	Complete a Parking Area Reduction Plan	3	
O-9a	Maintain undisturbed buffer yards with native species landscaping with 50% of demand met with passive water harvesting	2	
O-9b	Maintain undisturbed buffer yards with native species landscaping with 100% of demand met with passive water harvesting	4	
O-10a	Avoid, other than incidental impacts, Flood Control Resource Area, through use of cluster development, conservation subdivision, or modified development standards.	5	
O-10b	Avoid, other than incidental impacts, Flood Control Resource Area, developer mapped floodplains and Erosion Hazard Setback Areas through use of cluster development, conservation subdivision, or modified development standards.	10	
O-alt	Additional outdoor measures may be proposed by applicant.	#	
Sub-Total from Outdoor Options		**94**	**0**

Infrastructure Options

Inf-1	Relocate outside groundwater dependent ecosystem or abandon active well(s) located in a groundwater dependent ecosystem.	**15**	
Inf-2	Relocate outside groundwater dependent ecosystem or abandon active well(s) located within a mile of a groundwater dependent ecosystem.	**7**	
Inf-3	Seal off perched aquifers and recent alluvium in wells.	**7**	
Inf-4	Enhance native vegetation, including regulated riparian habitat, in on-site natural drainage patterns, using Low Impact Development and Green Infrastructure practices.	**3**	
Inf-5	Enhance groundwater recharge potential of detention basins in shallow groundwater areas.	**5**	
Inf-alt	Additional infrastructure options may be proposed by applicant.	#	
Sub-Total from Infrastructure Options		**37**	**0**
PROJECT TOTAL		**126**	**0**

* Landscape Area - Bufferyards and Common Area

To be Determined


W SILVERBELL RD
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W MOORE RD
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N ANWAY RD
N TRICO RD
W AVRA VALLEY RD
W TWIN PEAKS RD
W LINDA VISTA BL
N LA CHOLLA BL
N LA CANADA DR
N REDINGTON RD
N SANDARIO RD
N WADE RD
W INA RD
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W ORANGE GROVE RD
E SKYLINE DR
E SUNRISE DR
W MANVILLE RD
N SILVERBELL RD
E RIVER RD
N ORACLE RD
N 1ST AV
N CAMPBELL AV
N SWAN RD
E CATALINA HY
E REDINGTON RD
W MILE WIDE RD
N KINNEY RD
N CAMINO DE OESTE
W ANKLAM RD
E SPEEDWAY BL
E BROADWAY BL
W STARR PASS BL
E 22ND ST
E GOLF LINKS RD
S KINO PW
S PARK AV
S 12TH AV
S FREEMAN RD
S KOLB RD
S HOUGHTON RD
S KINNEY RD
S SANDARIO RD
S MISSION RD
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S NOGALES HY
S SWAN RD
E OLD SPANISH TR
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W AJO HY
S WILMOT RD
E BENSON HY
E MARSH STATION RD
S SONOITA HY
W STATE HIGHWAY 86
86
W DIAMOND BELL RANCH RD
S 119
N 119
W HELMET PEAK RD
E SAHUARITA RD
S HARRISON RD
S SASABE HY STATE HIGHWAY 286
W DUVAL MINE RD
N OLD NOGALES HY
119
N 119 FRONTAGE RD
E BOX CANYON RD
E GREATERVILLE RD
286
W ARIVACA RD
W ARIVACA SASABE RD
N
0 3 6 Miles
Legend
Shallow Groundwater Areas, Perrenial & Intermittent Streams, Springs Buffer
Subsidence 3 inch or greater

PIWMP Water Demand Calculator
Quick Reference Guide

Purpose: This spreadsheet is based upon the Arizona Department of Water Resources calculator used in Assured Water Supply applications. It has been modified for use by Pima County Regional Flood Control District staff to provide demand estimates for both the proposed and existing zoning. The difference between these estimates determines the water conservation points to be a recommended rezoning condition. At the time of development the applicant would need to achieve the total points indicated by the resulting rezoning condition. The array of conservation measures and associated points are shown on Table A of the PIWMP Site Analysis Requirements. This attachment thereto is intended to demonstrate the methodology used. For questions or assistance please contact the Pima County Regional Flood Control District at (520)724-4600.

While numerous calculations are contained in the cells only those added to the ADWR Calculator for use as part of the Site Analysis PIWMP have been highlighted on the right.

Key:

Red boxes indicate items that must be filled in.

Green boxes indicate items that may be adjusted based upon the submittal.

Blue boxes are explanatory.

	A	B	C	D	E	F
1	August 17, 2017	**PROJECT DEMAND CALCULATOR**				
2	Name of Proposed Project:					
3	This worksheet is designed to provide water demand estimates based upon zoning class and project size for use by Pima County staff in evaluating rezoning requests for complaince with the Pima County Comprehensive Plan Water Policy. Should an applicant wish to provide their own estimates based upon project design and have questions regarding use of the worksheet please contact Pima County Regional Flood Control District at (520)724-4600.					
4						
5	AMA the subdivision is located in*:	Tuc				
6	If you are not sure if your are located inside or outside of an AMA, contact the Office of Assured and Adequate Water Supply at (602) 771-8599.					
7						
8	Project Size in Acres	10.00				
9	*Yield after common area*	8.50				
10	*PC Zoning Lots per acre*	7.26				
11	*Lot Yield*	61.71				
12	**Residential Usage***					
13	Category	PPHU	GPCD or per house/day	Demand/HU/YR (af/yr)	No. HU (Lots)	Residential Demand/Yr (af/yr)
14	Single Family (int)	2.50	57.00	0.16	61.7	9.85
15	Multi-Family (int)		57.00	0.00		0.00
16	Single Family Landscape (ext)	1.00	118.00	0.13	61.71	8.16
17	Multi-Family Landscape (ext)	0.00	21.00	0.00	0.00	0.00
18	Single family Demand/HU/YR			0.34		
19	Multifamily Demand/HU/YR			0.00		
20						
21		Square Feet	Acres	Demand Factor (af/yr)	No. HU (Lots)	Large Lot Adjustment Demand/Yr (af/yr)
22	Maximum Lot Size per Zoning Code	6000.00	0.14			
23	Landscape Area After Pad Adjustment	1000.00	0.02			
24	85% low water use	850.00	0.02	1.50	61.71	1.81
25	15% turf	150.00	0.00	4.60	61.71	0.98
26						
27	**NOTE: If the subdivision contains several groupings of lot sizes, the large lot adjustment needs to be calculated for each grouping of large lot sizes.					
28	If CC&Rs with landscaping restrictions for the residential lots will be adopted, a modified large lot adjustment can be calculated based on the specific landscaping restrictions.					
29	Contact the Office of Assured and Adequate Water Supply for assistance in calculating the large lot adjustment for subdivisions with several groupings of large lot sizes or					
30	if CC&Rs limiting landscaping within the residential lots will be adopted.					
31						
32	**Total Residential Demand**					**20.79**
33						
34	**Non-Residential Usage*** **					
35						
36	**For each category please enter either square feet or acres of land for that type of non-residential use within your subdivision.**					
37						
38	Category	Square Feet	Acres	Demand Factor (af/ac)		Non-Residential Demand (af/yr)
39	No Water Use Common Area		0.00	0.00	no water use	0.00
40	Low Water Use Common Areas (Xeriscape)		1.50	1.50	low water use	2.25
41	High Water Use Common Areas (Turf)		0.00	4.60	turf	0.00
42	Commercial use		0.00	2.25	all acres	0.00
43	Public Pool (length x width = square feet)		0.00	Based on closest AMA	pool	0.00
44	*Total common area*		1.50			
45						
46	***NOTE: If your application is for a change of ownership from a previously issued Certificate of Assured Water Supply, and is for only a portion of the original Certificate, contact the					
47	Office of Assured and Adequate Water Supply to pro-rate non-residential area acreage.					
48						
49	**Total Non-Residential Demand**					**2.25**
50						
51	Distribution Losses					
52		Residential	Non-Residential	Total	Loss Factor %	Distribution Losses (af/yr)
53	Demand af/yr	20.79	2.25	23.04	10.00	**2.30**
54						
55	Construction					
56		No. of Lots	Demand (gals/lot)	100 yr demand (af)		Construction Demand (af/yr)
57		61.71	10000.00	2.09		**0.02**
58	**Total Demand Per Year**					
59	Residential Usage af/yr	Non-Residential Usage	Lost & Unaccounted for	Construction	Total Non-Res	**Total Demand Per Year (af/yr)**
60	**20.79**	**2.25**	**2.30**	**0.02**	**4.58**	**25.37**
61	Residential Usage GPCD					Total Demand GPCD
62	**120**					**147**
63	Annual Build Out Demand					
64	25.37					
65						

Fill in project name and save with recommendation.

"Tuc" has been entered and water demand rates established by ADWR associated with the Tucson AMA are populated in all cells where a rate is indicated.

Fill in space B8 with total project acres.

Calculated by subtracting the sum of common area from cell C43 from the project size entered in cell B8.

Calculated by dividing 43,560 square feet by the maximum lot size from cell B22.

Calculated by multiplying cells B9 and B10.

Default is 2.50 but may be adjusted for proposed development.

Fill in maximum lot size per zoning.

Cell B23 is calculated by subtracting a 5000 square foot building envelope from the lot size entered in cell B22 as it is assumed this area will not be landscaped.

As a baseline assumption the percentage of individual lots to be low water demand landscape is calculated by multiplying cell B23 by 0.85.

As a baseline assumption the percentage of individual lots to be high water demand landscape is calculated by multiplying cell B23 by 0.15. Alternately the applicant may provide landscape figures based upon the PDP including building envelopes and Covenants for use in the proposed zoning demand estimate.

Unless specified by the applicant 15% of the total project acreage is assumed to be in low water use common area. Leaving the default for both existing and proposed zoning ensures consistency in the estimates provided. Alternately the applicant may provide common area figures based upon the PDP for use in the proposed zoning demand estimate.