

CITY OF TUCSON
DRAFT RIPARIAN AREA PROTECTIONS DEVELOPMENT STANDARD

Regulatory Review Envelope (RRE)

For the purposes of this development standard, a “regulatory review envelope” consists of the 100-year floodplain for watercourses with a discharge of 100 cfs or more, unless the watercourse is confined.

A watercourse can be considered confined when the ratio of the wetted top-widths of the floodplains associated with the base flood (100 year) and the 25-year flood is 1.25 or less and the height of the features confining the flow are at least 1.5 times the hydraulic depth of the base flood.

For confined watercourses, the boundaries of the Regulatory Review Envelope are defined as the area within 50 horizontal feet from the edge of the wetted top of the 100-year floodplain, not to exceed 50 feet in vertical elevation above the wetted top of the 100-year floodplain. See Figure 1.

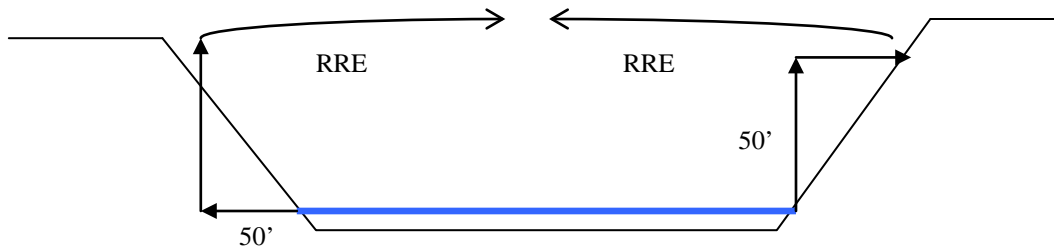


Figure 1: Regulatory Review Envelope for Confined Watercourses

Regulated Riparian Area (RRA)

For purposes of this development standard, a "regulated riparian area" is defined by the riparian classification maps adopted by the Pima County Board of Supervisors, for areas where this data is available.

These habitats are generally characterized by vegetation that is different in plant species composition or an increase in the size and/or density of vegetation as compared to upland areas and occur in association with regulatory floodplains through which waters flow at least periodically, as well as any spring, cienega, lake, watercourse, river, stream, creek, wash, arroyo, or other body of water. These communities represent a continuum of plant species' response to available moisture, and can be subdivided into hydroriparian, mesoriparian, and xeroriparian classifications as well as identification as Important Riparian Areas providing ecological connectivity and biological corridors.

- A. Hydroriparian. Riparian habitats generally associated with perennial watercourses and/or springs. Plant communities are dominated by obligate or preferential wetland plant species such as willow and cottonwood.
- B. Mesoriparian. Riparian habitats generally associated with perennial or intermittent watercourses or shallow groundwater. Plant communities may be dominated by species that are also found in drier habitats (e.g., mesquite); but contain some preferential riparian plant species such as ash or netleaf hackberry.
- C. Xeroriparian. Riparian habitats generally associated with an ephemeral water supply. These communities typically contain plant species also found in upland habitats; however, these plants are typically larger and/or occur at higher densities than adjacent uplands. Xeroriparian habitat is further divided into four subclasses for Class A, B, C, and D habitat as defined in the section on mitigation standards. Mitigation in xeroriparian habitat is to be determined based at least on total vegetative volume (TVV) as provided within the mitigation standards, as well as replacement of other lost riparian habitat functions necessary to sustain riparian habitat.
- D. Important Riparian Areas. Important Riparian Areas occur along the major river systems and provide critical watershed and water resources management functions as well as providing a framework for landscape linkages and biological corridors. Important Riparian Areas are valued for their higher water availability, vegetation density, and biological productivity, compared to adjacent uplands. Important Riparian Areas are essential for floodplain management and every effort should be made to protect, restore, and enhance the structure and functions of these areas including hydrological, geomorphological, and biological functions.

Watercourses for which there is not mapped riparian habitat

If riparian habitat maps are not available for a site, applicants may determine the boundaries of Regulated Riparian Areas using the protocol in Pima County Regional Flood Control Technical Procedure TECH-116.

As an alternative to this mapping protocol, applicants may, using a Native Plant Preservation Ordinance inventory, aerial maps (scale?), and other supporting data, identify areas within the Regulatory Review Envelope that are considered to NOT be Regulated Riparian Area.

What is not RRA: concrete, flood control, parking lots, roads, utilities, trails

Some sites may have trees within the Regulatory Review Envelope that are separated from the main body of riparian habitat by roads, trails, or other man-made breaks. Trees within the RRE are considered part of the RRA if they have some reasonable possibility (including with growth) of creating a relatively continuous canopy (canopy connection).

Habitat Functionality

Habitat functionality of Regulated Riparian Areas (RRAs) is a function of both the quality of habitat within the RRA (at the site) and the connectivity of the RRA to other riparian or upland habitat.

Connectivity:

- High – Part of a largely intact riparian system and/or connecting to permanently protected upland habitat such as natural parks, natural undisturbed open space, or other reserves.
- Medium – Part of a relatively intact system characterized by the ability of meso-mammals to utilize the RRA as a corridor between areas of undisturbed upland and/or riparian habitat. Watercourses where a majority of the reach is channelized and concrete-lined or undergrounded are not considered to be reasonably intact. Watercourses where a lower percentage of the reach is concrete-lined or undergrounded but where a majority of the reach consists of degraded riparian habitat characterized by dominance of invasive and/or non-native plants, low density and diversity of plants, or turfed areas are considered to be of medium quality. RRA with high connectivity in one direction and poor connectivity in the other (upstream/downstream) and RRA close to the upper end of the watercourse (where it becomes regulatory) are also considered medium.
- Low – Minimally connected to a larger system and represents only localized habitat for small mammals and reptiles and stopover points for birds. This includes non-connected habitat created by water impoundments that are not connected to a watercourse.

Assessing connectivity:

Connectivity is relative to the size of RRA being impacted. Applicants should look up stream and down stream of the site (using aerials) and determine the entire linear extent of the habitat patch. In assessing connectivity, applicants must look at least twice the distance of the linear reach of the patch, both upstream and downstream, or a minimum of 500 feet in each direction. Applicants can look more than twice the distance to demonstrate a particular rating.

Habitat Quality:

- High – Characterized by a predominance of native and/or non-invasive non-natives OR Xeroriparian A and B. Important Riparian Areas, hydro-mesoriparian habitat, and tabosa swales are always high quality.
- Medium – Characterized by a mix of native and non-native plant species OR characterized by a predominance of natives that are early succession (desert broom, etc.) OR Xeroriparian C.
- Low – Characterized by a predominance of invasive non-native plant species OR Xeroriparian D.

Xeroriparian habitats are subdivided into four sub-classes based on the total vegetation volume present.

- Xeroriparian A: The most dense Xeroriparian subcategory.
- Xeroriparian B: Moderately dense Xeroriparian subcategory.
- Xeroriparian C: Less dense Xeroriparian subcategory.
- Xeroriparian D: Less to sparsely dense xeroriparian subcategory that provides hydrologic connectivity to other riparian habitat areas.

Table 1: Functionality rating of existing RRA

Ecological Effectiveness factor	Assigned Rating (Hi, Med, Lo)	Narrative (explanation for assigned rating)
Connectivity		
Habitat Quality		

Necessary Development

Encroachment into the RRA for Necessary Development is restricted to the following types as long as they are located in a fashion that minimizes impacts to the RRA, do not exceed 1/3 of an acre, and overall footprint are designed in a fashion that minimizes impacts to the RRA and the impacts are mitigated in accordance with the standards contained in this document.

1. Roadway, Bikeway, Paved Walkway, and Utility Encroachment. Roadway, bikeway, paved walkway improvements, and utility encroachments RRE will be limited and approved only if there is no viable alternate crossing available and the crossing is necessary for the reasonable development of the property. Where allowed, roadway, bikeway, and paved walkway improvements and utility encroachments will cross RRAs perpendicularly, not run parallel to RRAs.
2. Spillways, Pipeline Outlets, Riprap, and Other Elements. The construction of spillways, pipeline outlets, riprap and other elements within the RRA will be limited and approved only if the construction is needed to address stormwater discharge at the site and does not cause destabilization of the watercourse.
3. Trails. The construction of trails parallel to a watercourse will be limited, and approved only where the trail is listed in the City of Tucson Parks and Recreation Department Trails Master Plan (2009).
4. Maintenance. Actions required within a watercourse for purposes of maintaining public health, safety and welfare, will be limited and approved when required by a City of Tucson department, including but not limited to, vegetation trimming, maintenance of the conveyance capacity of the wash, and erosion control.

Do we need to define types better?

Alteration of Regulated Riparian Areas

The Ordinance considers riparian habitat to be altered on the subject property when: There is disturbance to RRH (Class H, Xeroriparian Classes A, B, C, D, and/or IRA) that reduces vegetative volume or diminishes the value of the riparian habitat present on the site. Types of disturbances may include, but are not limited to:

- Mass grading/partial grading
- Clearing/thinning (including pruning)
- Planting of non-native (exotic) species within RRH (outside of developed areas) is discouraged
- Planting of noxious and/or invasive species
- Other modifications that may reduce vegetation volume or diminish the value of the RRH (e.g., implementing turf plantings, livestock areas, fencing, paved walking paths, roads, structures, play areas).

Any disturbance to RRH requires PDS review and approval and a Riparian Area Mitigation Plan (RAMP). To prevent a property owner from impacting RRA in a piecemeal manner, disturbance is considered cumulative. All disturbance occurring on a property or project site after the effective date of the Riparian Classification Maps will be counted toward the impact thresholds.

Avoidance of RRA is Required

When RRH is present on a site to be developed or subdivided, the following options are available for treatment of RRH, with preference in the order shown:

Options for Treatment of RRH:

1. Avoidance of habitat
2. Minimize disturbance
3. Rectify, reduce, or eliminate impact over time
4. Compensate for impact:
 - with onsite mitigation
 - with a combination of onsite and offsite mitigation
 - through offsite mitigation

Avoidance is required. If impacts to RRA cannot be avoided, the applicant shall provide evidence that no reasonably practicable alternative exists to the proposed impact. Reasons for impacting RRA may include the following:

- Site constraints such as steep slopes, rock outcroppings, etc.,
- Certain restrictions imposed by other City Departments,
- Public Health and Safety considerations.

Measures that can be taken to minimize impacts to RRA include:

- Reducing grading limits;
- Reducing building footprints;
- Reorienting the structure to minimize impacts;
- Reducing width, length, and/or relocating driveways and parking areas

If it is demonstrated that avoidance is not, RRA may be removed as long as an approved RAMP is implemented. This alternative is available only when it can be demonstrated that there is no “reasonably practical alternative” to the proposed impact and that impacts are minimized to the greatest extent possible. An approved RAMP is required before

disturbance to RRA is permitted and must address how impacts will be minimized, rectified or eliminated over time.

Lee Moore Watershed and other Basin Management Studies

In cases where a Basin Management Plan has been prepared for a watershed and natural flow corridors have been delineated, impacts, preservation, and mitigation should be considered within the context of these plans. Flow corridors, which are intended to be maintained in their natural state, are opportunities to create large, well-vegetated corridors throughout the watershed. Lower quality riparian habitat (Xeroriparian C and D), if impacted within the watershed, can be mitigated within flow corridors in order to achieve greater functionality of those corridors. Higher quality riparian habitat (Hydomeso riparian, Xeroriparian A and B, and Important Riparian Areas) should be preserved to the extent possible regardless of whether it falls within or outside of the designated flow corridors.

Watercourse Report

Applicants must complete an Environmental Resources Report to document the extent of RRE, RRA, and anticipated impacts to these for the site.

Components:

- Map of PC habitat or map based on NPPO + aerial
- Narrative on functionality
-

Impact Thresholds

Any impact above these levels requires approval by SAC and a DSMR.

<i>Connectivity @ Habitat Quality</i> -	High	Medium	Low
High	5%	10%	25%
Medium	10%	25%	40%
Low	25%	30%	50%

Exceptions:

- Impoundments not part of a wash – 100% impact allowed; mitigate with vegetated detention basin (mandatory) and in-lieu fee.
- Impoundments part of a wash – impact to impounded area (if that is the only wash impact) does not require a DSMR or SAC to exceed above thresholds IF the preserved portion is no narrower than the un-impounded portion of the habitat.
- Lee Moore Watershed – impacts to Xero C and D do not have to go to SAC or get DSMR if mitigated inside flow corridors.

Riparian Area Mitigation Plan

Riparian Area Mitigation Plans (RAMP) Submitted to PDS for review and approval shall include the following basic information. PDS encourages applicants to meet with

staff prior to submittal of a RHMP to discuss site constraints and requirements. Typically the following items are required:

- Evidence that no reasonably practicable alternative exists to the proposed impact to Regulated Riparian Area (RRA) and the impact has been minimized to the maximum extent practicable.
- Delineation of RRA in accordance with the 2005-FC2 Riparian Classification Maps, or site specific delineation of RRA (see Appendix X).
- Mitigation Planting Plan
- Development plan or tentative plat
- A detailed site plan (single-lot development)
- A completed Floodplain Use Permit application (single-lot development)
- A copy of the Native Plant Preservation Plan and/or Landscape Plan, if applicable.

Note: For specific plan requirements see the RAMP checklists for single-lot and development review projects, included in Appendix A. Pima County Riparian Classification Maps (see section 2, page 17, Riparian Classification Maps) were prepared at a scale of 1" = 2,000', providing a general location of RRA.

The actual habitat boundaries may be shifted relative to the parcel boundaries shown on the maps due to rectification of aerial photographs with the parcel map base. If an applicant feels the boundaries of the RRA shown on the Riparian Classification Maps are inconsistent with what is existing on the site, then the applicant may request a modification of the boundaries. In order to modify the boundaries of RRA on a site, the applicant must follow guidelines outlined in TECH-116.

Additionally, if the applicant feels that the Riparian Classification Maps do not accurately reflect the onsite total vegetative volume, the applicant can submit an onsite vegetation survey for consideration in determining mitigation requirements (TECH-116). IRA boundaries are part of the Conservation Land System (CLS) mapping adopted by the Pima County Board of Supervisors and are not subject to adjustment or modification. These areas have been delineated based upon a variety of resource values in addition to the presence of riparian vegetation, and are intended to provide for the establishment of an integrated natural open space system within Pima County.

Site Specific Delineation of RRA

Subdivisions and Commercial Sites.

The RRA Delineation shall be prepared at the same scale as the plat or development plan, and shall include:

- A recent aerial photograph of the site.
- Site specific limits of the RRH boundaries.
- Limits of development on the site.

Riparian Classification Maps and recent aerial photographs are available at:
www.dot.pima.gov/gis/maps/mapguide/

Single-Family Residential

The RRA Delineation shall be prepared at the same scale as the site plan and shall include:

- A recent aerial photograph of the site.
- Location of parcel boundaries and RRH delineated on the aerial photograph.
- Limits of development on the site, including existing and proposed improvements, and grading limits including fire safety zone, driveways, utility lines, pools and walls/fencing.

Mitigation Planting Plan

Residential, Commercial, and Single-Lot Development

The Mitigation Planting Plan shall use plant quantities required by the guidelines or plant quantities determined by an onsite vegetation survey. The RAMP shall be prepared at the same scale as the plat, development plan or site plan. If a Native Plant Preservation Plan is required, the RAMP shall be prepared at the same scale. The RAMP shall include, at a minimum (also see Mitigation Plan Checklists found in Appendix X for detailed requirements):

1. Scale, north arrow, location map, brief description of site location, and other general information as appropriate for the project.
2. Site specific delineation of RRH.
3. Proposed finished grades within the mitigation planting area. Finished grades shall be depicted by contours (1- or 2-foot contour interval) or by other methods that clearly depict the finished grades and slope conditions.
4. Grading limits.
5. Fire safety setbacks, if applicable.
6. Proposed mitigation planting area.
7. Within the mitigation planting area, locate mitigation plantings in a manner that imitates natural conditions (i.e., not planted in rows).
8. A plant list or schedule that identifies plant species, quantities, and plant size and seeding requirements at time of installation.
9. Calculations as described in the next section.
10. Irrigation requirements as described in Section X, page xx.
11. Maintenance requirements as described in Section X, page xx.
12. Monitoring point locations. Show location, directionality and number each point on the plan.

Calculations and Quantities for Disturbance and Mitigation

A summary of area and quantity calculations shall be shown on the Mitigation Planting Plan, and shall include:

- Total area of RRA present onsite, by classification.
- Area of RRA that will be disturbed, by classification.
- Minimum required mitigation planting area and the size of the mitigation area as proposed, by classification. See Appendix X for determining planting density within the mitigation area.

- Minimum quantity of plants required by classification, size, (trees: 15 gallon, 5 gallon, etc., shrubs: 5 gallon, 1 gallon, etc.), and species.

Mitigation Irrigation Plan

Residential and Commercial Development

Irrigation system shall be designed and installed as required under City of Tucson and Pima County Standard Specification for Public Improvements (2003), see Appendix X.

Single-Family Residential

Homeowners with single-family lots may meet the irrigation requirement with a statement included on the mitigation plan that defines the method of irrigation and a statement of basic maintenance.

The property owner is responsible for implementing and maintaining the mitigation area per the RHMP and submitting an annual monitoring report for mitigated areas on their property. Although, it is the property owners' responsibility, within multi-lot developments a single report may be coordinated and submitted for multiple lots (e.g., Home Owners Associations). For larger developments, an assigned monitor is recommended, though not required. Reports shall include information as outlined on page xx. The initial annual monitoring report shall be considered the "as-built" RAMP and provide information regarding any deviations from the approved RAMP based on plant species availability or problems encountered during installation.

In addition to the annual monitoring requirement, a representative of the City will visit the Mitigation Area at least once during the five year establishment period to assess compliance with the RAMP.

The RHMP shall be considered successful if 80% of the plants are living and actively growing without supplemental irrigation or significant die back or loss at the end of the 5-year monitoring period. The monitoring plan will provide an assessment of success. During the monitoring period, the responsible party shall be required to provide annual reports to PDSD documenting progress toward success. If the site is not progressing as anticipated, proposed corrective actions shall be provided in the monitoring report.

Mitigation areas must be monitored following installation, which occurs during the first growing season following completion of construction. The Mitigation Area must be maintained and monitored for five calendar years. Each calendar year has multiple growing seasons typically determined by climate, location, temperature, daylight hours, and rainfall. In Southern Arizona there are three main growing seasons;

March—May “Spring growing season”

July—September “Monsoon season” of summer rains

September—November “Fall growing season”

Submittal of the annual monitoring report is required for compliance with the RAMP. PDSD will send out a courtesy reminder annually to property owners with an approved RAMP. Failure to submit the annual report will require an inspection of the property by PDSD staff to verify compliance with the approved RAMP, and possibly enforcement action if the property owner has failed to properly implement the RAMP.

Monitoring reports shall include the following information:

1. 11” x 17” copy of the approved RAMP, with photo monitoring point locations identified and numbered.
2. Photographic documentation:
 - Photographs shall be numbered to correlate with the monitoring points identified on the RAMP. Number of monitoring points will be based on site constraints, so that the entire mitigation area(s) is documented.
 - A minimum of one photograph per monitoring point is required. If the mitigation area cannot be captured by one photograph, several points shall be used.
3. Provide a plant monitoring schedule that identifies plant species, quantities, and plant size at time of installation with plant condition noted. Deviations from the approved RAMP must be highlighted and an explanation provided. With the initial monitoring report submittal, provide copies of receipts for plant material and seed mix. Note: a plant schedule identifying plant species, quantities, and plant size at time of installation will have been submitted as part of the original RAMP.
4. Verify replacement of dead trees and shrubs from previous year(s), if applicable. Property owners shall verify through submittal of the following:
 - Nursery receipts for replacement plants
 - Photographs of replacement plants
 - Note replacement tree and shrub locations on the RAMP.
5. If the site is not progressing as anticipated, proposed corrective actions shall be provided in the annual monitoring report. Depending upon the extent of problems encountered, a meeting with staff may be required.
6. Monitoring reports shall be submitted to the RFCDD at:

Development Plan or Subdivision Plat

The RAMP shall be submitted as early as possible during the development review process, unless otherwise requested by the applicant. Review and approval of the final RAMP shall occur prior to disturbance. The RAMP shall be submitted to the Subdivision Review Coordinator as a separate sheet labeled “Riparian Habitat Mitigation Plan” along with the Tentative Plat or Development Plan or may be included as separate sheet(s) within the Landscape Plan. The submittal shall include one hard copy and one electronic copy in pdf file format.

If substantial changes occur between the tentative plat/development plan and final plat and/or grading plan, including but not limited to increased RRA disturbance, modified development layout, or other substantial change, a revised RHMP will be required prior to approval of the final plat or development plan. No grading permits shall be issued until the revised RAMP is approved to ensure the final Development Plan or Plat are

reconciled. Any revisions to the grading limits during the Improvement/Grading Plan review process that may require revision of the RAMP must be submitted to PDS staff for review and approval.

Offsite mitigation proposals will require review and approval prior to approval of the tentative plat or development plan.

A single-lot development RHMP should be submitted along with the site plan at the time of FPUP application.

Mitigation Requirements

- 1:1 mitigation (acres)
- **If mapped by Pima County, follow guidelines for mapped habitat type.** If Xero B, trees can be planted at a density of up to Xero A. If Xero C or D, can be planted at a density of up to Xero B.
- If not mapped by Pima County, planting requirement: At least 60 trees and 80 shrubs per acre of disturbance (Xero B), but can't be planted at more than 75 trees and 90 shrubs per acre (Xero A) plus seeding.
- Applicant has option of doing Total Vegetative Volume (per County protocol) to demonstrate that habitat is Xero C or D.
 - For Xero C: At least 45 trees and 70 shrubs per acre of disturbance, but can't be planted at more than 60 trees and 80 shrubs per acre (Xero B) plus seeding.
 - For Xero D: At least 30 trees and 60 shrubs per acre of disturbance, but can't be planted at more than 60 trees and 80 shrubs per acre (Xero B) plus seeding.
- **What size:** At least 50% of the trees planted must be 15-gallon size. The remaining 50% must be at least 5 gallon. At least 50% of the shrubs planted must be 5 gallon or larger. The remaining 50% may be 1 gallon. If you use all 15-gallon trees instead of 50% 5-gallon, the total quantity of required trees may be reduced by 20%. If all shrubs planted are 5-gallon, the required number of shrubs may be reduced by 20%.
- **Species Diversity:** No more than 75% of the trees used in the Mitigation Area can be of a single species. A minimum of 3 tree species is required. Use existing tree species as a guide for species selection. You may use any shrub species found on the approved Xeroriparian shrub list. A maximum of 1 shrub species may be selected from the "cacti & succulents" section of the approved plant list. No more than 35% of the shrubs selected may be of a single species. A minimum of 5 shrub species is required. Use existing shrub species as a guide for species selection.
- You must select trees from the Approved Xeroriparian Plant List. Select trees appropriate for your location and install using standard, approved planting methods. In general, existing native plants found onsite are a good indicator of appropriate mitigation plants. Native species identified onsite but not found on the approved plant list may be allowed pending review and approval by PDS staff.
- Applicants may use their NPPO mitigation for these plantings as long as the density, diversity, species, and size requirements are adhered to.
- **Seeding/Understory requirements:** Seed all disturbed areas within the Mitigation Area with the approved Xeroriparian seed mix and seeding requirements. Site-specific seed

mixes may be proposed and approved if they better reflect existing/desired conditions.

- If degraded conditions exist at the site (e.g., erosion, headcutting), a site-specific restoration plan may be developed. In-lieu fees can be used to stabilize the watercourse, remove invasive species, revegetate and/or implement any other BMPs that improve the functionality and long-term stability of the riparian habitat on site.

On-Site Mitigation

Onsite mitigation is required for any disturbance other than restoration. The purpose of onsite mitigation is to provide new habitat of similar value to RRA that will be disturbed as a result of site development.

Onsite mitigation must include:

- Mitigation Area Location Onsite mitigation shall be located, to the extent practicable, in a manner that enhances the overall function of natural open space within a property or project area and contributes to the overall value of riparian habitat protected within the property. The site should be selected based upon its potential to support the required planting density without long-term supplemental irrigation (i.e., within the floodplain, drainage swales and/or low-lying areas). To the extent compatible with other public health, safety, and welfare considerations, mitigation will be integrated into flood control infrastructure and will utilize water harvesting to the maximum extent possible. Water harvesting features, such as microbasins and swales will be required if the mitigation area is proposed outside of a naturally sustaining riparian ecosystem, such as a floodplain or naturally low-lying land feature, such as a drainage swale or depression in the land, where water accumulates.
- Planting and Seeding of trees, shrubs, and understory as required to re-establish a natural riparian plant community similar to habitat removed.
- Irrigation to facilitate the establishment of plants and to assist in re-establishment of riparian habitat within 5 years.
- Maintenance for a period of 5 years to ensure re-establishment of riparian. Maintenance practices for riparian habitats will differ from maintenance practices used on traditional aesthetic landscape areas.
- Monitoring for a period of five full calendar years, to ensure that the Riparian Area Mitigation Plan (RAMP) is implemented and being maintained.

A successfully mitigated habitat will:

- Include all layers of site-appropriate vegetation in a naturalistic condition.
- Include sufficient diversity of plant species and structure to provide food and cover for a variety of wildlife.
- Develop into and function primarily as riparian habitat and should not be modified for other activities.
- Retain leaf litter which acts as a mulch to hold soil moisture and recycle nutrients into the soil for plant use.
- Establish vegetation to help prevent erosion and increase infiltration into groundwater aquifers.

Common flaws in implementing RAMP's:

- Planting only trees and failure to use all the plant species identified in the RAMP. Planting shrubs, succulents, forbs, and grasses are key components. All the vegetation layers need to be present in order for the habitat to function properly.
- Placement of landscaping rock, and other intensive landscaping measures within the mitigation area.

Common flaws in maintaining a Mitigation Area include:

- Pruning or shaping of trees and shrubs.
- Removal of ground cover vegetation, leaf litter and woody debris.

Other activities that diminish the habitat value of Mitigation Areas include:

- Installing fencing or walls that hinder wildlife movement, diverts natural drainage, or prevents surface water drainage from reaching existing riparian habitat.
- Using the mitigated habitat for livestock grazing or as recreation areas (e.g., children's play areas, paved walking paths, gazebos).

Where to locate your Mitigation Area

- You must locate your Mitigation Area within or adjacent to RRA or in areas where conditions are optimal for plant survival. To ensure the long-term viability of the mitigation area, and to the extent allowable with respect to the minimum mitigation area size, the plant density should be similar to that which naturally exists and can be supported by site conditions. Where it is not possible to meet all mitigation requirements onsite, see "Offsite Mitigation".
- You may locate your Mitigation Area outside of RRA if you can demonstrate that this will enhance the overall habitat value of the site along with providing verification the area will support the required planting density without long-term supplemental irrigation. An example of an acceptable non-adjacent location would be replanting previously disturbed natural drainages or constructed detention basins. See Appendix XX for guidelines on planting within these areas.
- Unacceptable areas would be planting in parking lots, in areas with high volumes of vehicle and pedestrian traffic, areas that will be landscaped, or within active recreational areas.
- The Mitigation Area should be one continuous area that provides continuity of habitat. If one continuous area is not feasible, several areas in a density that creates habitat may be used. The mitigation area shall not consist of scattered trees used as amenity landscaping on the site. If the mitigation area cannot be placed adjacent to preserved habitat, an alternative location shall be chosen based on water availability, to facilitate growth/maintenance of habitat, such as areas of shallow ground water, the floodplains of ephemeral, intermittent, and perennial streams, low-lying areas, or water harvesting basins that collect and infiltrate sufficient water to support riparian plant species. If approved by PDS, the mitigation area may be located within designated Natural Undisturbed Open Space (NUOS). If this option is chosen, design guidelines provided by PDS for planting within NUOS must be followed.

Grading and Erosion Control Requirements

- If the mitigation area will be placed within an already disturbed area, it is recommended the area be graded to collect and retain stormwater runoff to help reduce supplemental irrigation requirements. Grading must be done so as not to disturb additional habitat. Harvesting of stormwater runoff from other areas of the site is encouraged and acceptable, if consistent with applicable county, state, and federal regulations.
- Follow requirements found in the City of Tucson Grading Manual and the City of Tucson Stormwater Detention/Retention Manual.

Irrigation System Requirements

- For subdivision plats and development plans, an automatic irrigation system shall be installed within the Mitigation Area to provide water to:
 - All transplanted/salvaged trees and shrubs
 - All planted nursery stock trees and shrubs
- The irrigation system must be capable of providing appropriate volumes of water to the trees and shrubs.
- An automatic bubbler or other irrigation system capable of efficiently providing water to the tree and shrub root zones may be proposed. It must be demonstrated that the alternative irrigation system will provide sufficient irrigation water at the appropriate intervals, to ensure establishment of mitigation plantings. Individual homeowners may not be required to install an extensive automatic irrigation system if it can be demonstrated that they will provide adequate supplemental irrigation to ensure plants are established.
- Subdivision plats and development plans must meet all requirements in the City of Tucson Standard Specifications for Public Improvements.

Required Maintenance

- Your RAMP must include the statement:

“The project owner, and/or the Owner’s successors, agree to preserve and protect the Mitigation Area for the duration of the project. Further, the project owner and/or their successors agree to actively maintain the mitigated area for a period of not less than five years. Maintenance activities shall include, but not be limited to, the regular operation of the irrigation system, the replacement of dead trees and shrubs, and the removal of noxious and/or invasive plant species.”

You, or your successors, are bound to perform the maintenance outlined in this statement.

- You must follow the Maintenance Guidelines found in Appendix XX. See Appendix XX for a list of noxious and/or invasive plant species and best management practices (BMPs) for control of these species.

August 20, 2010 Off-site Mitigation

Offsite mitigation will be allowed when it has been demonstrated that preservation or onsite mitigation is not feasible. All offsite mitigation proposals will require review and approval by PDS and SAC. Proposals for in-lieu mitigation for more than 1 acre must be approved by Mayor and Council.

Offsite mitigation includes the following options:

- Mitigation may be performed on another parcel of land with approval of PDS. The proposed parcel must contain comparable riparian habitat, or may be used if the parcel is suitable for enhancement or restoration of degraded riparian habitat. The alternate parcel must be under the same ownership as the parcel impacted by development or if under different ownership, must record deed restrictions that protect the mitigated area(s) in perpetuity.
- For Master Planned Communities and large commercial developments, exchange of land in-lieu of onsite mitigation may be allowed. Land exchange proposals must provide multiple benefits such as preservation of valuable habitat corridors, provide habitat connectivity, and proximity to habitat preserved on public land, parks, preserves and habitat restoration projects.
- A financial contribution in-lieu of onsite mitigation. RRA may be removed or altered concurrent with payment of an in-lieu fee which may be used for purchase of property with riparian habitat, educational programs, invasive species management, or towards restoration on property currently owned by the City.

Mitigation Plan

Mitigation Plan. If an applicant demonstrates to the satisfaction of PDS that alteration of regulated riparian habitat areas cannot reasonably be avoided, a mitigation plan shall be submitted to PDS for approval.

Mitigation Plan Requirement. The mitigation plan shall delineate all mitigation measures to be taken by the owner and shall include a schedule of completion. The mitigation plan shall be consistent with the riparian habitat mitigation standards included in this document and shall be prepared in accordance with best available scientific or management practices.

Mitigation may be incorporated into measures taken to satisfy other requirements of the City. Where appropriate, the mitigation plan shall at a minimum provide for:

1. Construction methods that identify and protect riparian habitat that is to be left unaltered;
2. Selective clearing or other habitat manipulation;
3. Replacement of affected vegetation with appropriate plant species in ratios that will result in simulation of the pre-alteration vegetation within 5 years;
4. Irrigation with passive water harvesting, where possible, or installation and maintenance of irrigation methods until plantings are established;
5. Periodic monitoring of mitigation features;
6. Maintenance and replacement of damaged plantings; and
7. Posting a performance bond or financial assurances.

At the request of the property owner, and with Mayor and Council approval, the mitigation plan requirement under this chapter may be waived by contributing funds to an account established and administered by the District for the purpose of offsetting damage to riparian habitat.