

Mayor and Council

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October 1, 1997

**S.T.A.C./C.A.C.**  
**STORMWATER TECHNICAL ADVISORY COMMITTEE**  
**CITIZENS ADVISORY COMMITTEE**  
**Ad Hoc Subcommittee**  
*City of Tucson, Department of Transportation*  
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October 1, 1997

Mayor and Council Members  
City of Tucson  
110 East Pennington, Tenth Floor  
Tucson, Arizona 85701

SUBJECT: Tucson Code, Chapter 29, Article VIII  
Watercourse Amenities, Safety and Habitat (W.A.S.H.) Ordinance  
Ordinance Numbers 7579, 7944, 8303, and 8779  
Suggested Modifications for Clarifying and Strengthening this Code

The Honorable Mayor Miller and Council Members:

At the suggestion of Councilwoman Marcus during an appeal of the W.A.S.H. Ordinance last November 18, 1996, an *ad hoc* subcommittee was formed in order to review the ordinance and how it has been applied throughout the City of Tucson, and to make recommendations on ways of emphasizing the original intent of the ordinance, as well as of clarifying the language in the ordinance so that future expectations of property owners, engineers, City staff, and affected neighbors can be more nearly met. Our *ad hoc* subcommittee comprises eight active members of the Stormwater Technical Advisory Committee and the Citizens Advisory Committee with individual experience in ecology, landscape architecture, hydrology, environmental conservation, and civil engineering.

This letter briefly describes our understanding of the Mayor and Council's original intent in creating the ordinance, along with our collective opinion of those areas of the ordinance that should be modified or improved in order to better reflect this original intent. However, this letter does not contain recommendations for revisions that would significantly alter or enlarge the

scope of the original W.A.S.H. Ordinance. The primary focus of our *ad hoc* subcommittee has only been to develop recommendations for changes to the ordinance that would help strengthen and streamline its uniform application.

#### Original Intent of Mayor and Council

As part of our initial work, members of our *ad hoc* subcommittee invited current and former City staff to attend our public meetings and asked them to give us their understanding of the ordinance, as well as their understanding of the original intent of Mayor and Council when this ordinance was initially written in 1990 and 1991. Our *ad hoc* subcommittee also reviewed correspondence written prior to ordinance adoption by Council Members and administrative staff from the Planning Department and the Department of Transportation. Based on this information, our *ad hoc* subcommittee understands that the W.A.S.H. Ordinance was created out of a desire by the previous Mayor and Council to formalize, through the adoption of an ordinance, the wash-preservation policies given in the Interim Watercourse Improvement Policy (IWIP) approved by Mayor and Council on June 27, 1988. The IWIP contained specific policies that encouraged the preservation of natural watercourses and the design of landscaped, natural-appearing channels. The IWIP also contained policies that restricted the use of concrete bank protection in order to allow for the preservation and protection of native plant species.

Despite the earlier approval of the IWIP, the previous Mayor and Council were still concerned that concrete bank protection along urban washes was too widely used. Consequently, Mayor Tom Volgy directed staff from the Department of Transportation, on June 25, 1990, to return within 120 to 180 days with a new ordinance that would help prevent further channelization and concrete lining of washes. In response to the Mayor's request, several draft versions of the W.A.S.H. Ordinance were written and circulated, and a final version of the ordinance was adopted by Mayor and Council on March 25, 1991 (Ord. No. 7579). The W.A.S.H. Ordinance was later amended on March 15, 1993 to include newly annexed washes (Ord. No. 7944), and then amended again on September 26, 1994 to include additional appeals and variance procedures (Ord. No. 8303). The list of watercourses protected by this ordinance was later modified on December 2, 1996 to include a portion of Fahringer Wash (Ord. No. 8779). The primary focus of our *ad hoc* subcommittee has been on the first W.A.S.H. Ordinance (Ord. No. 7579).

Based on conversations with City staff and other individuals involved in the initial development of the ordinance, our *ad hoc* subcommittee believes that the original intent of Mayor and Council in creating the W.A.S.H. Ordinance was to:

- a. Protect existing large native trees found within and along certain designated washes, as well as to provide reasonable opportunities and incentives for formerly disturbed washes to be restored or recreated;
- b. Substantially limit the future use of concrete bank protection along certain designated washes, and to encourage the use of wash treatments that maintain the existing appearance of the wash and adjoining resource areas;
- c. Provide administrative procedures for implementing and safeguarding specific wash-protection policies; and,
- d. Provide an opportunity for the establishment of open space beside selected washes for continuous and interconnected active and passive recreational activities.

#### General Review of Recent Requests for Variances and Appeals

In accordance with Section 26-12.d of the W.A.S.H. Ordinance (Ord. No. 8309) the Stormwater Technical Advisory Committee (STAC) has the responsibility of evaluating the technical merits of variances and appeals, and to make recommendations to the Mayor and Council, as requested. In this capacity, the STAC has had many opportunities to examine the W.A.S.H. Ordinance in the context of private and public development projects located near washes governed by this ordinance.

In this official capacity, members of the STAC noticed that variances to Mayor and Council regarding the W.A.S.H. Ordinance were usually in the form of requests to include concrete in the construction of roadway culverts or streambed grade-control structures along certain designated washes. Similarly, one of the appeals reviewed by STAC centered on whether or not the "top of bank", used to delineate the 50-foot-wide Study Area, had been properly identified by the developer's engineer, and whether or not the existing "wildlife habitat" would be damaged by wash encroachments and nearby development.

Although the City Engineer and the Mayor and Council occasionally receive requests for variances to the W.A.S.H. Ordinance, the large majority of projects affected by the W.A.S.H. Ordinance are usually designed, reviewed, approved, and built without controversy or unnecessary hardship on the part of City staff, consulting engineers, and affected property owners. To our knowledge, only two requests for an appeal have ever been made in the nearly six years since the W.A.S.H. Ordinance was initially adopted. Conflicts, should they arise, are generally resolved during routine project review. The relatively small number of formal variances and appeals is a strong indication that effective communication between City staff,

engineers, and affected property owners regularly occurs, and that the W.A.S.H. Ordinance is being uniformly and consistently interpreted and administered by City staff from both the Engineering Division and the Planning Department.

Despite the apparent administrative success of the ordinance, members of the *ad hoc* subcommittee noticed that the W.A.S.H. Ordinance was unclear in some critical areas, and this sometimes resulted in differences of opinion of affected property owners, consulting engineers, and City staff. Some of the general areas found to be weak or unclear included those sections dealing with:

- a. Definitions of critical terms such as “top of bank” and “resource area”;
- b. Minimum criteria for evaluating the engineer’s assertion that the Resource Area cannot be left in its natural state;
- c. Description of the minimum content and areal extent of the Plant/Habitat Inventory and Preservation/Revegetation Plan;
- d. Description of the minimum professional qualifications of the person responsible for preparing the Plant/Habitat Inventory and the Preservation/Revegetation Plan; and,
- e. Clarification of the time period within which appeals and variances can be made by persons aggrieved by the decision of the City Engineer or the Planning Director made in the course of administering or interpreting the W.A.S.H. Ordinance.

Several key areas of the ordinance appear to be unclear and occasionally cause conflict and project delays. For example, it has been our experience that the Plant/Habitat Inventory occasionally submitted in conjunction with a development plan only shows the locations of relatively large trees, and occasionally the plant species or names listed beside these large trees have been incorrectly identified by the land-survey crews. Likewise, because the ordinance does not define the term “Resource Area”, it is still unclear what physical attributes must be present in order for all, or a portion of, the 50-foot-wide Study Area to be considered a Resource Area, and whether or not the Resource Area can be simply defined by the existence of large mature Mesquites and Palo Verdes, as has been the general practice within the City of Tucson. It is also unclear whether or not sparsely vegetated areas within a 50-foot-wide Study Area contain any vegetative resources or any important wildlife habitat areas, and should be preserved or enhanced by revegetation efforts. In general, it has been the practice within the City of Tucson to allow sparsely vegetated areas within a 50-foot-wide Study Area to be altered or encroached upon without habitat-loss mitigation.

Based on our work, we would like to make the following recommendations to improve the effectiveness and clarity of the W.A.S.H. Ordinance. Our recommendations are both general and specific. Our general recommendations pertain to the apparent effectiveness of the ordinance in protecting riparian habitats. Our specific recommendations pertain to refining definitions used in the ordinance and outlining the minimum professional qualifications for those persons responsible for completing the natural resource inventory of the study area.

### *General Recommendations*

There are three general recommendations our *ad hoc* subcommittee would like to propose if Mayor and Council decide to evaluate and modify the W.A.S.H. Ordinance in the future. These recommendations are as follows.

1. Evaluate the Effectiveness of the Ordinance. During the brief tenure of our subcommittee, we did not collect or examine data that specifically reflect whether or not the ordinance has been effective in protecting and preserving riparian habitat. Although only two appeals have been made since the ordinance was adopted more than six years ago, this fact alone does not demonstrate the effectiveness of the ordinance in protecting Tucson's remaining riparian zones. While debating this particular topic, our discussions have often been contradictory. If the Mayor and Council ever decide to thoroughly review and revise the W.A.S.H. Ordinance, we believe the first step by Mayor and Council should be to determine whether or not critical riparian habitats within the City limits have changed in extent and health since the ordinance was first adopted, and whether or not these changes can be directly attributable to the strengths and weaknesses of the ordinance.
2. Evaluate how the W.A.S.H. Ordinance is being Enforced. It is also recommended that Mayor and Council evaluate the effectiveness of the City's enforcement of the W.A.S.H. Ordinance. Information gained during our examination of the W.A.S.H. Ordinance seems to indicate that the W.A.S.H. Ordinance's effectiveness may be compromised more by weak enforcement of the ordinance's principles than by the strength of the ordinance itself. One effective way of immediately improving enforcement would be to employ additional City staff having the qualifications and professional experience in preparing environmental assessments and designing habitat remediation and protection measures.

3. Develop Incentives for Protecting Riparian Habitats. It is the opinion of the ecologists and environmental conservation experts on our subcommittee that a fifty-foot-wide buffer along both sides of a wash is the minimum area necessary for maintaining ecological integrity and providing a healthy habitat for indigenous wildlife species. It is also the opinion of these experts that incentives should be offered to land developers that would not only encourage them to comply with the conditions of the W.A.S.H. Ordinance, but would also make it appealing to voluntarily protect more than this minimal fifty-foot-wide buffer area. Western cities, such as Portland, Oregon and Boulder, Colorado, have successfully developed incentive packages that have been effective in protecting valuable natural areas within an urbanized setting. It is recommended that policies and regulations from cities such as these be investigated and a determination be made whether or not these existing programs and experiences can be brought to Tucson and applied.

### *Specific Recommendations*

Because the W.A.S.H. Ordinance appears to be working, at least administratively, as originally intended by Mayor and Council, we do not recommend making any immediate changes to it, and instead, we recommend that a letter addressed to consulting engineers be written by the City Engineer with input from the City Attorney's Office and the Economic Development Office, clarifying certain portions of the ordinance, as well as explaining the administrative procedures currently being used by staff. It is our understanding that most of the administrative procedures currently used by the City Engineer have already been written by Jim Turner, the former City Engineer, with help from the City Attorney's Office. It is also our understanding that work is currently underway as part of the ongoing Tucson Stormwater Management Study (TSMS) to review many of the existing City ordinances and to make recommendations for developing an ordinance that is consistent with the local, state, and federal regulations, as well as consistent with the policies and guidelines developed as part of TSMS. Because of this ongoing work, we recommend that the ordinance review continue as part of TSMS, and that any revisions to the W.A.S.H. Ordinance be done within the larger context of TSMS.

The areas where we recommend clarification by the City Engineer include:

- a. Expansion of the definitions given in Sec 29-13. In particular, we recommend providing reasonable definitions for critical terms used in the ordinance, such as Resource Area, Study Area, and Top of Bank. Attachment A to this letter contains a list of words and recommended definitions for your consideration;
- b. Description of the minimum criteria for evaluating the engineer's assertion that

the Resource Area could not be left in its natural state as required in Sec. 29-16.A. Attachment B to this letter contains a list of items we believe should be included as part of the engineer's and owner's assertion;

- c. Description of the minimum content of the Plant/Habitat Inventory identified in Sec. 29-15.B.2. Attachment C to this letter contains a list of items we believe should be included in a complete Plant/Habitat Inventory;
- d. Listing of the minimum qualifications of the individual responsible for preparing the Plant/Habitat Inventory and Mitigation Plan. Specifically, we recommend requiring the responsible individual to be a plant professional, such as those listed in Section 3.8.4.4 of the City of Tucson's Native Plant Preservation Ordinance (Ord. No. 8845). Attachment D to this letter contains a consistent list of minimum qualifications for your consideration;
- e. Listing of the minimum content of the Mitigation Plan identified in Sec. 29-16.C. We recommend that the Preservation/Revegetation Plan should contain a Landscape Plan, a Plant Materials List, an Irrigation Plan, and a 3-year Maintenance Schedule. Attachment E to this letter contains a list of these items;
- f. Description of the recommended criteria for adding more washes to Table 1 of the W.A.S.H. Ordinance. We recommend utilizing current maps of riparian vegetation and trail systems as a means of identifying washes to be considered under Sections 29-14.C and 29-19.E of the W.A.S.H. Ordinance. Attachment F to this letter contains a brief list of criteria for increasing the list of washes protected by the W.A.S.H. Ordinance; and,
- g. Clarification of the time period within which appeals and variances can be made under Section 29-17.B.3 by persons aggrieved by the decision of the City Engineer or the Planning Director made in the course of administering or interpreting the W.A.S.H. Ordinance. Also requirements for timely notification by the City Engineer are needed under Section 29-17.B in order to give officially notified property owners ample time to formulate an appeal within the limited 30-day appeal period. Further, it is our opinion that limitations should be made on the eligibility of persons who can file an appeal under Section 29-19.A. Attachment G to this letter contains our recommendations for clarifying and improving Sections 29-17.B and 29-19.A of the W.A.S.H. Ordinance.

This concludes our letter describing our understanding of the Mayor and Council's original intent in creating the ordinance, along with our collective opinion of those areas of the ordinance that should be modified or improved in order to better reflect this original intent. If you have any questions, or require any further information, please feel free to contact any of the

undersigned members of our *ad hoc* subcommittee.

Very truly yours,

***Ad Hoc Subcommittee of STAC and CAC***

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Justin Turner

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- cc:
- Council Member Jose J. Ibarra, Ward 1
  - Council Member Janet Marcus, Ward 2
  - Council Member Michael J. Crawford, Ward 3
  - Council Member Shirley C. Scott, Ward 4
  - Council Member Steve Leal, Ward 5
  - Council Member Molly McKasson, Ward 6
  - Tony Paez, P.E., Director, City of Tucson Dept. of Transportation
  - G. Dewayne Tripp, P.E., City Engineer
  - John Lynch, P.E., S.T.A.C. Chairman
  - Lou Bright, C.A.C. Chairman
  - S.T.A.C. and C.A.C. Members

- Attachments:
- A. Recommended Definitions of Terms
  - B. Recommended Minimum Criteria for Evaluating the Assertion that the Resource Area Cannot be Left in its Natural State
  - C. Recommended Minimum Content of the Plant/Habitat Inventory
  - D. Recommended Minimum Professional Qualifications of the Individual Responsible for Preparing the Plant/Habitat Inventory and Mitigation Plan
  - E. Recommended Minimum Content of the Mitigation Plan
  - F. Recommended Criteria for Adding Washes to Table 1 of the W.A.S.H. Ordinance
  - G. Recommended Revisions to Sections 29-17.B and 29-19.A of the W.A.S.H. Ordinance

## ATTACHMENT A

### Recommended Definitions of Terms

We recommend using the following additional definitions in order to more clearly describe the words or terms used in the W.A.S.H. Ordinance. These words or terms are as follows.

#### Section 29-13 Definitions.

ANIMALS are multicellular organisms of the kingdom *Animalia*, characterized by a capacity for locomotion, nonphotosynthetic metabolism, pronounced response to stimuli, restricted growth, and fixed bodily structure.

PLANT COMMUNITIES are groups of three or more plants of any of the indicator plant species listed in the definition given below for VEGETATIVE RESOURCES. To be considered, these indicator plants must not be in environments that have been artificially created or maintained.

RESOURCE AREA consists of the channel and banks of the wash, and those portions of the STUDY AREA containing VEGETATIVE RESOURCES and WILDLIFE HABITAT. Furthermore, a single Mesoriparian indicator plant shall also constitute a Resource Area.

STUDY AREA means the channel bottom, banks, and the land area extending fifty (50) feet from the TOP OF BANK of the washes listed in Table 1. Both the left and right overbank areas of these washes are within the STUDY AREA.

10-YEAR FLOOD means the flood peak having a 10 percent chance of being equaled or exceeded in any given year.

TOP OF BANK refers to the highest point along the slope rising from the outer edges of a channel or wash, or the edge of the flood plain produced by a 10-year flood, whichever is closer to the channel or wash centerline. Tributary channels and relatively small topographic depressions along the channel banks are not to be included when delineating the 10-year floodplain boundaries for the purposes of this ordinance. In addition, in those areas where discontinuities in the observed or measured TOP OF BANK exist, then the inside edge of the STUDY AREA is approximated by a straight line joining the nearest upstream and downstream bank lines determined by topography or flood hydraulics.

VEGETATIVE RESOURCES are those PLANT COMMUNITIES exhibiting any of the following characteristics:

1. An area inhabited by any one of the following Mesoriparian plant species: Arizona Walnut (*Juglans major*), Fremont cottonwood (*Populus fremontii*),

Gooding (black) willow (*Salix gooddingii* = *S. nigra*), Arizona sycamore (*Platanus wrightii*), or Arizona ash (*Fraxinus velutina*).

2. An area inhabited by over-story vegetation consisting of closely spaced, perennial, woody plants (e.g., mesquite, foothill palo verde, mexican palo verde, ironwood, net-leaf hackberry) that are generally six feet in total height, or higher, and where the distance between canopy margins of individuals of the predominant over-story plant species is less than two times the height of the tallest individuals.
3. An area inhabited by under-story vegetation consisting of closely spaced, perennial woody plants (e.g., catclaw and whitethorn acacia) that are generally six feet in total height, or less, and where the distance between canopy margins of individuals of the predominant under-story plant species is less than two times the height of the tallest individuals. However, areas inhabited by nearly pure stands of under-story vegetation consisting of the following perennial woody plants are not considered to be Vegetative Resources: burrow bush (*Isocoma teunisectus*), creosote bush (*Larrea tridentata*), desert broom (*Baccharis sarathroides*), or triangle-leaf bursage (*Ambrosia deltoidea*).

WILDLIFE HABITAT is the locality, site and particular type of environment occupied by a particular WILDLIFE species. Wildlife habitat is a terrestrial ecosystem that consists of natural features that can provide food, cover, or water for one or more species of vertebrate organisms. A primary component of habitat is vegetation. Wildlife habitat may also be represented by physical structures such as rock outcrops, naturally occurring, downed, woody vegetation, or dead, standing, woody vegetation. For the purposes of the W.A.S.H. Ordinance, areas of open, bare ground lacking VEGETATIVE RESOURCES are not considered to be WILDLIFE HABITAT even though such areas may be utilized by some species of wildlife.

WILDLIFE are endemic ANIMALS living in a natural, undomesticated state.

**ATTACHMENT B****Recommended Minimum Criteria for Evaluating the Assertion  
that the Resource Area Cannot be Left in its Natural State**

We recommend that decisions by the City Engineer and Planning Director to approve the assertion that the Resource Area cannot be left in its natural state be, in part, based on an evaluation of the following specific written information to be provided by the developer or their engineer.

1. Describe specifically why the Resource Area cannot be left in its natural state. List specific reasons, other than self-imposed reasons, for not being able to leave the Resource Area in its natural state. The economic viability of a development project is an important consideration when designing a project, however, other non-economic considerations (e.g., public safety, and the economic, social, environmental and technical factors described on page 62 of the Appendix to the City of Tucson “Standards Manual For Drainage Design And Floodplain Management In Tucson, Arizona”) must also be included in the description of why the Resource Area cannot be left in its natural state.
2. List and graphically describe alternative site designs that were previously considered, and that did not include any, or as much, encroachment into the Resource Area. Describe, in terms other than strictly economic, why these other alternatives were deemed less acceptable than the alternative being proposed. Include in this description, what was done to maximize the preservation-in-place of healthy native riparian plants through creative site design.
3. Describe mitigation measures that will be implemented to help offset the probable impact caused by the proposed encroachment. Describe any other vegetative habitats located outside the Resource Area being disturbed that can be left in their natural state as possible mitigation for those Resource Areas being disturbed.

When considering whether or not to approve the submittal of this information and accept the assertion that the Resource Area cannot be left in its natural state, the City Engineer and Planning Director should find all of the following:

- a. A showing of good and sufficient effort by the engineer or property owner.
- b. That failure to grant an approval would result in exceptional hardship to the property owner or developer.
- c. That approval of the assertion is the minimum necessary to afford protection of, and opportunities for restoration of, existing riparian vegetation found within and along washes listed in Table 1 of the ordinance.
- d. That granting an approval will not significantly harm remaining Resource Areas.
- e. That granting an approval will not significantly jeopardize existing and proposed open-space linkages recommended in the Parks, Recreation, Open Space, and Trails Plan.

**ATTACHMENT C**

## Recommended Minimum Content of the Plant/Habitat Inventory

It is recommended that a *Preliminary* and a *Final Plant/Habitat Inventory* be made in conjunction with implementation of the W.A.S.H. Ordinance. The *Preliminary Plant/Habitat Inventory* is used to help determine whether or not any portion of the Study Area is a Resource Area, and the *Final Plant/Habitat Inventory* is used to identify the specific plant species and communities to be replaced in the same or greater density, diversity, and volume of vegetation as existed prior to the alteration. The Preliminary Plant/Habitat Inventory should consist of the identification and mapping of all plants and cacti mentioned in the definition of Vegetation Resource. The Final Plant/Habitat Inventory of the portion of the Resource Area to be disturbed should include a complete and thorough inventory and mapping of plant density, diversity, plant height, and plant health. The Final Plant/Habitat Inventory should cover those areas where encroachment is being proposed, as well as those areas where in-kind mitigation is being proposed. As part of this final inventory, the following vegetation attributes should be measured:

- A. Density. Population density provides an estimate of the abundance of a particular plant species as the number of individual organisms per unit area. All woody plants and cacti rooted within the mapped study area are to be counted and recorded by species. Both living and dead plants and cacti should be inventoried.
- B. Diversity. Species diversity provides an estimate of the biological richness of an area, and is a descriptor of the number of species in a defined area. Species diversity provides an indication of the relative stability and habitat quality of a plant community. In general, the higher the diversity of the plant species in an ecosystem, the more stable the system. Highly diverse plant communities also provide high quality habitat for wildlife, and are positively correlated to wildlife species diversity. In order to adequately describe species diversity as part of an inventory, it is first necessary to list all species present in each plant community. These species lists can then be used to develop density data.
- C. Plant Height. Measure the height and locate all woody plants and cacti having basal trunk diameters greater than 5 cm (about 2 inches).
- D. Photo Points. As part of the plant inventory, photographs should also be taken. Photographs provide a unique record of current conditions and are especially helpful for locating specific sites for post-construction assessments.
- E. Viability. The general health of individual plants and cacti are needed. Although dead plants and cacti provide valuable habitat, it is not necessary to replace dead standing plants and trees as part of a habitat mitigation plan. Nevertheless, the general health of individual plants and cacti should be assessed and described. Information regarding plant health should be considered when selecting and

planting replacement plants.

Because plant communities provide most of the components of riparian habitat that are of critical importance to wildlife, the inventory methods presented here focus solely on plant characteristics. Nevertheless, such non-vegetative components as soil and channel morphologic characteristics should also be described.

## **ATTACHMENT D**

### **Recommended Minimum Professional Qualifications of the Individual Responsible for Preparing the Plant/Habitat Inventory and Mitigation Plan**

We recommend that the individual responsible for preparing a Plant/Habitat Inventory and Mitigation Plan for compliance with the W.A.S.H. Ordinance have the following minimum professional qualifications.

- A. An arborist certified by the International Society of Arboriculture; or,
- B. A Landscape Architect, licensed in the State of Arizona; or,
- C. A horticulturist, wildlife biologist, or botanist with at least a baccalaureate degree (i.e., B.A. or B.S.) in an appropriate arid-environment, natural-resource field.

(For reference to a similar set of professional qualifications, see Section 3.8.4.4. of the COT Native Plant Preservation Ordinance.)

Prior to implementing this recommendation, it is further recommended that the City Attorney determine whether or not the State of Arizona Board of Technical Registration (under A.R.S. § 32-101 *et. sec.*) restricts the preparation of a Plant/Habitat Inventory and a Mitigation Plan to registered professionals.

**ATTACHMENT E**

## Recommended Minimum Content of the Mitigation Plan

In accordance with Section 29-16.B.1.c of the W.A.S.H. Ordinance, a Preservation/Revegetation Plan is required whenever a Resource Area is to be disturbed, and whenever it has been satisfactorily demonstrated that the Resource Area cannot be left in its natural condition. The purpose of the Preservation/Revegetation Plan is to show how vegetation removed from the Resource Area will be replaced as closely as possible to the pre-disturbance condition in terms of plant type, density, and diversity. The plan shall also show how the replacement habitat will be of similar or equal value within three years of installation. The Preservation/Revegetation Plan shall contain a detailed site layout, a plant material list, an irrigation plan, and a three-year maintenance plan, as follows:

1. Site Layout. The Site Layout shall, at a minimum, show the *Area of Disturbance*, the *Mitigation Area*, and a detailed *Planting Plan*.
  - A. The Site Layout shall identify the planned *Area of Disturbance*, including the types, sizes, location, and health of individual plants, shrubs, and cacti to be removed or disturbed.
  - B. The Site Layout shall also identify the onsite *Mitigation Area*, including the types, sizes, location, and health of individual plants, shrubs, and cacti to be planted. The proposed *Mitigation Area* shall be located immediately adjacent to, and outside of, the Top of Bank of the regulated wash, or along the streambanks of tributaries to these regulated washes. Only areas formerly covered by Vegetative Resources, and which have been degraded and are now sparsely vegetated, shall be used as a *Mitigation Area*. It shall be demonstrated and affirmed, in writing, that: (1) the introduction of new plant materials into the *Mitigation Area* shall improve or enhance the existing habitat value of the overall site without overcrowding the existing vegetation; (2) the *Mitigation Area* shall closely resemble the *Area of Disturbance* after three years in terms of plant type, density, and diversity; and (3) the discontinuation of supplemental irrigation within three years of plant introduction shall not harm the new plants. The ground surface within the *Mitigation Area* may be minimally graded or reshaped, as needed, in order to facilitate the collection and retention of stormwater runoff near new trees and shrubs. The purpose of this water harvesting is to help ensure plant viability after supplemental irrigation is discontinued within three years of plant establishment.
  - C. The Site Layout shall also present a *Planting Plan*, including soil preparation, as well as the types, sizes, location of individual plants, shrubs, and cacti to be planted within the *Mitigation Area*. The *Planting Plan* shall be prepared in accordance with applicable standards, including Section 800 of the "Pima County/City of Tucson Standard Specifications for Public Improvements".

A *Planting Plan* is only an illustrative drawing showing the conceptual layout of the Mitigation Area, and shall not to be used as a construction document. If construction documents are needed, then a detailed *Landscaping Plan* is required, and shall be prepared by an Arizona registered professional.

2. Plant Material List. The types of replacement plants to be planted shall be selected in order to reestablish a plant community similar to that removed within three years. All replacement plants shall be listed on the Low Water Use/Drought Tolerant Plan List in Development Standard 9-06.0, and shall meet or exceed ANA standards. The minimum replacement ratios are as follows:

#### Mesquite

Trees with basal trunk diameters ranging from 2 to 4 inches shall be replaced at a 2:1 ratio. Mesquite trees with basal trunk diameters less than 2 inches do not need to be replaced. Replacement trees shall be 15-gallon size, or larger, and shall be a native, regionally indigenous species (i.e., screwbean mesquite, *Prosopis pubescens*, and chilean mesquite, *P. chilinensis*, are not acceptable).

Mesquite trees with basal trunk diameters larger than 4 inches shall be replaced at a 3:1 ratio. Replacement trees shall be a 15-gallon size, or larger, and shall be a native, regionally indigenous species (i.e., screwbean mesquite, *Prosopis pubescens*, and chilean mesquite, *P. chilinensis*, are not acceptable).

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#### Palo Verde

Trees with basal trunk diameters ranging from 2 to 4 inches shall be replaced at a 2:1 ratio. Palo Verdes with basal trunk diameters less than 2 inches do not need to be replaced. Replacement trees shall be 15-gallon size, or larger, and shall be a native, regionally indigenous species (i.e., *Cercidium praecox*, *C. sonorae*, and *Parkinsonia aculeata*; "Mexican" Palo Verde are not acceptable). It is recommended that Blue Palo Verde (*C. floridum*) be used, rather than Foothill Palo Verde (*C. microphyllum*), owing to the more rapid growth and tree-like nature of Blue Palo Verde.

Palo Verdes with basal trunk diameters larger than 4 inches shall be replaced at a 3:1 ratio. Replacement trees shall be 15-gallon size, or larger, and shall be a native, regionally indigenous species.

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#### Desert Willow

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Trees with basal trunk diameters ranging from 2 to 4 inches shall be replaced at a 2:1 ratio. Willows with basal trunk diameters less than 2 inches do not need to be replaced.

Replacement trees shall be 15-gallon size or larger.

Desert Willows with basal trunk diameters larger than 4 inches shall be replaced at a 3:1 ratio. Replacement trees shall be 15-gallon size or larger.

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#### Other Tree Species

Cottonwood, willow, walnut, sycamore, Arizona ash, ironwood and canyon hackberry (*Celtis reticulata*) shall not be removed.

If the removal of any cottonwood, willow, walnut, sycamore, Arizona ash, ironwood and canyon hackberry (*Celtis reticulata*) is unavoidable and no other practicable alternative exists, then these plants shall be replaced by large, boxed trees at a 3:1 ratio and provided with at least three years of supplemental irrigation and care to ensure healthy establishment. Replacement trees shall be in 36-inch boxes and the trees themselves shall be at least 8 to 10 feet tall and at least 2.5 inches in diameter, measured three feet above the ground.

#### Perennial, Woody Shrubs

Shrubby, understory species such as Catclaw (*Acacia greggii*), whitethorn (*A. constricta*), jojoba (*Simmondsia chinensis*), desert hackberry (*Celtis pallida*), wolfberry (*Lycium* sp.), graythorn (*Zizyphus obtusifolia*), brittlebush (*Encelia farinosa*), fairy duster (*Calliandra eriophylla*), brickellia (*Brickellia* sp.), limber bush (*Jatropha cardiophylla*), and indigo bush (*Dalea* sp.) shall be replaced at a 2:1 ratio using 5-gallon size or larger.

#### Cactus

All cacti, except cholla and prickly pear, shall be replaced at a 2:1 ratio. Cholla and prickly pear do not need to be replaced. Where feasible, cacti removed from the *Area of Disturbance* shall be transplanted and augmented with nursery stock of the same species at a 1:1 replacement ratio using 5-gallon size or larger.

#### Semi-shrubs, forbs, and grasses

It is likely that this group of plants will naturally invade the *Mitigation Area* within a relatively short period of time after establishment. Therefore, no additional plant materials of this type are needed in order to accelerate recovery. However, it is recommended that the *Mitigation Area* be protected from excessive human activity during the first three years of recovery.

3. Irrigation Plan. An automatic drip irrigation system shall be designed and installed within the *Mitigation Area* in order to provide irrigation to all transplanted or salvaged trees and shrubs (excluding cacti), and all planted nursery stock trees and shrubs (also

exclusive of cacti). The irrigation system shall provide appropriate amounts of water to designated trees and shrubs for a period up to three years from plant establishment. The latter portion of the 3-year irrigation period shall be used to reduce the amount of water supplied to the mitigation plantings so that they become naturalized and independent of supplemental care. The *Irrigation Plan* shall be prepared in accordance with the performance standards given in the City of Tucson's "Xeriscape Landscaping and Screening Standards", Development Standard No. 2-06.5.4., as well as within Section 800 of the "Pima County/City of Tucson Standard Specifications for Public Improvements".

4. Three-year Maintenance Plan. All mitigation plantings and related improvements shall be maintained for at least three years following installation to ensure the healthy establishment of a new riparian plant community as required by paragraph 3.7.6 of the City of Tucson Land Use Code. Monitoring, repair, and proper operation of the irrigation system are essential parts of the maintenance program. Vehicular access into and through the *Mitigation Area* shall be provided, unless this requirement is waived by both the Planning Director and City Engineer, based on consideration of benefits and detriments. The *Maintenance Plan* shall include a schedule or frequency of visits, types of scheduled and emergency maintenance activities, access requirements, identification of short-term and long-term responsibility, and a list of required maintenance easements and agreements.

**ATTACHMENT F**Recommended Criteria for Adding Washes to  
Table 1 of the W.A.S.H. Ordinance

Table 1 of the W.A.S.H. Ordinance lists the regulated urban washes located within the incorporated boundaries of the City of Tucson. The original Table 1 has been revised on two recent occasions to include additional wash segments. In addition, Ordinance 7944 extends the applicability of the W.A.S.H. Ordinance upon notice and hearing in the same manner as for adoption of an ordinance establishing original zoning boundaries for newly annexed areas.

It is recommended that current maps of riparian vegetation and trail systems be utilized as a means of identifying washes to be considered under Sections 29-14.C and 29-19.E of the W.A.S.H. Ordinance. Specifically, new washes should be added to Table 1 if the particular wash has already been designated as being or containing:

1. Hydroriparian, Mesoriparian, or Xeroriparian Types A, B, or C habitats as delineated by Pima County as part of Article X of the Pima County Floodplain and Erosion Hazard Management Ordinance.
2. Hydroriparian, Mesoriparian, Xeroriparian High-Volume Habitats or Xeroriparian Intermediate-Volume habitats as delineated in the TSMS, Phase II, Stormwater Master Plan.
3. Vegetation Resource, as defined by the *ad hoc* subcommittee in this letter.
4. A riparian area suitable for the establishment of open space for continuous and interconnected active and passive recreational activities, especially those areas where urban trails exist, or are needed, as designated on the "Pima County Trail Master Plan".

**ATTACHMENT G**Recommended Revisions to  
Sections 29-17.B and 29-19.A of the W.A.S.H. Ordinance

It is our opinion that portions of the W.A.S.H. Ordinance dealing with variance and appeal procedures are unclear. Specifically, Section 29-17.B.3 of the ordinance states that the City Engineer must notify, among others, all owners of property within 200 feet of the site, whereas Section 29-17.A.3 of the ordinance is inconsistent, and says nothing concerning notification of property owners after similar decisions by the Planning Director. Additionally, Section 29-17.B.3 of the ordinance does not give a maximum time period within which appeals can be made by persons aggrieved by the decision of the City Engineer or the Planning Director made in the course of administering or interpreting the W.A.S.H. Ordinance. Elsewhere in the ordinance, Section 29-19.A states that appeals to Mayor and Council must be filed within 30 days of a decision by the City Engineer or Planning Director. However, no mention is given in Section 29-19.A of the need for timely notification after these administrative decisions in order to give officially notified property owners adequate time to formulate an appeal.

It is also our opinion that portions of the W.A.S.H. Ordinance dealing with variance and appeal procedures are overly restrictive, whereas other related sections of the ordinance are only mildly restrictive. Specifically, Section 29-17.B.3 of the ordinance says that only persons owning property within 200 feet of the site shall be notified of decisions by the City Engineer and the Planning Director, whereas Section 29-19.A of the ordinance says that anyone aggrieved by these administrative decisions may file a written appeal. It is our opinion that additional people should be notified of decisions by the City Engineer or Planning Director, whereas, we also believe substantial limitations should be made on the eligibility of persons who can file an appeal under Section 29-19.A. These limitations should be similar to those imposed during property rezoning cases under the Tucson Land Use Code.

Based on these considerations, it is our recommendation that the City Engineer and Planning Director interpret the appeals and variance portions of the ordinance as follows:

1. Section 29-17.A.3 of the ordinance should be expanded to include public notification of all owners of property within 200 feet of the site following a decision by the Planning Director.
2. The word "site" used in Section 29-17.B.3 should refer to the entire developed property and not just the Study Area immediately adjoining the wash.
3. For consistency, public notification under Sections 29-17.A.3 and 29-17.B.3 of the ordinance should be made utilizing the administrative procedures given in Section 5.4.5.7.A.2.b of the City of Tucson Land Use Code.
4. The maximum time period within which appeals can be made under Section 29-17.B.3 of the ordinance should be limited to only 30 days of a decision by the City Engineer or

5. Public notice under Sections 29-17.A.3 and 29-17.B.3 of the ordinance should be made within five working days of the decision, otherwise the allowable response time should be extended by the length of any delay in notification in order to allow officially notified property owners adequate time to formulate an appeal.
6. Not everyone should be eligible to file an appeal under Section 29-19.A. Appeals should be limited to property owners notified under Sections 29-17.A.3 and 29-17.B.3 of the ordinance, as well as those individuals living within the affected Area Plan Boundary.