

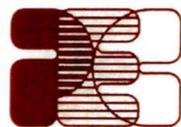
# Loop 303 Drainage Improvements Candidate Assessment Report (Data Collection)

Prepared for



Flood Control District of Maricopa County

Prepared by



Project Engineering Consultants, Ltd.

August 2006



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- Exhibit 1: Existing Conditions
- Exhibit 2: Future Facilities
- Exhibit 4A: Existing Scenic Resource Compatibility
- Exhibit 4B: Future Scenic Resource Compatibility
- Exhibit 5: Regional Recreation Resources Inventory
- Exhibit 6: Seed Alternatives 1 through 10
- Exhibit 7: Conceptual Channel Treatment Methods
- Exhibit 8: Evaluation Matrix



# Project Engineering Consultants, Ltd.

## EXECUTIVE SUMMARY

The Flood Control District of Maricopa County (FCDMC) contracted with Project Engineering Consultants, Ltd. to create a Candidate Assessment Report (Project) to plan future drainage facilities for the proposed SR Loop 303 freeway between Interstate 10 and the Gila River. This report summarizes the first (data collection) phase of the two-phase CAR that will identify locations for regional channel and basins adjacent to the proposed Loop 303 to intercept storm water flows and provide an outfall to the Gila River.

The study area is a one-half mile strip centered on Cotton Lane between I-10 on the north and the Gila River on the south. The five-mile project is located in the City of Goodyear.

This area of metropolitan Phoenix continues to experience rapid growth and development. The area is rapidly transforming from an agricultural area to a residential and commercial use area. This change in land use puts pressure on agencies to acquire the land to be used for drainage facilities before these drainage ways are blocked by development. The additional information that has become available since the completion of the ADMPU in 2005 includes:

- Information about new developments in the project area.
- Identification of development that has occurred in a parcel identified for use as a basin in the ADMPU.
- Information about the Morocco Ruin site and the efforts made to clear the site for development.
- Identifying the location of the Palo Verde cooling line.
- Information about several parcels along Cotton Lane that are currently in the zoning process for development.

Drainage solutions in the Project area were first identified in the Loop 303/White Tanks Area Drainage Master Plan Update (ADMPU) completed by the FCDMC in 2005. Since completion of the ADMP, development has occurred in the channel and basin sites proposed in the ADMP, necessitating additional examination of locations of drainage facilities.

The purpose of this project is to design drainage facilities to the point that rights-of-way can be purchased for the future construction of those facilities. The Project is divided into two phases.

- i) Phase I includes collection of documents and data, preparing an existing facilities exhibit, identifying opportunities and constraints, and developing ten "seed" alternatives.
- ii) Phase II includes revising the existing hydrology models, performing alternative analysis, identifying right-of-way needs, selection of a recommended alternative and developing 30% level design plans for the recommended alternative.

## 1.0 INTRODUCTION

### 1.1 PROJECT DESCRIPTION

This Data Collection Report documents all data collected during Phase I of the Loop 303 Drainage Improvements Candidate Assessment Report (Project). The project area covers approximately five miles along Cotton Lane between Interstate 10 (I-10) and the Gila River in Goodyear, Arizona. The goal is to provide a drainage corridor to the Gila River in conjunction with the future Loop 303 freeway that will be constructed in the vicinity of Cotton Lane. The area is agricultural, but is quickly transforming into an urban area.

Project Engineering Consultants, Ltd., under contract with the FCDMC produced this report to assist in the design of future drainage facilities. The report summarizes existing hydrologic and hydraulic studies and compiles existing topographic mapping, as-built plans for existing drainage infrastructure, FEMA flood hazard boundary maps, and other information which may be pertinent to the existing drainage features in the area.

#### 1.1.1 Location

The project area is bounded ¼ mile east and west of Cotton Lane, north to south from the I-10 to the Gila River in the City of Goodyear in southwest metropolitan Phoenix. This area spans sections 1, 2, 11, 12,

Loop 303 Drainage Improvements  
Candidate Assessment Report  
(Data Collection)  
August, 2006

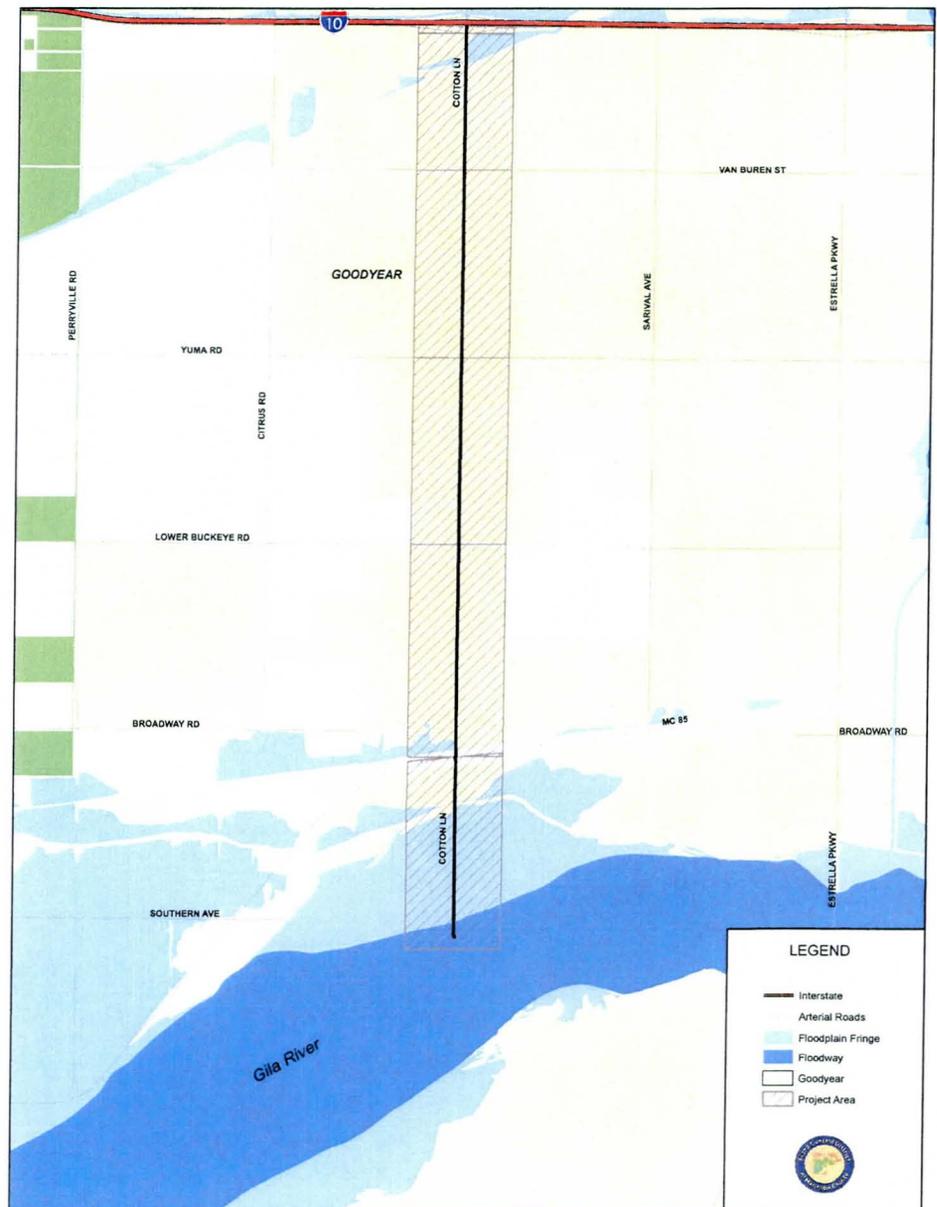


Figure 0.1 Loop 303 Drainage Improvements CAR Project Area.

13, 14, 23, 24, 25, 26, 35, and 36 in Township 1 North, Range 2 West. See Figure 1.1 on page 2 for the project boundaries.

### ***Topography***

The topography of the area is primarily alluvial plains with floodplain and riparian areas at the south end of the project area near the Gila River. The area is flat with a slight grade toward Cotton Lane and then to the River. Agriculture is still the primary land use, but the land use is quickly becoming urban.

### ***Soils***

The soils present in the Loop 303 CAR project area are sandy loams, loams, and clay loams on old alluvial fans, valley plains, and low stream terraces. This is according to the SCS *Soil Survey of Maricopa County, Arizona* published in 1977.

### ***Demographics***

This semi-rural agricultural study area is rapidly becoming urbanized. The area within the City of Goodyear and is experiencing rapid population growth due to development. The Canyon Trails Development is residential housing and is expanding through several phases of construction.

#### **1.1.2 Purpose**

The purpose of this report is to document all existing data and documents concerning drainage for the proposed Loop 303 freeway.

The major Project objective is to evaluate and select new channel and basin(s) locations and produce detailed cost estimates and right-of-way acquisition recommendations. An additional Project objective is to consider stakeholder and community expectations regarding aesthetic and multi-use functions of the flood control facilities.

The data collected and seed alternatives developed in Phase I of this Project will be used in Phase II to develop flood control solutions for the Loop 303 freeway and its surrounding area.

#### **1.1.3 History of the Loop 303 Project Area**

The project area has been inhabited for thousands of years. First by Hohokam Indians, who occupied the area from approximately 500 BC to 1450 AD, and later by European settlers. A Hohokam village, known as the Morocco Ruin is within the project area. The ruin is on both sides of Cotton Lane between MC-85 and the Buckeye Canal. This information was gleaned from *A Cultural Resource Assessment of the El Rio Archeological Research Locale in West-Central Maricopa County, Arizona* written in 2002.

According to Brian Kenny of MCDOT, the site has had been surveyed and much of the site has been investigated by archeologists contracted by MCDOT. Much of the site was destroyed by farming, but recent surveys unearthed a prehistoric cemetery and part of the village. Most of the site has been cleared for development and it is anticipated that the entire site will be cleared by the State Historic Preservation Office (SHPO) by the time this project is set for construction.

## **2.0 DATA COLLECTION AND RESULTS**

The primary objective of Phase I of the Loop 303 CAR was to collect data, hydrologic and hydraulic models, documents, and other information to later facilitate the design of the proposed drainage structures. This section summarizes the information collected.

### **2.1 DATA COLLECTION**

Information for this project was collected from several public and private sources. The following is a list of agencies that provided information for this document.

- Flood Control District of Maricopa County
- City of Goodyear
- MCDOT
- ADOT
- Blue Stakes and the associated utility companies
- URS
- HDR
- Coe & Van Loo

The types of data and documents collected from these sources include:

- GIS database
- Utility locations and information
- Aerial photography
- FIS
- Existing and planned developments
- Existing hydrologic and hydraulic models and reports
- Preliminary freeway alignments
- Archeological information
- Scenic and Recreation Resource Assessments for Maricopa County
- Environmental/hazardous waste impacts

#### ***GIS Database***

The GIS data was provided by the FCDMC, and the City of Goodyear to build the base map to display the infrastructure, topography, land use, existing floodplains, utilities, hydraulic structures, and other relevant characteristics of the project area. CAD files

from URS and Coe & Van Loo were converted to shape files for use in the GIS Database. Exhibits for the project were created with this GIS database.

Topographic information used for the project was provided by the FCDMC and consists of 2-foot contour interval topography that was developed as part of the ADMPU. Aerial Photography from the ADMPU was also provided by the FCDMC. The newest available photographs were taken in 2004.

All data in the database are projected in the State Plane NAD 83 coordinate system in the Central Arizona State Plane Zone. NAVD 88 was used for the vertical coordinate system. This datum and state plane coordinate projection comply with FCDMC GIS standards.

### ***Utilities Search***

A full investigation of utilities in the project area was conducted. Arizona Blue Stakes provided a list of public and private utility companies that have facilities in the project area that may conflict with drainage structure designs. PEC contacted each utility company to determine if there were facilities in the area and to acquire maps or digital data that showed the locations of the utility facilities.

Companies that have utilities in the area and that provided facilities location information include AT&T, APS, Arizona Water Co., Cox Communications, Level 3 Communications, Qwest Communications, Southwest Gas, and Sprint.

Another significant utility in the area is an APS water line that provides cooling water to the Palo Verde Nuclear Power Plant in Tonopah, Arizona.

### ***Flood Insurance Studies and Floodplain Mapping***

The FCDMC provided FEMA DFIRM the digital floodplain mapping revised on September 30, 2005. This data was put into the GIS database and used in the exhibits.

The FEMA flood zones are in the south end of the project area near the Gila River. Some ponding occurs behind highway MC-85 and behind the Buckeye Irrigation Canal creating floodplain areas, but the majority of the floodplains are along the banks adjacent to the Gila River.

### ***Existing hydrologic and hydraulic models and reports***

The primary hydrologic study in this area is the Loop 303 Corridor/White Tanks Area Drainage Master Plan Update (2004). This report replaces the White Tanks/Agua Fria Area Drainage Master Plan (1999). Other models and reports in the area are based on these master plans.

## **1. Loop 303 Corridor/White Tanks Area Drainage Master Plan Update**

The master plan, prepared by Coe & Van Loo in 2004 for Coldwater Properties, covers a large area on the western fringes of the metropolitan Phoenix area. The study area was bounded by the White Tank Mountains on the west, the Gila River on the south, the Agua Fria River on the east, and the McMicken Dam and Deer Valley Road on the north. The selected alternative of the ADMPU proposed a drainage channel along the Loop 303 freeway alignment. Some of the basins proposed in the ADMPU are no longer available for construction. Along Cotton Lane, between I-10 and the Gila River, there are two basins proposed. The proposed basin near the intersection of Yuma Road and Cotton Lane is currently being developed into residential homes. The basin closest to the river near Dunlap Road and Cotton Lane is still available, but it may be preferable to relocate the basin since the City of Goodyear has designated this area to be used as commercial or industrial development (i.e. a basin in a commercial/industrial would not be seen as an amenity like a regional basin in a residential area where multi-use is practical).

## **2. Master Drainage Report Update For Canyon Trails Goodyear, Arizona.**

Coe & Van Loo Consultants, Inc. prepared this report for Coldwater Properties in September 2004. This report is an update to the original Master Drainage Report completed in 1999 for the Canyon Trails Master Planned Community (CTMPC). The report is based on the 2004 Loop 303 Corridor/White Tanks Area Drainage Master Plan Update (ADMPU). The CTMPC is approximately 2000 acres, located south of I-10 and along Cotton Lane. The CTMPC will have four units when completed. At the time of this report, Units 1 and 2 were constructed.

The CTMPC includes a series of channels that run parallel to Cotton Lane that replace the channel proposed in the ADMPU. The CTMPC channels intercept all flows from the north, route them through the development and then discharge at the ADMPU proposed channel at the intersection of Lower Buckeye Road and Cotton Lane. The flow leaving the development is comparable to the flow at the same location in the ADMPU.

## **3. Preliminary Drainage Report For Canyon Trails Unit 4 West Goodyear, Arizona**

The report, prepared by Coe & Van Loo in 2004 for Centex Homes, sets forth the drainage patterns and constraints that are to be used throughout the Canyon Trails development as well as provides hydrologic and hydraulic analyses of the proposed site. The report addresses off-site drainage, on-site drainage, and retention.

The site is south of Van Buren Street, north of Yuma Road, west of Cotton Lane (future Loop 303 Freeway), and east of Citrus Road. Approximately 10 acres is proposed for a school and 5 acres is proposed for a park located within the site.

The magnitude and location of the off-site flows impacting the proposed site have been obtained from the original District White Tanks/Agua Fria Area Drainage Master Study by The WLB Group. The study modeled the watershed using the HEC-1 program for the

100-yr, 24-hr storm. The 100-year offsite flow of 625 cfs will be routed in a future drainage channel (by others) along the west side of the Loop 303 (Cotton Lane).

The 100-year, 6-hour runoff generated by the farm field at the northwest corner will be retained temporarily on-site within the Phase 3 portion of the site. Off-site flows in excess of the 100-year 6-hour storm outfalls to the local retention basins and streets within the site.

Onsite storm water runoff from the 100-year 6 hr storm will be retained in various retention basins located within the site. In addition the school and park site provide their own on-site runoff retention for a 100-year 6-hr storm per City of Goodyear drainage requirements.

#### **4. Preliminary Drainage Report for Cotton 76 Goodyear, Arizona**

Coe & Van Loo Consultants, Inc. (CVL) prepared this report for BET Investment, Inc. in February 2006. The Drainage Report only covers a small portion of the total project area. Cotton 76 is located in section 24, T1N, R2W. The report provides hydrologic and hydraulic analysis of storm water runoff in the proposed site for up to a 100-year event. The report takes into consideration on and off-site drainage and retention. The White Tanks/Agua Fria Area Drainage Master Study (ADMS) by The WLB Group was used in the report for off-site hydrology peak flows. On-site hydrologic studies were conducted by CVL. CVL recommended retention basins and street specifications within the site in order to mitigate flooding.

#### **5. Cotton Lane Crossing Preliminary Drainage Report**

This is a preliminary drainage report, prepared by RBF for Voit Development in 2006, for a development to be built in the southern portion of the study area. The development is to be built south of Lower Buckeye Road, west of Sarival Avenue, east of Cotton Lane, and north of the Union Pacific Railroad. The report is based on the Loop 303 Corridor/White Tanks Area Drainage Master Plan Update (ADMPU) and the Coe & Van Loo Canyon Trails drainage reports. Flows from the site currently discharge at the Railroad trestle and two sets of 2-24 inch CMP culverts east of Cotton Lane.

The HEC-1 model used for this report is from the ADMPU with the Canyon Trails modifications. The channels and retention basins designed for this development are nearly independent of the channel along west side of Cotton Lane proposed in the ADMPU.

#### ***Preliminary freeway alignments***

Two future freeways will pass through the Loop 303 project area. These freeways are known as Loop 303, which will be another circumference freeway around metropolitan Phoenix, and State Route 801 (SR 801), which will be parallel to I-10 to relieve congestion on that freeway.

The exact alignments for these two freeways have not been determined. Loop 303 will likely follow the Cotton Lane alignment to Lower Buckeye where it may make a sweeping turn west. The SR 801 freeway is in preliminary stages of planning. Its alignment through the project area is extremely preliminary at this time.

I-10, which is an existing freeway at the north end of the project area, will undergo changes as it is widened to increase capacity. The widening of this freeway will have impact on the project area, but the impact will not be as remarkable as the creation of the Loop 303 and SR 801 in the area.

### ***Archeological information***

A Hohokam village, known as the Morocco Ruin, is in the project area. The ruin straddles Cotton Lane between highway MC-85 and the Buckeye canal. Much of the site has been destroyed by farming, but some archeological artifacts were found in a recent survey. Significant archeological surveying and excavation have been done at the site to prepare the site for development. Most of the site has been cleared for development and the remainder of the site is expected to be cleared for construction or development by the time the Loop 303 freeway design is ready for construction.

### ***Scenery and Recreation Resources Assessments***

Based on the *Policy for the Aesthetic Treatment and Landscaping of Flood Control Facilities* adopted by the FCDMC, the goals and objectives for scenery and recreation resources include the following:

- Incorporation of landscape aesthetic considerations throughout the project in order to produce flood protection solutions that are context sensitive.
- Facilitate the year-round value of flood control structures by integrating public recreation and open space needs of the community.
- Increase opportunities for cost sharing and partnerships with local communities to provide multi-use opportunities and to involve stakeholders in determining the desired visual character of the planned structures.

For the Phase I analysis, the Countywide Scenic Resource and Recreation Resource Assessment provided by the FCDMC was used to determine compatible methods of flood protection strategies within the project area. The regional and local inventory of existing and planned recreation use areas provided an understanding of the opportunities for open space linkages and the potential for dual role facilities such as parks and greenways serving as basins and drainage channels.

## **2.2 DOCUMENT LISTING**

A large number of documents and data were gathered to get an adequate understanding of the area and issues that will dictate the design and construction of drainage facilities. The data is stored in varying formats such as paper copies and digital files including photo images, pdf, Microsoft Word, and GIS data. A list of the documents and data collected has been prepared so all the data can be viewed in one place.

Table 1 on the following pages lists the data and documents collected. The table also shows the data format, the author, a brief description, who produced it, when it was received, and where the data or document is located.

**Table 1 Document List**

<b>Description</b>	<b>Format</b>	<b>Author</b>	<b>Produced By</b>	<b>Received</b>	<b>Location</b>
SR 303L I-10 to US 60 Draft Design Concept Report. Vol 1-3	.pdf	URS	PEC	Feb-06	PEC
Preliminary Geotechnical and Pavement Report, SR 303L, I-10 to US 60	.pdf	URS	PEC	Feb-06	PEC
SR 303L I-10 to US 60 Draft Preliminary Drainage Report. Vol 1-2	.pdf	URS, Entranco, PEC	PEC	Feb-06	PEC
Digital Flood Insurance Rate Map, Maricopa County, Arizona	.pdf		PEC		PEC
Loop 303/White Tanks ADMP Level III Update Report: Volume I - Data Collection Report	.pdf	URS	FCDMC	May-06	PEC
Loop 303/White Tanks ADMP Level III Update Report: Volume II - Level I Alternatives Analysis Report	.pdf	URS	FCDMC	May-06	PEC
Loop 303/White Tanks ADMP Level III Update Report: Volume III - Level II Alternatives Analysis Report	.pdf	URS	FCDMC	May-06	PEC
Loop 303/White Tanks ADMP Level III Update Report: Volume IV - Level III Area Drainage Master Plan Update Report	.pdf	URS	FCDMC	May-06	PEC
Loop 303/White Tanks ADMP Level III Update Report: Hydrology Model - Existing Conditions	HEC-1	URS	FCDMC		FCDMC
Loop 303/White Tanks ADMP Level III Update Report: Hydrology Model - Future Conditions	HEC-1	URS	FCDMC		FCDMC
Loop 303/White Tanks ADMP Level III Update Report: Hydrology Model - Existing Conditions with projects in place	HEC-1	URS	FCDMC		FCDMC
Loop 303/White Tanks ADMP Level III Update Report: Hydrology Model - Future Conditions with projects in place	HEC-1	URS	FCDMC		FCDMC
GIS Data - Bridges, Culverts, Canals, Elevation (topo and points), Railroad, Flood Plain Elevations, Rivers, SCS Soil Types, Structures, Powerpoles, Cross Section Leader, Horizontal and Vertical Photogramatic control, Land Ownership (public or Private), Lakes, Flood Plain Zone between 100yr and 500yr, Road Names, Flood Development Studies	GIS	FCDMC	FCDMC	May-06	PEC
Transcontinental Fiber Optic Cable location maps	Paper	AT&T	AT&T	Jun-06	PEC
Electric and Underground OH & UG Electric maps	Paper	APS	APS	Jun-06	PEC
6", 4", 2" water lines maps	Paper	Arizona Water Co.	Arizona Water Co.	Jun-06	PEC

<b>Description</b>	<b>Format</b>	<b>Author</b>	<b>Produced By</b>	<b>Received</b>	<b>Location</b>
Master Drainage Report Update for Canyon Trails Goodyear, AZ	Paper	CVL	City of Goodyear	Jun-06	PEC
Master Drainage Report Update for Canyon Trails Goodyear, AZ: Hydrology Model - Updated HEC-1 by CVL	HEC-1	CVL	City of Goodyear		City of Goodyear
Master Drainage Report Update for Canyon Trails Goodyear, AZ: Hydraulic Model	HEC-RAS	CVL	City of Goodyear		City of Goodyear
Preliminary Drainage Report for Canyon Trails Unit 4 West	Paper	CVL	City of Goodyear	Jun-06	PEC
Preliminary Drainage Report for Canyon Trails Unit 4 West: Hydrology Model - Updated HEC-1	HEC-1	CVL	CVL		CVL
Preliminary Drainage Report for Cotton 76 Goodyear, AZ	Paper	CVL	City of Goodyear	Jun-06	PEC
Preliminary Drainage Report for Cotton 76 Goodyear, AZ: Hydrology Model - Updated HEC-1	HEC-1	CVL	CVL		CVL
Preliminary Drainage Report-Cotton Lane Crossing	Paper	RBF	City of Goodyear	Jun-06	PEC
Preliminary Drainage Report-Cotton Lane Crossing: Hydrology Model - HEC-1 100-Year 24-Hour Model	HEC-1	RBF	RBF		RBF
City of Goodyear General Plan	.pdf	URS and COG	City of Goodyear	Jun-06	PEC
Various Development plans in COG			City of Goodyear	Jun-06	PEC
GIS Data - Street Centerlines, Parcels, Land Use, Quarter Sections, Sections, Sewer lines, Water lines, Wells	GIS	City of Goodyear	City of Goodyear	Jun-06	PEC
COG 303 drainage information	GIS	City of Goodyear	City of Goodyear	Jun-06	PEC
Data-Cotton Lane Corridor Area in Shape File Format	GIS	FCDMC	City of Goodyear	Jun-06	PEC
Topographic Data for the Loop 303 Corridor/White Tanks ADMPU Update Project in Various Formats	Various	FCDMC	City of Goodyear	Jun-06	PEC
Database- Digital Flood Insurance Rate Map for Maricopa County	GIS	FCDMC	City of Goodyear	Jun-06	PEC
GIS Data Cotton Lane area	GIS	City of Goodyear	City of Goodyear	Jun-06	PEC
GY Data Cotton Lane Area Parcels, Centerlines	GIS	City of Goodyear	City of Goodyear	Jun-06	PEC
Field Map 1 and 2, 2 CD's	.jpg	FCDMC	City of Goodyear	Jun-06	PEC
Utility Maps	Paper	COX Comm.	COX Comm.	Jun-06	PEC
Cotton Lane Aerial Photos - December 2004 (not geo-referenced)	GIS	FCDMC	FCDMC	Jun-06	PEC
El Rio Watercourse Master Plan (WCMP) Overview	.pdf	Stantec	FCDMC	Jun-06	PEC
El Rio Environmental Resources Report Executive Summary	.pdf	Stantec	FCDMC	Jun-06	PEC
El Rio WCMP-GIS Files Disk 1 of 2	GIS	Stantec	FCDMC	Jun-06	PEC
El Rio WCMP-GIS Files Disk 2 of 2	GIS	Stantec	FCDMC	Jun-06	PEC

Description	Format	Author	Produced By	Received	Location
A Cultural Resource Assessment of the El Rio Archeological Research Locale in West-Central Maricopa County, Arizona	Paper	Scientific Archeological Services	FCDMC	Jun-06	PEC
FY 04/05 Orthophotography Tiles for the Cotton Lane/Loop 303 Corridor Project Area in MrSID Format	MrSID	FCDMC	FCDMC	Jun-06	PEC
Level 3 Comm- Fiber Optic Cable	.pdf	Level 3	Level 3	Jun-06	PEC
SR 303L Final Design Concept Report MC 85 to Indian School Road	.pdf	HDR	MCDOT	Jun-06	PEC
Corridor Improvement Study SR 303L Between Rigs Road and MC 85 (Final)	.pdf	PARSONS	MCDOT	Jun-06	PEC
Fiber Optic Cable Maps	Paper	MCI	MCI	Jun-06	PEC
Long Distance fiber optic cable	Paper	Qwest	Qwest Comm.	Jun-06	PEC
Local Network telephone lines	Paper	Qwest	Qwest Local Net.	Jun-06	PEC
Gas line maps	Paper	Southwest Gas	Southwest Gas	Jun-06	PEC
Fiber optic cable location	Paper	Sprint	Sprint	Jun-06	PEC
GIS Files	GIS	Stantec	Stantec	Jun-06	PEC
Archeological Studies, Wild life, Hazardous Site	GIS	Stantec	Stantec	Jun-06	PEC
Copy of Level III final report including 15% plans in .pdf	.pdf	URS	URS	Jun-06	PEC
Utility, culverts, landuse, railroad in microstation format	Microstation	URS	URS	Jun-06	PEC
Conceptual 801 freeway alignment	.pdf	HDR	HDR	Jul-06	PEC
Existing Landscape Character Assessment and compatibility analysis for Maricopa County			EDAW		EDAW
Maricopa County Regional Trail Plan			EDAW		EDAW
Recreational Resource Assessment			EDAW		EDAW
El Rio Watercourse Master Plan Recommended Alternative			EDAW		EDAW
Goodyear's existing and proposed parks available in GIS			EDAW		EDAW
MAG Desert Spaces Plan			EDAW		EDAW
APS Electric Utility Maps	Paper	APS	APS	Jul-06	PEC
303 South of I-10 Archeology Report	.pdf	MCDOT	SWCA	Jul-06	PEC
Cotton Lane final archeology survey report	.pdf	MCDOT	ACS	Jul-06	PEC
Loop 303 - US 60 to Gila River letter	.doc	MCDOT	MCDOT	Jul-06	PEC
Cotton Lane Treatment plan	.pdf	MCDOT	SWCA	Jul-06	PEC
Morocco Ruin treatment plan letter	.doc	MCDOT	MCDOT	Jul-06	PEC
SHPO consultation 4 Morocco Ruin Letter	.pdf	MCDOT	SHPO	Jul-06	PEC
Phased mitigation map	.pdf	MCDOT	MCDOT	Jul-06	PEC
Morocco Ruin Survey map	.pdf	MCDOT	MCDOT	Jul-06	PEC
Comments on SWCA Morocco Ruin for MCDOT Letter	.doc	MCDOT	AZ State Museum	Jul-06	PEC
Palo Verde Cooling line As-Built plans	Paper	APS	APS	Aug-06	PEC

## 2.3 EXISTING FACILITIES (INFRASTRUCTURE)

Two types of facilities exist in the area. There are core infrastructure facilities that have been in place for some time, and there are recent developments that are rapidly changing the landscape of the area. The facilities with the most impact in the area are listed below. These facilities are shown in detail on Exhibit 1.

- Interstate 10 (I-10)
- Cotton Lane
- Roosevelt Irrigation District (RID)
- Buckeye Irrigation District (BID)
- Union Pacific Railroad
- Maricopa County Highway 85 highway (MC-85)
- Canyon Trails Residential Development Phases 1, 2, and 3.
- Palo Verde Nuclear Generating Station Pipeline

## 2.4 OPPORTUNITIES AND CONSTRAINTS

The project area is quickly being developed into a residential and commercial land use area. This conversion provides opportunities to design drainage facilities that best integrate the existing and future facilities in the area. Many of these opportunities are listed below.

### Opportunities

- Use of existing ROW set aside by the City of Goodyear
- Land at the south basin location in ADMPU is still available
- Many undeveloped parcels are not in plan approval process yet
- Use of floodplain upstream of railroad
- Use of existing railroad crossing east of Cotton Lane
- Use of existing BID wasteway
- Use of new Loop 303 alignment
- Use of existing and new Canyon Trails drainage channels
- Morocco Ruin mostly cleared along Cotton Lane
- Possible integration of recreation trails in drainage channels.
- Possible trail tie-ins with the El Rio Project area and County trail alignments
- Use of underpasses for recreational linkages north of I-10 and across the Loop 303 alignment
- Use of existing and proposed park points identified by City of Goodyear and developments for possible detention areas and partnering opportunities

While the project affords some exciting opportunities for design, development as well as existing facilities places some limitations on the type and locations of drainage facilities.

## Constraints

- Land at north basin site in ADMPU no longer available
- Area rapidly developing / limits to Right-of-way for kinder and gentler drainage facilities
- Cost of land rising
- Planned new roadways/freeways (I-10 widening, Loop 303 realignment, SR 801, MC-85 improvements, Cotton Lane Widening, Cotton Lane bridge)
- Limited drainage easements set aside by the City of Goodyear
- Palo Verde Cooling Line crossing
- The proposed outfall at the Gila River calls for a sensitive environmental design
- Proposed mitigation area north of the proposed Cotton Lane bridge crossing has potential restrictions

### 2.4.1 Future Facilities

The area is experiencing rapid growth as the land use changes from agricultural to a residential and commercial. These changes affect the availability of land, the price of land, and determine what type of facilities would be appropriate for the area. Exhibit 2 shows the known or planned facilities that may exist in the future. There are likely other developments and facilities that are currently being planned for the area, but those plans are preliminary and are not finalized with the City of Goodyear or any other agency at this time.

### 2.4.2 Future Land Use

Future Land Uses (Exhibit 3) planned for the project area as conveyed in the General Plan, 2013, are mostly residential with community commercial uses planned at the I-10, Van Buren and Yuma Road intersection. Residential uses vary from some medium-high to low density residential. General industrial uses are planned south of Elwood Road and north of Broadway Road. Existing master plans for the Canyon Trails development and Cotton Flower development show an extensive trail network on the west and east side of Cotton Lane. The trail network on the west begins at the I-10, RID underpass and extends southward and is a potential recreation linkage/drainage way to the Gila River. The proposed uses indicate that at build-out, community concern for the physical and visual nature of the drainage structure planned along the Loop 303 will be high due to the residential nature of the area. Opportunities to build consensus at the onset of the project through community involvement and partnerships must be taken advantage of.

### 2.4.3 Landscape Character Assessment

The identification of unique visual resources and the natural and local community character within the project area at the onset of the project will help in the integration of these aspects in the final alternatives development. The identification and selection of a final alternative that has the potential to complement the visual character of the landscape setting where it is situated is a key step toward achieving the FCDMC's aesthetic treatment policy.

The landscape character assessment of the project area mainly utilizes the County-wide landscape character assessment provided by the FCDMC. But even though, according to the county-wide assessment, the area landscape character is compatible with nonstructural to semi-soft structural flood control solutions, it may have different compatibility levels on a small scale portion of the project. The Scenery Resource Assessment (SRA) specifically addresses three components that help to establish the relative importance of the scenic resource within the context of the project area. These include 1) landscape character, including historic, existing and future planned character; 2) scenic quality, including landscape variety and scenic integrity; and 3) visual sensitivity, relating to the visibility of the project area as viewed by aesthetically concerned viewers. The SRA also includes assessments that determine the relative compatibility of these resources with a variety of flood protection methods routinely utilized by the FCDMC in providing flood protection.

### ***Flood Protection Methods***

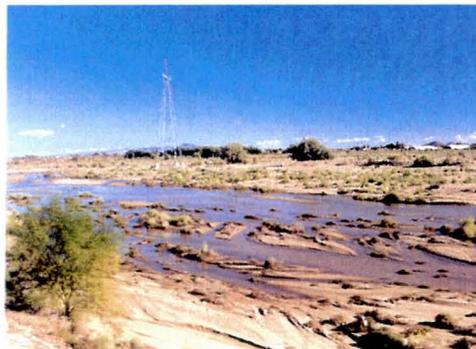
The range of flood protection methods identified for possible application in FCDMC Planning projects include the following:

- Non-Structural Method
- Soft Structural Method
- Semi-Soft Structural Method
- Hard Structural Method with Aesthetic Treatment
- Semi-Hard Structural Method without Aesthetic Treatment
- Hard Structural Method

A brief description of the applicable methods as described by the FCDMC follows;

- **Non-Structural Method**

The non-structural method of flood protection employs the use of regulatory mechanisms such as erosion setback zones and zoning regulations as a mechanism for providing flood protection. This method does not generally introduce structural elements or facilities into the landscape setting.



- **Soft Structural Method**

The soft structural method includes construction of flood protection structures, such as conveyance channels, storage basins and flood retarding structures, utilizing earthen materials. The hard structural components of these facilities are either non-existent or are buried or concealed so as not to be visually evident



to the average viewer. Soft structural facilities can be designed to complement the visual characteristics of a wide range of landscape settings.

- Semi-soft Structural Method

The semi-soft structural method is similar in many respects to the soft structural, except for the introduction of visible structural components that are a functional part of the flood protection facility. These may include grade control structures, energy dissipaters, low flow features, inlet and outlet structures. These structural components can often be designed to remain visually subordinate to and complement the desired character of the settings in which they are located.



- Hard Structural Method with Aesthetic Treatment

The hard structural method with aesthetic treatment includes large-scale concrete lined channel facilities and other structural components. This method can include aesthetic treatments such as graceful meanderings, use of color, textural patterns, urban art and other architectural embellishments to establish visual and cultural context and a unique sense of place within local communities. This method also includes attractive grading and landscape planting of overbank areas to create an effective visual transition with adjacent properties.



- Semi-hard Structural Method without Aesthetic Treatment

The semi-hard structural method is similar to the semi-soft structural method, but it lacks the inclusion of aesthetic features. The superstructure is constructed predominantly of earthen material and tends to be large with overall geometric forms, uniform side slopes, bottom and over bank areas. Component structures for grade control, energy dissipation, inlets and outlets are typically of standard engineering design without aesthetic treatments. Vegetation planting of overbank areas is incorporated only to the extent required for erosion control, dust control or 404 permitting requirements.



- **Hard Structural Method**

The hard structural method includes the construction of heavily armored concrete structures and component facilities without the inclusion of aesthetic treatment measures. These facilities are typically large scale with an overall geometric and straight form, uniform side slopes bottom and over bank areas. Vegetation planting of overbank areas is incorporated only to the extent required for erosion control, dust control or 404 permitting requirements.



For the purposes of the Phase I, Candidate Assessment Report, the final composite compatibility class map that takes into account specific compatibility with the different scenic resource components were analyzed in order to determine the most appropriate flood protection strategy that complements not only the existing landscape setting; but the landscape settings that may occur based on future land use. Within the project area, existing Scenic Resource Compatibility Classes 1, 2 and 3 were identified (Exhibit 4A), While future scenic resource compatibility maps identified classes 1, 2, 3 and 4 as compatible (Exhibit 4B). The following is an explanation of these compatibility classes

- Class 1: Includes natural landscape settings which is compatible with non-structural and is occasionally compatible with the soft structural method.
- Class 2: Includes natural appearing and pastoral landscape settings which is compatible with non-structural and soft structural methods and is occasionally compatible with the semi-soft method.
- Class 3: Includes rural and suburban settings which are compatible with non-structural, soft structural and semi soft structural methods and occasionally compatible with hard structural methods with aesthetic treatments.
- Class 4: Includes urban settings, which are compatible with the non-structural, soft structural, semi-soft, and hard structural method with aesthetic treatments and occasionally compatible with the semi-hard structural without aesthetic treatments.

#### **2.4.4 Recreational Resource Assessment**

The Recreational Resource Assessment (RRA) helps to identify trails and open space linkages planned in the region, and supports overall recreational and multi-use connectivity. The RRA includes an inventory of existing and future planned recreation use areas, trails and open space resources within the study area and within the regional context of the study area.

The regional open space inventory (Exhibit 5) shows existing and proposed regional open spaces and linkages within a 10 mile boundary surrounding the project area. Major regional open spaces include the White Tanks Regional Park, the Estrella Mountains Regional Park and significant natural open spaces provided by the Agua Fria River and

the Gila River. The Maricopa regional trail proposed in the 10-mile boundary include north-south segments that connect from the White Tank Mountains to the Gila River through the proposed Tuthill Outfall Channel, segments along Bullard Wash, the Agua Fria River, and Waterman Wash. Major east-west segments include those that run parallel to Northern Avenue, the RID Canal and the El Rio project area. The inventory also includes the MAG Desert Spaces plan adopted in 1995 that recommends areas for retention and conservation.

At a local level (Exhibit 3), within the one mile project area, the City of Goodyear has identified local trail segments parallel to the major arterials, and along the RID Canal and MC85. Potential park locations have also been indicated on the future land use plan.

## **2.5 SEED ALTERNATIVES AND CROSS SECTIONS**

Some of the alternatives make use of facilities designed by others, such as the channels and basins in the Canyon Trails development. Other alternatives propose using land not yet developed such as the State Trust Land near the intersection of Cotton Land and Van Buren Street. Each of these Alternatives is shown in Exhibit 6. Exhibit 7 presents several conceptual channel treatment methods that will help to refine the seed ideas in Phase II. The following descriptions of the “seed” alternatives include a qualitative cost comparison that ranks each alternative as low, moderate or high cost.

### **Alternative 1 – “No Action” or keep ADMPU plan**

Alternative 1 is the preferred alternative proposed in the ADMPU with one exception. The north basin proposed in the ADMPU cannot be built because the land is already being developed; otherwise this alternative remains the same as the previous preferred alternative. The associated cost of building this alternative is moderate.

### **Alternative 2 – Concrete Channel**

The channel and south basin from Alternative 1 are preserved, but the channel is specified as a concrete channel for the entire length from I-10 to the Gila River. This is done to provide a baseline cost for an Inter-Governmental Agreement (IGA) with the Arizona Department of Transportation (ADOT). The cost of building this alternative is high.

### **Alternative 3 – State Land Basin**

Canyon Trails has implemented into their subdivision design a channel system that conveys drainage from I-10 through the development to Lower Buckeye Road. Alternative 3 would use this channel down to Lower Buckeye Road instead of using the ADMPU proposed channel. The north basin proposed in the ADMPU would be replaced with a basin placed in the State Trust Land located near the intersection of Cotton Lane and Van Buren Street where an old trotter track is currently located. A section of the ADMPU channel would bring water to the north basin and then another channel constructed by Canyon Trails would carry storm water from the basin across Cotton Lane

and into the main Canyon Trails channel. This alternative would incur a low construction cost.

#### **Alternative 4 – Enlarged Channel**

Alternative 4 uses the alignment of the Canyon Trails channel, but would enlarge the channel to carry all drainage from I-10 to the River in a single channel without any basins. Costs associated with this alternative would be high.

#### **Alternative 5 – Enlarged Channel with Basin**

The south basin proposed in the ADMPU is added to the enlarged channel of Alternative 4. The addition of the basin would reduce the needed size of the channel from the basin to the river where the channel crosses highway MC-85, the Buckeye Canal, and the Palo Verde cooling water line. The cost of this alternative would be expected to be high.

#### **Alternative 6 – Railroad & Mesquite Basin**

Locations of two new basins are proposed in this alternative as well as curving the drainage channel to follow a proposed Loop 303 alignment. From I-10 to Lower Buckeye Road the drainage channel will be the same as the channel proposed in the ADMPU, but at Lower Buckeye Road, the channel would curve west along the Loop 303 freeway alignment and then turn south again at 175<sup>th</sup> Avenue. A basin would be built on the east side of Cotton Lane between Van Buren Street and Harrison Street. Another basin would be built along 175<sup>th</sup> Avenue between Broadway Road and highway MC85 where there is existing floodplain due to ponding behind the highway. Construction costs would be moderate.

#### **Alternative 7 – Mesquite Drive Basin East**

The Canyon Trails channel and ADMPU south basin are used in this alternative with the addition of the north basin east of Cotton Lane between Van Buren Street and Harrison Street as was proposed in Alternative 6. Moderate costs could be expected with this alternative.

#### **Alternative 8 – Mesquite Drive Basin West**

The ADMPU channel and south basin are combined with a north channel with a new north basin on the west side of Cotton Lane between Van Buren and Harrison Streets. The associated cost of building this alternative is moderate.

#### **Alternative 9 – Multi-Small Basin Channel**

Alternative 9 utilizes the Canyon Trails channel and adds additional small basins to those built by Canyon Trails. The channel continues south from Canyon Trails 169<sup>th</sup> Avenue to highway MC-85 where the channel turns west to Cotton Lane. At Cotton Lane the channel turns south to the Gila River. This alternative makes use of multiple small basins

throughout the channel corridor to minimize the size and impact of both the channel and the basins. Low costs could be expected with this alternative.

### **Alternative 10 – Off Alignment Channel**

This alternative moves the channel away from Cotton Lane for the entire length of the project from I-10 to the Gila River. A north basin would be built on the State Trust Land west of Cotton Lane between the Roosevelt Canal and Van Buren Street. Then a channel would carry flows across Cotton Lane and into the Canyon Trails channel. The channel would continue south from Canyon Trails to a basin north of highway MC-85 and east of Cotton Lane. The basin outfall would be near 167<sup>th</sup> Avenue where another channel would carry drainage to the Gila River. Construction costs would likely be high.

## **2.6 EVALUATION MATRIX**

Project Engineering Consultants, LTD. and FCDMC worked together to create an evaluation matrix that will be refined and used to assess the ten seed alternatives already listed. The matrix is included as Exhibit 8.

## **2.7 CONTACT LOG**

An extensive network of contacts was created to acquire the data and documents listed in this report. Public agencies that assisted in the project included the FCDMC, MCDOT, and the City of Goodyear. Private consultants that provided data and information included URS, Coe and Van Loo, and HDR. Utility companies were also contacted and they provided maps of their facilities in the area. A phone log of people and agencies contacted is shown in Table 2. Table 3 contains a contact list.

**Table 2 Contact Log**

<b>Date</b>	<b>Time</b>	<b>Contact</b>	<b>Organization</b>	<b>Phone No.</b>	<b>Comment</b>
5/24/2006	10:00am	Nancy	AZ Blue Stakes	602-263-1100	obtained contacts for all utility companies in area received design ticket#2006052400737
5/26/2006	11:00a.m.	Daniel	Kinder Morgan Energy	602-278-2320	Talked to Daniel informed me that need to write a letter to Don Quinn asking for maps
5/30/2006	2:00 p.m.	Keith Brown	City of Goodyear	623-882-7979	No response, left message, wrote e-mail 3:45 p.m.
5/30/2006	3:10 p.m.	Bill Hahn	FCDMC	602-506-4614 or 602-506-8600	Spoke to Bill Hahn he referred me back to Greg Jones and said to call back if Greg could not provide needed information
5/30/2006	3:20 p.m.	Jennifer Polcorski	FCDMC	602-506-4695	Left message about data collection
5/31/2006	3:35 p.m.	Dave Shaub		602-648-2345	Left message requesting Loop 303 alignment, line work and aerial photos
5/31/2006	3:45 p.m.	Jay Koesters	Parsons Brinkerhoff	480-966-8295	Called and left message requesting 801 alignment
5/31/2006	4:40 p.m.	David French	URS	602-648-2475	Spoke to David French -made it clear that their project ended at Van Buren,nothing below that-Mike Heaton has most recent submittal-URS's aerial photos are several years old, new photos from someone else.-Parson Brinkerhoff may have the new aerial photos.
5/31/2006	8:50 p.m.	Keith Brown	City of Goodyear	623-882-7979	Will gather information Thursday 6-1-06 4:00p.m. 190 N. Litchfield Rd. Goodyear, AZ 85338
6/1/2006	1:35 p.m.	Elliott Silverston	URS	602-371-1100	Left a message stating that we have a project with FCD and PEC needs Information from URS. Please return my call
6/1/2006	1:40 p.m.	Jay Koesters		480-966-8295	a second request for 801 alignment and aerial photos
6/1/2006	2:10 p.m.	Elliott Silverston	URS	602-371-1100	Elliott Silverston called and ask me to e-mail him a list of data we requested and he would see what he could do. He said that he only knew about ADMP and he would talk to Dave Shaub about Loop 303.
6/1/2006	2:21 p.m.	Elliott Silverston	URS	602-371-1100	emailed Elliot Silverston elliott_silverston@urscorp.com
6/5/2006	10:00am	Scott Vollreth	ADOT	602-316-0281	need to go to ADOT Engineering Records and get maps
6/5/2006	11:00am	Mathew Garlic	Lychfield Park Service	623-935-9367	No utilites south of I-10, No conflict
6/5/2006	3:30 p.m.	Fred	Qwest Comm. Long distance	602-909-1789	said that they do not give out maps but gave the location of fiber optic cable

Date	Time	Contact	Organization	Phone No.	Comment
6/5/2006	4:00 p.m.	Keith Brown	City of Goodyear	623-882-7956	called Keith Brown at City of goodyear and asked for more data. He referred me to their GIS person Tim Johnson
6/5/2006	4:00 p.m.	Tim Johnson	City of Goodyear	623-882-7926	Called Tim Johnson and requested more GIS Data
6/5/2006	4:10pm	Mike McNeil	AT&T	480-827-6048	Need to send in written inquiry to Walter Werstiuk
6/6/2006	11:00am	Dispatch	Level 3 Comm.	877-366-8344	Need to email request form to level3.networkrelocations@level3.com
6/6/2006	11:20 a.m.	Linda	Cox Comm.	623-328-3518	talked to Linda, told me to send email request
6/6/2006	2:00 p.m.	Chris Lertique	Qwest Local Net.	602-630-0492	talked to Chris said that need to send a fax request for utility maps to 480-831-4946
6/6/2006	2:00 p.m.	Chris Lertique	Qwest Local Net.	fax: 480-831-4946	sent fax requesting utility maps
6/6/2006	2:00 p.m.	Norman Garcia	Broadwing Comm.	512-742-3827	sent fax requesting utility maps
6/6/2006	3:15pm	Willtell Center	Willtell Comm.	888-265-2283	Willtell is a subsidiary of level3 so level 3 will have maps
6/7/2006	11:30 a.m.	Greg	Southwest Gas	623-780-3350	talked to Greg about utility maps told me to send email to alisha.pothen@swgas.com
6/7/2006	1:00pm		Valencia Water Co.	623-386-4252	No Conflict
6/8/2006	2:00 p.m.	Dean Boyers	MCI	972-729-6016	requested new maps because wrong maps were sent
6/8/2006	2:30 p.m.	Collin Sword	Sprint	602-417-0970	Sprint does not send out maps but told me the location of the fiber optic cable
6/8/2006	4:00 p.m.	Bill Hahn	FCDMC	602-506-4614	returned Ronson's phone call about the cotton LN alignment. He said to send him an email at billhahn@mail.maricopa.gov and he will forward it to the right people to get us the information. He also reminded me of the Loop 303 reports on the MCDOT
6/16/2006	9:10 AM	Elliott Silverston	URS	602-371-1100	Left message about data collection
6/16/2006	10:15 AM	Elliott Silverston	URS	602-371-1100	returned call and said to come in Monday 6/19/06 at 11:30 am to pick out the files that we want.
6/21/2006	11:30 a.m.	Michael Book	HDR	602-522-7774	801 and 303 alignments. He is sending amps. He also informed me of a Loop 303 public meeting on June 29th and he added PEC to his mailing list
6/27/2006	4:00 PM	Brian Kenny	MCDOT	602-506-8082	There are archeological sites on either side of Cotton Lane south of MC-85. Reports will be available to view or copy by July 7th.
7/11/2006	10:15 AM	Dennis Pomroy	APS	602-371-7847	I followed up on the email Ying sent to him on June 19. We are looking for information about the Palo Verde cooling line. Dennis said he would talk to the person working on this task and get back to me or Ying.

Date	Time	Contact	Organization	Phone No.	Comment
7/10/2006	4:00 PM	Brian Kenny	MCDOT	602-506-8082	Brian has a few reports about archeological work done in the area including right along cotton lane. He is willing to sit down with us and show us the reports because he is very familiar with the area and knows more than is in the reports. He said we should get together with Jen and PEC to meet with him. The reports he has were prepared for planned developments by Sonterra Partners
7/28/2006	8:30 AM	Brent Emmerton	CVL	602-222-2824	Brent will be emailing CAD line work for the Canyon Trails channels.

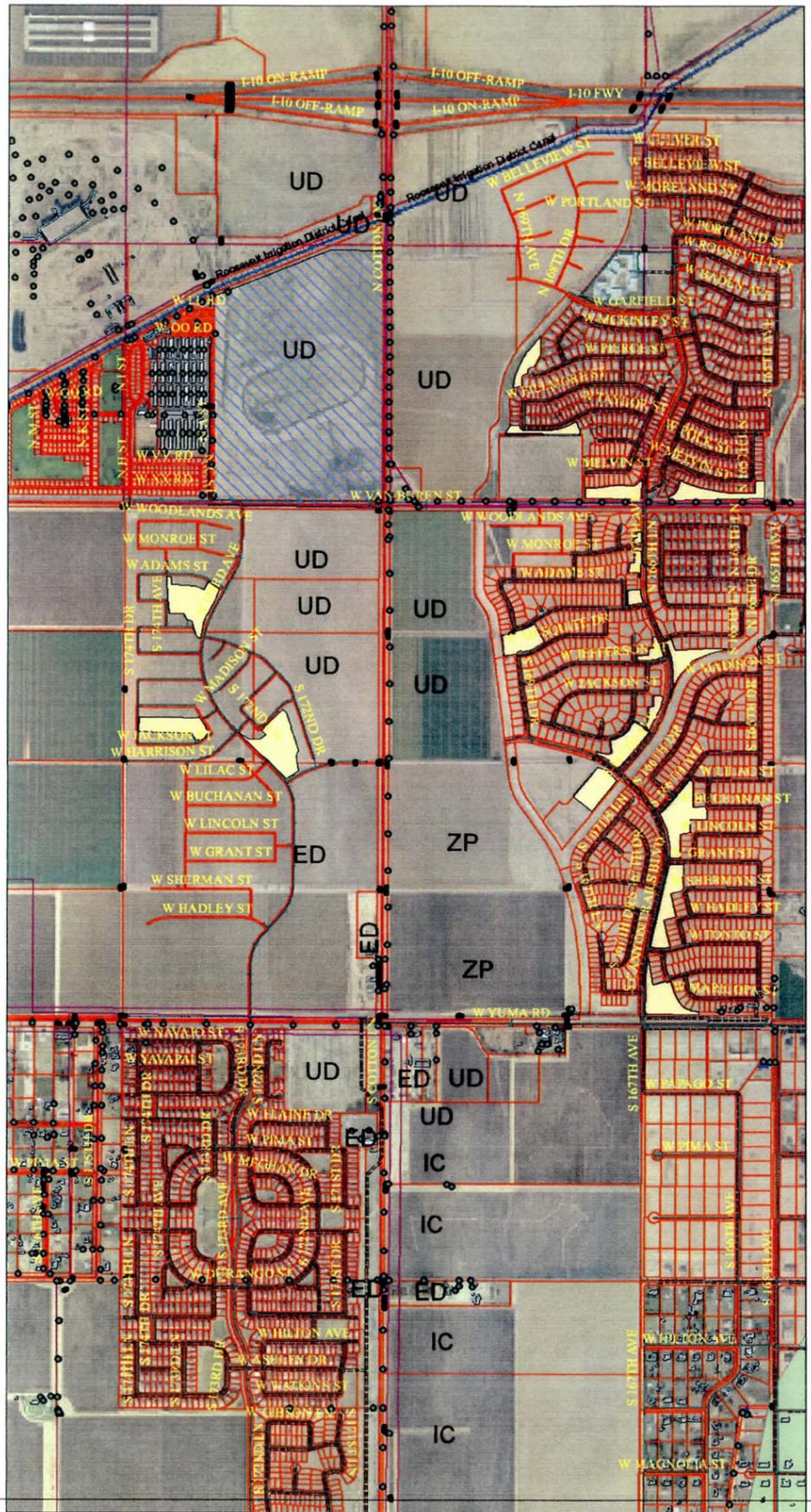
**Table 3 Contact List**

Affiliation	Last Name	First Name	Position	Phone	Email
ADOT	Beasley,	Stephen	Senior Project Manager	602-712-7646	<a href="mailto:Sbeasley@azdot.gov">Sbeasley@azdot.gov</a>
ADOT	Baiza,	Monica	Engineer		<a href="mailto:mbaiza@azdot.gov">mbaiza@azdot.gov</a>
APS	Pomroy,	Dennis	Land Services	602-371-7847	<a href="mailto:Dennis.Pomroy@aps.com">Dennis.Pomroy@aps.com</a>
APS	Smith,	Ray		602-371-6545	
Buckeye Water Conservation and Drainage District	Meck,	Jackie	Manager	623-386-2196	
City of Goodyear	Ramirez,	David	City Engineer		<a href="mailto:Dramirez@goodyearaz.gov">Dramirez@goodyearaz.gov</a>
City of Goodyear	Brown,	Keith	Assistant City Engineer	623-882-7979	<a href="mailto:KBrown@goodyearaz.gov">KBrown@goodyearaz.gov</a>
City of Goodyear	Farar,	Daren	Civil Engineer	623-882-7974	<a href="mailto:dfarar@goodyearaz.gov">dfarar@goodyearaz.gov</a>
City of Goodyear	Johnson,	Tim	GIS Analyst	623-882-7926	
Coe & Van Loo Consultants, Inc.	Emmerton,	Brent	Civil Engineer	602-222-2824	<a href="mailto:Bemmerton@cvlci.com">Bemmerton@cvlci.com</a>
EDAW	Ankrom,	Jack	Senior Associate	602-393-3791	<a href="mailto:AnkromJ@edaw.com">AnkromJ@edaw.com</a>
EDAW	Anthony,	Seema	Associate	602-393-3791	<a href="mailto:anthonys@edaw.com">anthonys@edaw.com</a>
FCDMC	Jones,	Greg	Regional Planning Manager	602-506-1501	<a href="mailto:glj@mail.maricopa.gov">glj@mail.maricopa.gov</a>
FCDMC	Pokorski,	Jennifer	Associate Project Manager	602-506-4695	<a href="mailto:jmp@mail.maricopa.gov">jmp@mail.maricopa.gov</a>
FCDMC	Holcomb,	Dennis	Planning and Project Management	602-506-1501	<a href="mailto:dbh@mail.maricopa.gov">dbh@mail.maricopa.gov</a>
FCDMC	Stuart,	Diana	Planning and Project Management	602-506-1501	<a href="mailto:dms@mail.maricopa.gov">dms@mail.maricopa.gov</a>
FCDMC	Holmes,	John	Engineer	602-506-1501	<a href="mailto:jwh@mail.maircopa.gov">jwh@mail.maircopa.gov</a>
FCDMC	Feldman,	Eric	GIS Analyst	602-506-1501	<a href="mailto:emf@mail.maricopa.gov">emf@mail.maricopa.gov</a>
HDR	Book,	Michael	Engineer	602-522-7774	<a href="mailto:Michael.Book@hdrinc.com">Michael.Book@hdrinc.com</a>
HDR	Erickson,	Jami	Senior Project Engineer		<a href="mailto:jami.ericson@hdrinc.com">jami.ericson@hdrinc.com</a>

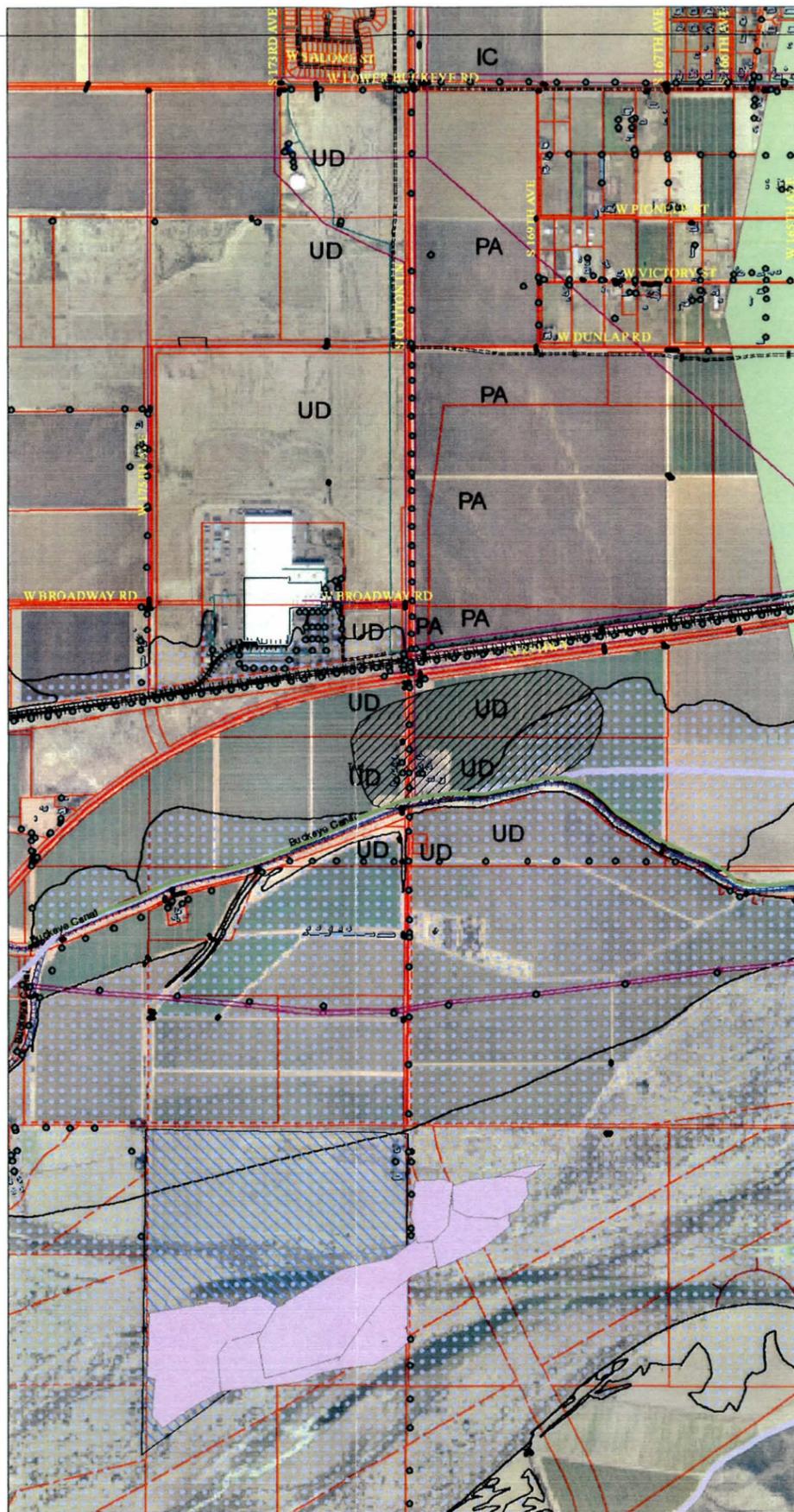
<b>Affiliation</b>	<b>Last Name</b>	<b>First Name</b>	<b>Position</b>	<b>Phone</b>	<b>Email</b>
MCDOT	Hahn,	Bill	Regional Transportation Program manager	602-506-4614	<a href="mailto:billhahn@mail.maricopa.gov">billhahn@mail.maricopa.gov</a>
MCDOT	Kenny,	Brian	Applied Anthropologist	602-506-8082	
Michael Baker Jr., Inc.	Pisano,	Anthony	Engineer	602-279-1234	<a href="mailto:APISANO@mbakercorp.com">APISANO@mbakercorp.com</a>
Parsons Brinckerhoff Quade & Douglas, Inc.	Kosters,	Jay	Engineer	520-882-6424	<a href="mailto:Koesters@pbworld.com">Koesters@pbworld.com</a>
Parsons Brinckerhoff Quade & Douglas, Inc.	Sun,	Gary	Engineer		
Project Engineering Consultants, Ltd.	Miller,	Steve	Vice President	602-906-1901	<a href="mailto:smiller@pecaz.com">smiller@pecaz.com</a>
Project Engineering Consultants, Ltd.	Heaton,	Mike	Project Manager	602-906-1901	<a href="mailto:mike@pecaz.com">mike@pecaz.com</a>
Project Engineering Consultants, Ltd.	Xu,	Ying	Project Engineer	602-906-1901	<a href="mailto:ying@pecaz.com">ying@pecaz.com</a>
Project Engineering Consultants, Ltd.	Lancaster,	Ryan	Project Engineer	602-906-1901	<a href="mailto:ryan@pecaz.com">ryan@pecaz.com</a>
Project Engineering Consultants, Ltd.	Kuruva,	Pandu	Project Engineer	602-906-1901	<a href="mailto:pkuruva@pecaz.com">pkuruva@pecaz.com</a>
URS	Silverston,	Elliot	Vice President	602-371-1100	<a href="mailto:elliot_silverston@urscorp.com">elliot_silverston@urscorp.com</a>
URS	French,	David	Engineer	602-648-2475	
URS	Schaub,	David	Engineer	602-371-1100	

# **Exhibit 1: Existing Conditions**

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Matchline See Right Sheet



Flight Date Nov 2004

# Exhibit 1: Existing Conditions

## Flood Control District of Maricopa County

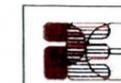


AUG 2006

### Legend

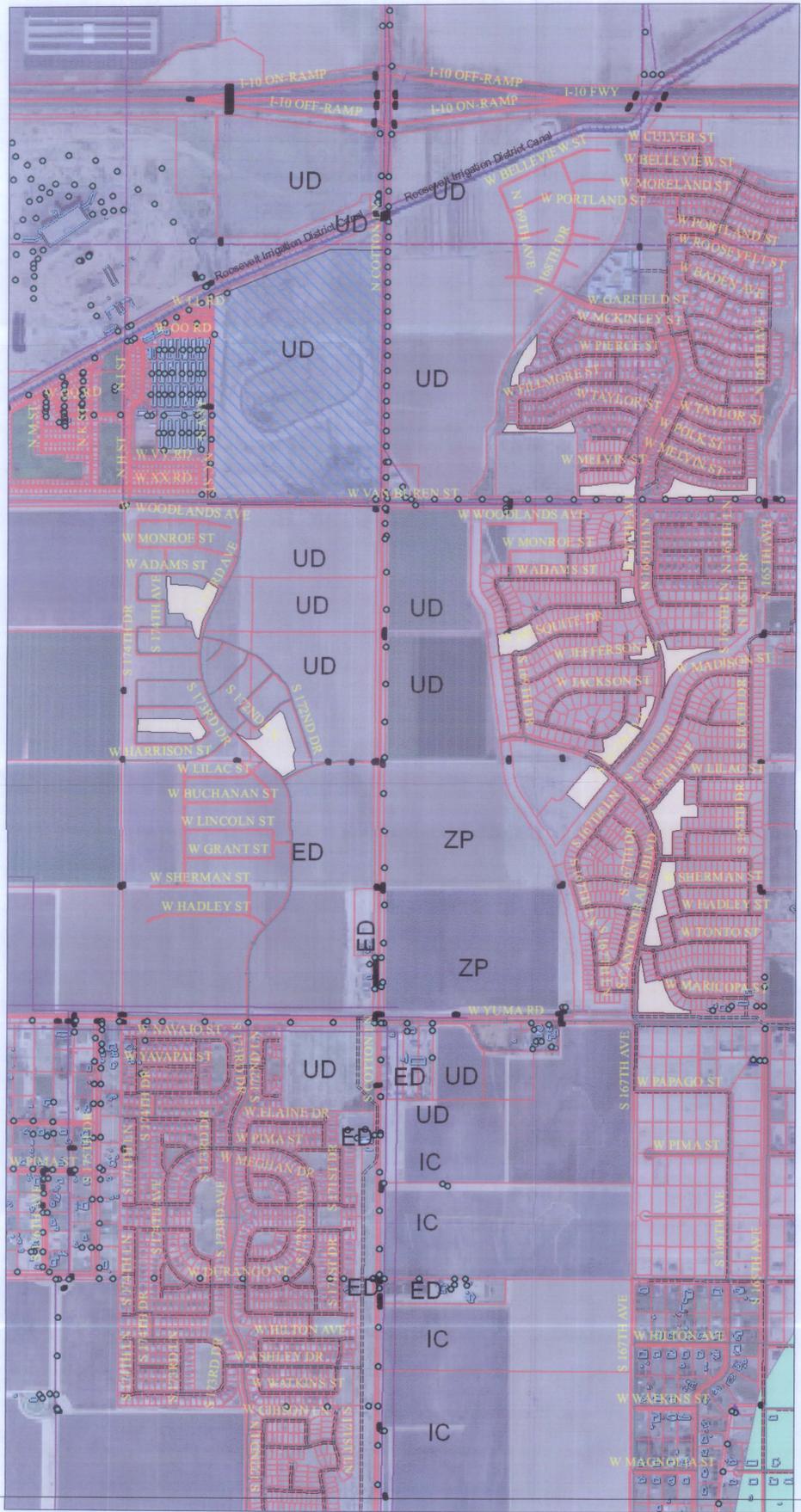
- Palo Verde Cooling line
- Powerpoles
- Wells
- Basin
- Morocco Ruin
- Erosion Hazard zone
- Culvert
- Utilities
- Canal
- Hazardous Sites
- Structures
- Waterlines
- Sewerlines
- Bridge
- Roadway Centerlines
- Railroad
- Historical Mining Locations
- Bird Strike Zone
- Endangered Species Areas
- State Trust
- FEMA Flood Zone
- Parcels

UD= Undeveloped  
 ED= Existing Development  
 IC= In Construction  
 PA= Preliminary Plats Approval Process  
 ZP= Zoning Process

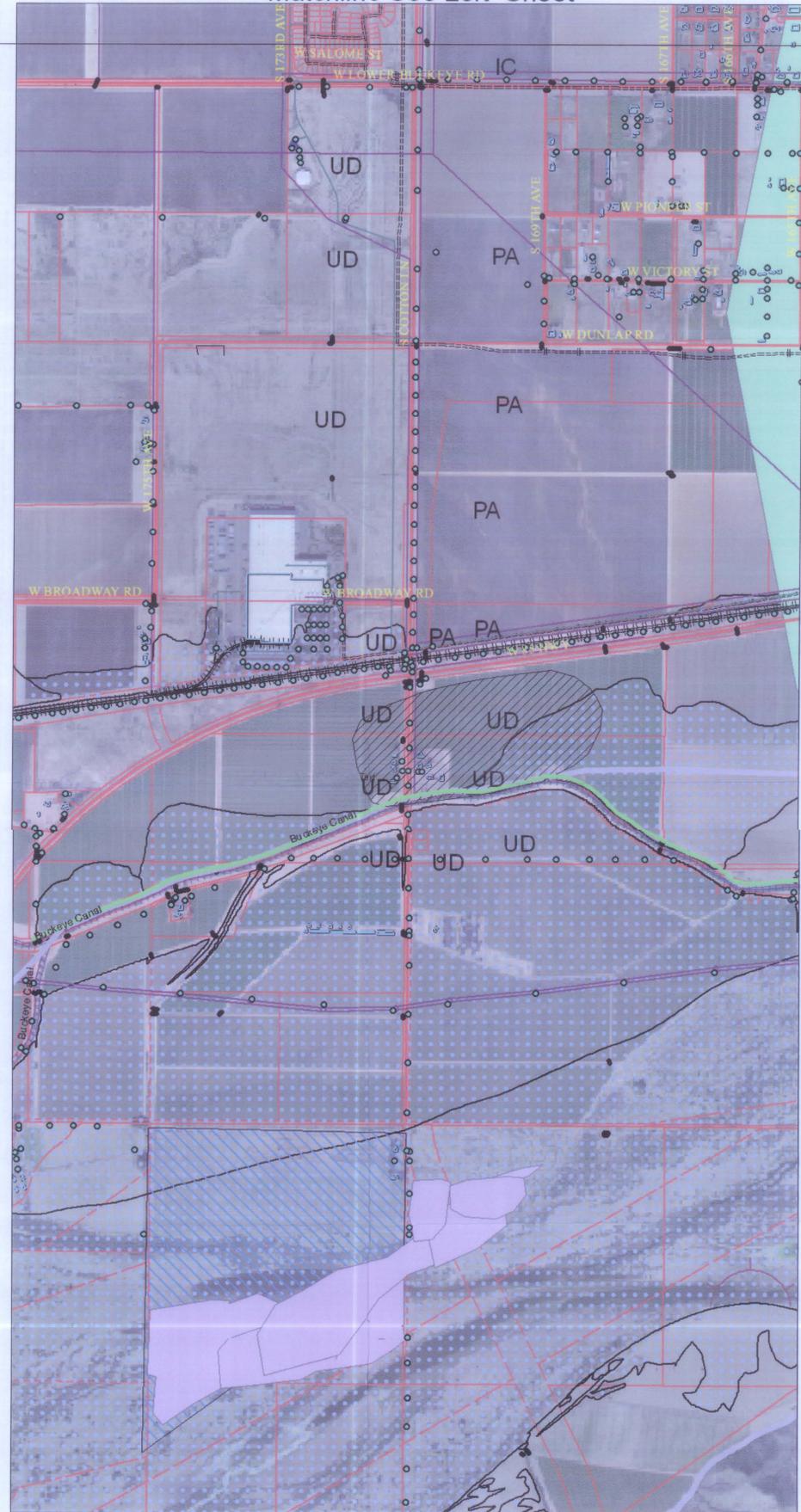


PROJECT ENGINEERING CONSULTANTS  
 2310 W. MISSION LANE, STE 4  
 PHOENIX, AZ 85021

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Flight Date NOV 2004

# Exhibit 1: Existing Conditions

## Flood Control District of Maricopa County

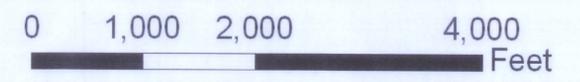


AUG 2006

### Legend

- Palo Verde Cooling line
- Powerpoles
- Wells
- Basin
- Morocco Ruin
- Erosion Hazard zone
- Culvert
- Utilities
- Canal
- Hazardous Sites
- Structures
- Waterlines
- Sewerlines
- Bridge
- Roadway Centerlines
- Railroad
- Historical Mining Locations
- Bird Strike Zone
- Endangered Species Areas
- State Trust
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UD= Undeveloped  
 ED= Existing Development  
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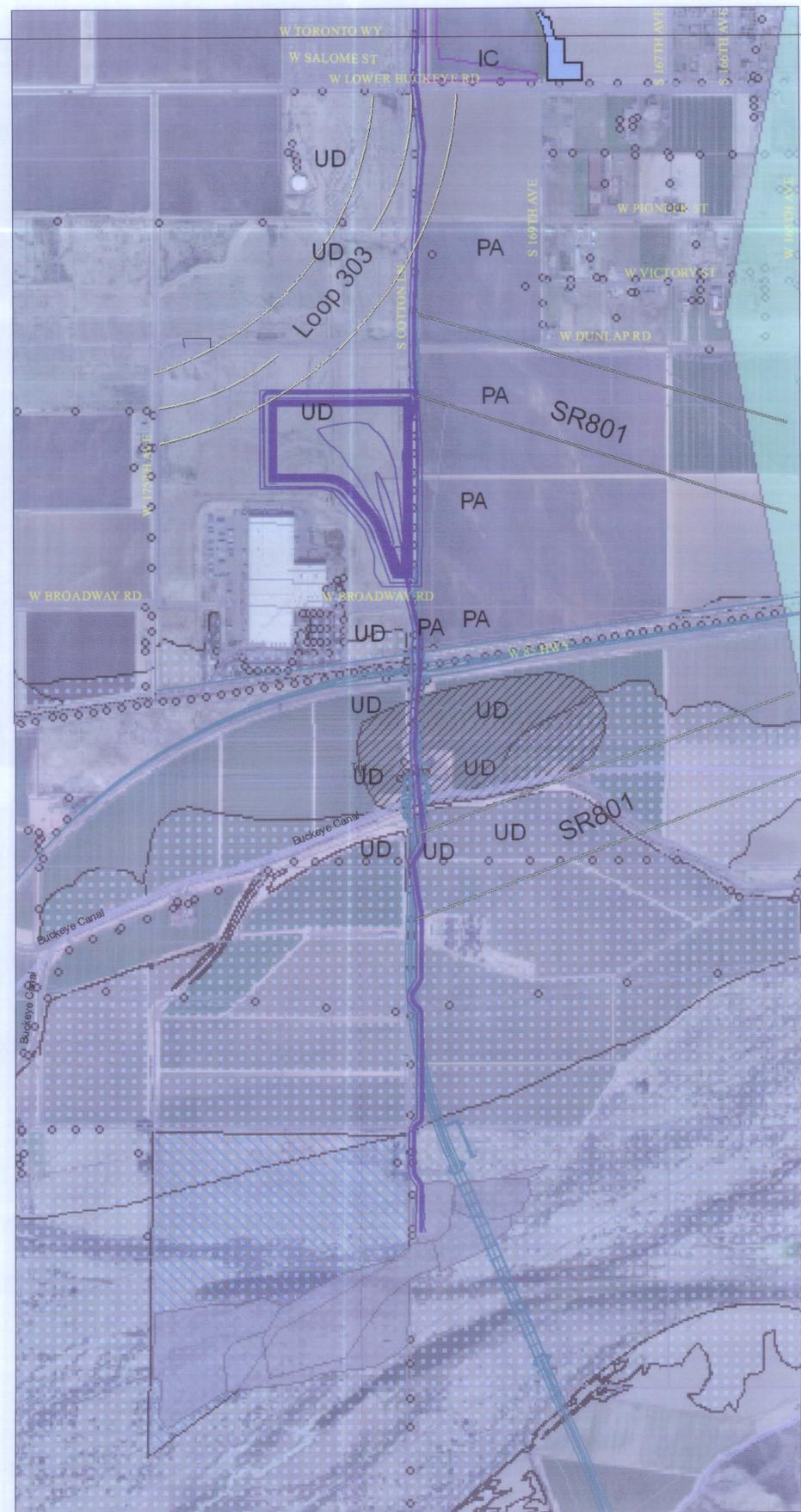
PROJECT ENGINEERING CONSULTANTS  
 2310 W. MISSION LANE, STE 4  
 PHOENIX, AZ 85021

## **Exhibit 2: Future Facilities**





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Flight Date Nov 2004

## Exhibit 2: Future Facilities Flood Control District of Maricopa County

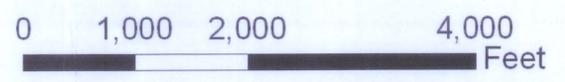


AUG 2006

### Legend

- Loop 303
- SR801
- ADMP Proposed Channel
- Cottonlane Bridge
- Future Roads
- Endangered Species Areas
- Future Channel
- FEMA Flood Zone
- Bird Strike Zone
- State Trust
- Erosion Hazard zone
- Future basin
- Morocco Ruin
- Palo Verde cooling line
- Powerpoles
- Wells
- Culvert
- Utilities
- Canal
- Hazardous Sites
- Structures
- Waterlines
- Sewerlines
- Existing Basins
- Parcels
- Railroad
- Historical Mining Locations
- Roadway Centerlines

UD= Undeveloped  
 ED= Existing Development  
 IC= In Construction  
 PA=Preliminary Plats Approval Process  
 ZP= Zoning Process



PROJECT ENGINEERING CONSULTANTS  
 2310 W. MISSION LANE, STE 4  
 PHOENIX, AZ 85021

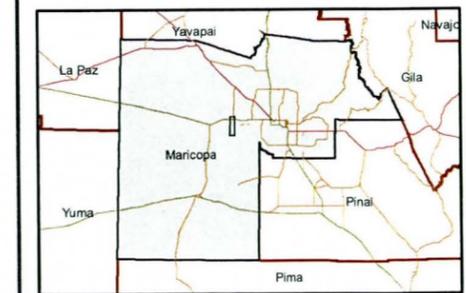
# **Exhibit 3: Future Land Use**

**Exhibit # 3:  
Future Land Use**

**Legend**

- 1 Mile Boundary
- Light Rail Stations
- City Center
- Secondary Trailhead
- Park Locations
- Proposed Light Rail
- Railroad
- Arterial Streets
- 4'-6' - Regional Trail
- Cottonwood Corridor-Trail
- Levee With Existing Trails
- River Levee Alignment
- Goodyear Trails
- Canals
- New Development Boundaries

- Proposed El-Rio River Features**
  - Proposed Bridge Alignment
  - Cobble
  - Intermittent Water Body
  - Mitigation
  - Water Bodies
- 
- Goodyear Landuse**
  - Open Space
  - Community Commercial
  - Regional Commercial
  - City Center
  - Light Industrial
  - General Industrial
  - Luke Compatible Landuse Area
  - Public/Quasi-Public
  - Prison
  - Road
  - Rural Residential (0-2 Du's/Ac)
  - Low Density Residential (2-4 Du's/Ac)
  - Low-Medium Density Residential (4-6 Du's/Ac)
  - Medium Density Residential (6-10 Du's/Ac)
  - Medium-High Density Residential (10-20 Du's/Ac)
  - High Density Residential (20+ Du's/Ac)



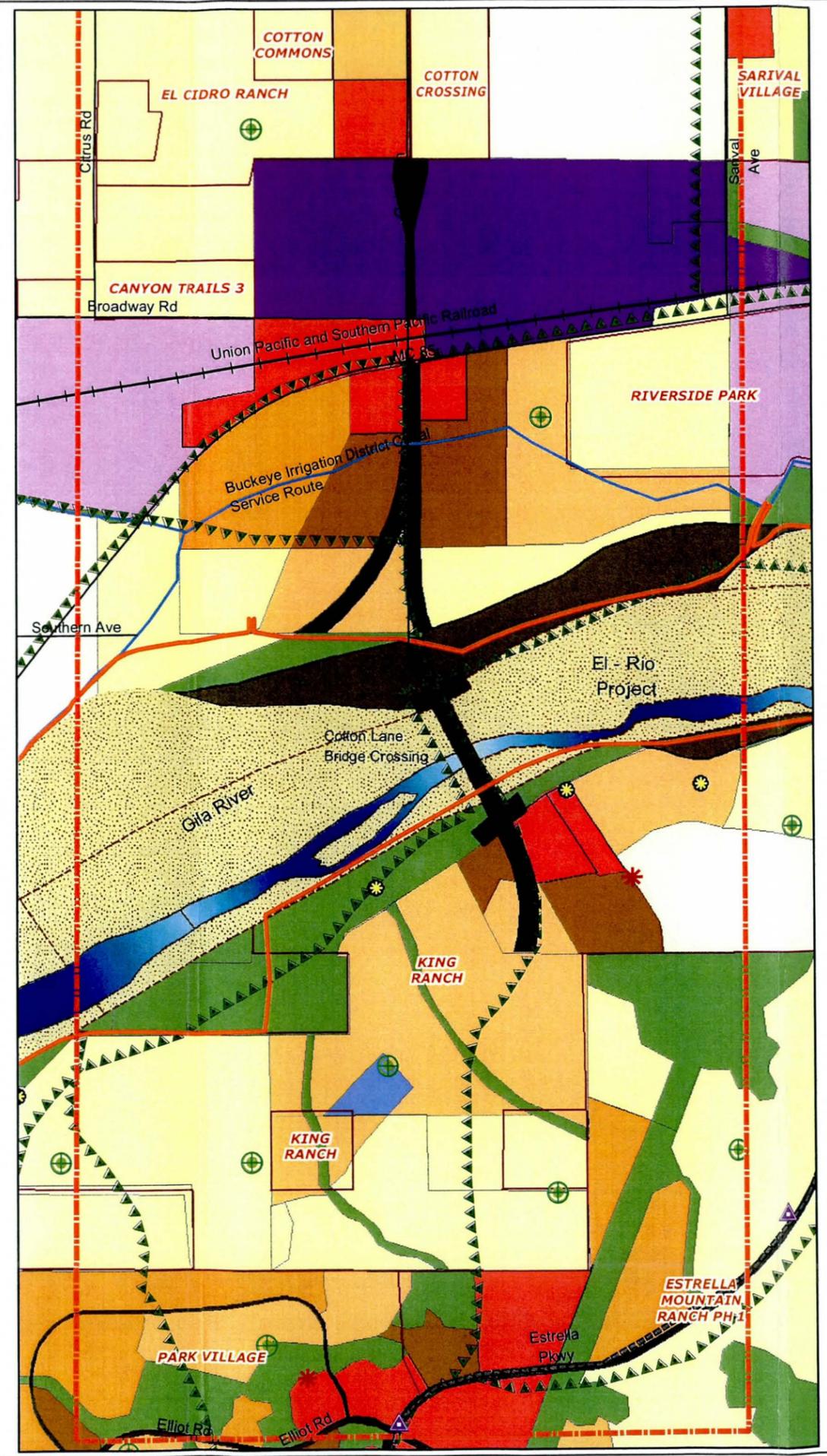
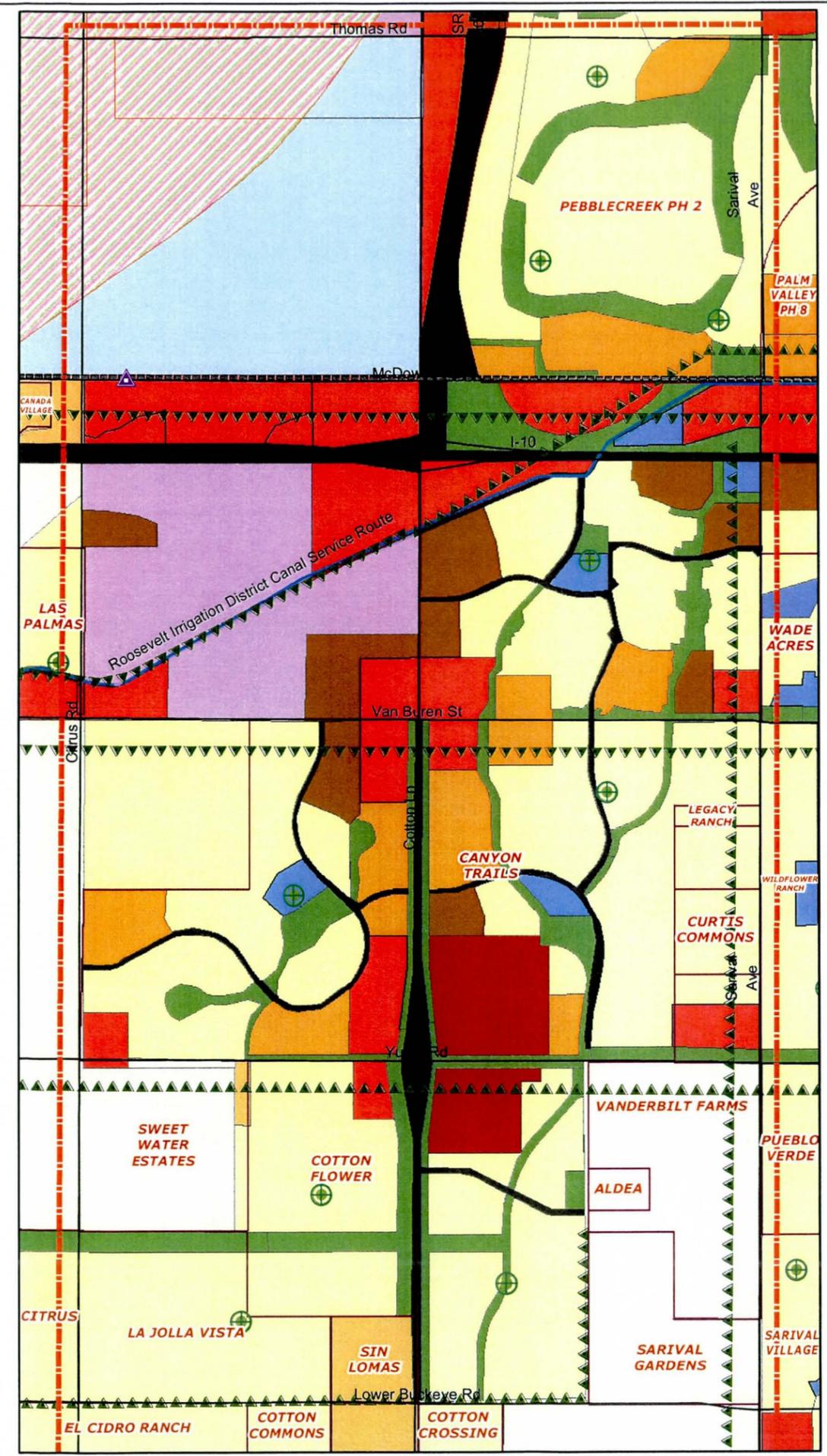
**Loop 303 Candidate  
Assessment Report**

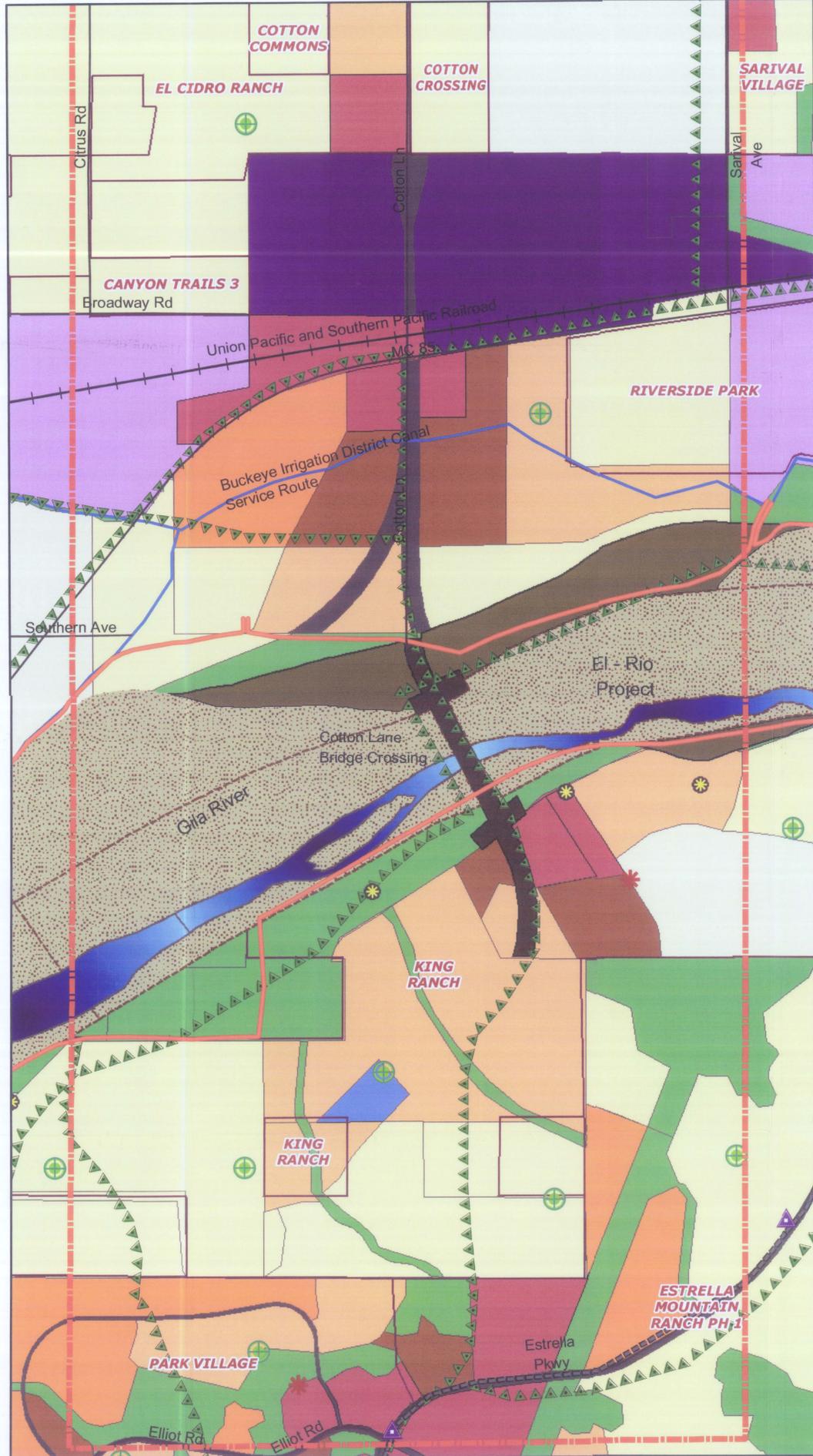
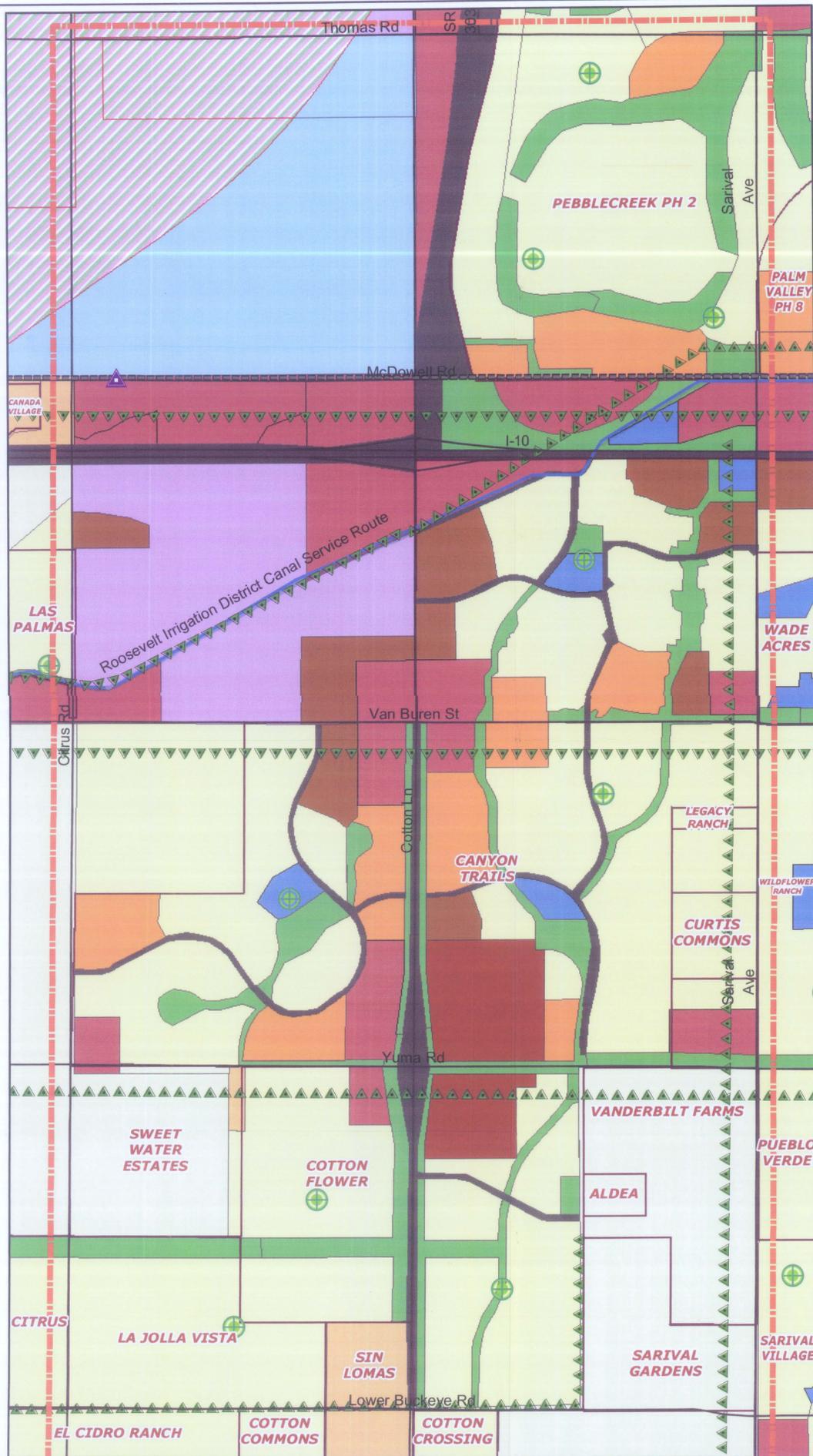
FLOOD CONTROL DISTRICT OF  
MARICOPA COUNTY

Prepared by: **EDAW** | **ALCON**



08-28-2006





**Exhibit # 3:  
Future Land Use**

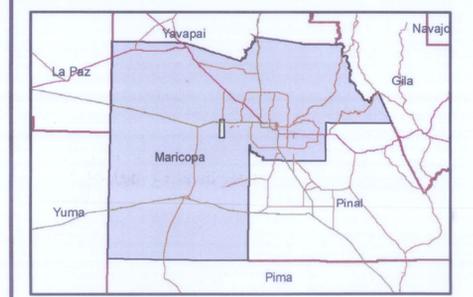
**Legend**

- 1 Mile Boundary
- Light Rail Stations
- City Center
- Secondary Trailhead
- Park Locations
- Proposed Light Rail
- Railroad
- Arterial Streets
- 4'-6' - Regional Trail
- Cottonwood Corridor-Trail
- Levee With Existing Trails
- River Levee Alignment
- Goodyear Trails
- Canals
- New Development Boundaries

**Goodyear Landuse**

- Open Space
- Community Commercial
- Regional Commercial
- City Center
- Light Industrial
- General Industrial
- Luke Compatible Landuse Area
- Public/Quasi-Public
- Prison
- Road
- Rural Residential (0-2 Du's/Ac)
- Low Density Residential (2-4 Du's/Ac)
- Low-Medium Density Residential (4-6 Du's/Ac)
- Medium Density Residential (6-10 Du's/Ac)
- Medium-High Density Residential (10-20 Du's/Ac)
- High Density Residential (20+ Du's/Ac)

- Proposed El-Rio River Features**
- Proposed Bridge Alignment
  - Cobble
  - Intermittent Water Body
  - Mitigation
  - Water Bodies



**Loop 303 Candidate  
Assessment Report**

FLOOD CONTROL DISTRICT OF  
MARICOPA COUNTY

Prepared by: **EDAW** | **AECOM**



08-28-2006

**Exhibit 4A: Existing Scenic Resource  
Compatibility**



**Exhibit # 4A:**  
**Existing Scenic Resource**  
**Compatibility**

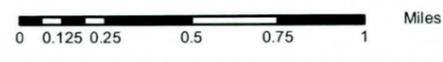
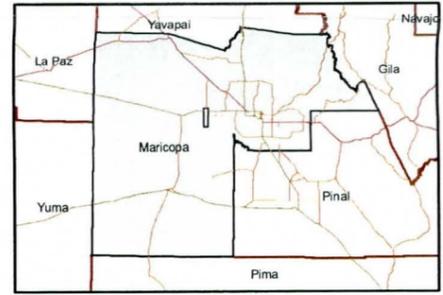
- Legend**
- Compatibility Class 1
  - Compatibility Class 2
  - Compatibility Class 3
  - Compatibility Class 4
  - Compatibility Class 6

Landscape Character Units	Flood Protection Method					
	Non-Structural	Soft Structural	Semi-Soft Structural	Hard Structural w/ Aesthetic Treatment	Semi-Hard Structural	Hard Structural
Sonoran Desert Landscape Character Type Units						
Natural and Pastoral Arroyo	C	C-	C-	IC	IC	IC
Natural and Pastoral Bagada	C	C	C	IC	IC	IC
Natural and Pastoral Foothills	C	C	C	IC	IC	IC
Natural and Pastoral Mountain	C	C	C	IC	IC	IC
Natural and Pastoral River Channel	C	C-	C-	IC	IC	IC
Natural and Pastoral River Terrace	C	C	C	IC	IC	IC
Natural and Pastoral Valley Plain	C	C	C	IC	IC	IC
Natural and Pastoral Valley River & Washes	C	C-	C-	IC	IC	IC
Natural and Pastoral Volcanic Field	C	C	C	IC	IC	IC
Rural Arroyo	C	C	C	IC	IC	IC
Rural Bagada	C	C	C	IC	IC	IC
Rural Foothills	C	C	C	IC	IC	IC
Rural Mountain	C	C	C	IC	IC	IC
Rural River Channel	C	C-	C-	IC	IC	IC
Rural River Terrace	C	C	C	IC	IC	IC
Rural Valley Plain	C	C	C	IC	IC	IC
Rural Valley River & Washes	C	C-	C-	IC	IC	IC
Rural Volcanic Field	C	C	C	IC	IC	IC
Suburban Arroyo	C	C	C	IC	IC	IC
Suburban Bagada	C	C	C	IC	IC	IC
Suburban Foothills	C	C	C	IC	IC	IC
Suburban Mountain	C	C	C	IC	IC	IC
Suburban River Channel	C	C-	C-	IC	IC	IC
Suburban River Terrace	C	C	C	IC	IC	IC
Suburban Valley Plain	C	C	C	IC	IC	IC
Suburban Valley River & Washes	C	C-	C-	IC	IC	IC
Suburban Volcanic Field	C	C	C	IC	IC	IC
Urban Arroyo	C	C-	C-	IC	IC	IC
Urban Bagada	C	C	C	IC	IC	IC
Urban Foothills	C	C	C	IC	IC	IC
Urban Mountain	C	C	C	IC	IC	IC
Urban River Channel	C	C-	C-	IC	IC	IC
Urban River Terrace	C	C	C	IC	IC	IC
Urban Valley Plain	C	C	C	IC	IC	IC
Urban Valley River & Washes	C	C-	C-	IC	IC	IC
Industrial Arroyo	C	C-	C-	IC	IC	IC
Industrial Bagada	C	C	C	IC	IC	IC
Industrial Foothills	C	C	C	IC	IC	IC
Industrial Mountain	C	C	C	IC	IC	IC
Industrial River Channel	C	C-	C-	IC	IC	IC
Industrial River Terrace	C	C	C	IC	IC	IC
Industrial Valley Plain	C	C	C	IC	IC	IC
Industrial Valley River & Washes	C	C-	C-	IC	IC	IC

Compatibility Levels  
 C= Complementary and Compatible  
 IC= Not Complementary or Compatible

\* Also achieves compatibility through the introduction of positive visual variety that enhances the character of the landscape setting.  
 - Not compatible with Flood Retarding Structures.  
 \* Hard structures are incompatible when adjacent to or visible from an adjacent landscape character unit that is incompatible with a Hard structure or when located within an industrial park.

Compatibility Classes	Flood Protection Method					
	Non-Structural	Soft Structural	Semi-Soft Structural	Hard Structural w/ Aesthetic Treatment	Semi-Hard Structural	Hard Structural
Compatibility Class 1						
Compatibility Class 2						
Compatibility Class 3						
Compatibility Class 4						
Compatibility Class 5						
Compatibility Class 6						
Incompatible						



**Loop 303 Candidate**  
**Assessment Report**

FLOOD CONTROL DISTRICT OF  
 MARICOPA COUNTY

Prepared by: **EDAW** | **AFCOM**



08-28-2006



### Exhibit # 4A: Existing Scenic Resource Compatibility

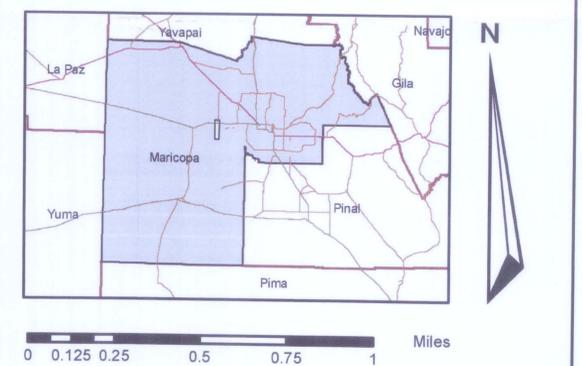
- Legend**
- Compatibility Class 1
  - Compatibility Class 2
  - Compatibility Class 3
  - Compatibility Class 4
  - Compatibility Class 6

Landscape Character Units	Flood Protection Method					
	Non-Structural	Soft Structural	Semi-Soft Structural	Hard Structural w/ Aesthetic Treatment	Semi-Hard Structural	Hard Structural
<b>Sonoran Desert Landscape Character Type Units</b>						
Natural and Pastoral Arroyo	C	C	C	IC	IC	IC
Natural and Pastoral Bajada	C	C	C	IC	IC	IC
Natural and Pastoral Foothills	C	C	C	IC	IC	IC
Natural and Pastoral Mountain	C	C	C	IC	IC	IC
Natural and Pastoral River Channel	C	C	C	IC	IC	IC
Natural and Pastoral River Terrace	C	C	C	IC	IC	IC
Natural and Pastoral Valley Plain	C	C	C	IC	IC	IC
Natural and Pastoral Valley River & Washes	C	C	C	IC	IC	IC
Natural and Pastoral Volcanic Field	C	C	C	IC	IC	IC
Rural Arroyo	C	C	C	IC	IC	IC
Rural Bajada	C	C	C	IC	IC	IC
Rural Foothills	C	C	C	IC	IC	IC
Rural Mountain	C	C	C	IC	IC	IC
Rural River Channel	C	C	C	IC	IC	IC
Rural River Terrace	C	C	C	IC	IC	IC
Rural Valley Plain	C	C	C	IC	IC	IC
Rural Valley River & Washes	C	C	C	IC	IC	IC
Rural Volcanic Field	C	C	C	IC	IC	IC
Suburban Arroyo	C	C	C	IC	IC	IC
Suburban Bajada	C	C	C	IC	IC	IC
Suburban Foothills	C	C	C	IC	IC	IC
Suburban Mountain	C	C	C	IC	IC	IC
Suburban River Channel	C	C	C	IC	IC	IC
Suburban River Terrace	C	C	C	IC	IC	IC
Suburban Valley Plain	C	C	C	IC	IC	IC
Suburban Valley River & Washes	C	C	C	IC	IC	IC
Suburban Volcanic Field	C	C	C	IC	IC	IC
Urban Arroyo	C	C	C	IC	IC	IC
Urban Bajada	C	C	C	IC	IC	IC
Urban Foothills	C	C	C	IC	IC	IC
Urban Mountain	C	C	C	IC	IC	IC
Urban River Channel	C	C	C	IC	IC	IC
Urban River Terrace	C	C	C	IC	IC	IC
Urban Valley Plain	C	C	C	IC	IC	IC
Urban Valley River & Washes	C	C	C	IC	IC	IC
Urban Volcanic Field	C	C	C	IC	IC	IC
Industrial Arroyo	C	C	C	IC	IC	IC
Industrial Bajada	C	C	C	IC	IC	IC
Industrial Foothills	C	C	C	IC	IC	IC
Industrial Mountain	C	C	C	IC	IC	IC
Industrial River Channel	C	C	C	IC	IC	IC
Industrial River Terrace	C	C	C	IC	IC	IC
Industrial Valley Plain	C	C	C	IC	IC	IC
Industrial Valley River & Washes	C	C	C	IC	IC	IC

**Compatibility Levels**  
 C= Complimentary and Compatible  
 IC= Not Complimentary or Compatible

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 \* Not compatible with Flood Retarding Structures.  
 \* Hard structures are incompatible when adjacent to or visible from an adjacent landscape character unit that is incompatible with a Hard structure or when located within an industrial park.

Compatibility Class	Compatibility Classes					
	Non-Structural	Soft	Semi-Soft	Hard w/ Aesthetic Treatment	Semi-Hard	Hard
Compatibility Class 1						
Compatibility Class 2						
Compatibility Class 3						
Compatibility Class 4						
Compatibility Class 5						
Compatibility Class 6						
Incompatible						



## Loop 303 Candidate Assessment Report

**Exhibit 4B: Future Scenic Resource  
Compatibility**



**Exhibit 4B:**  
**Future Scenic Resource**  
**Compatibility**

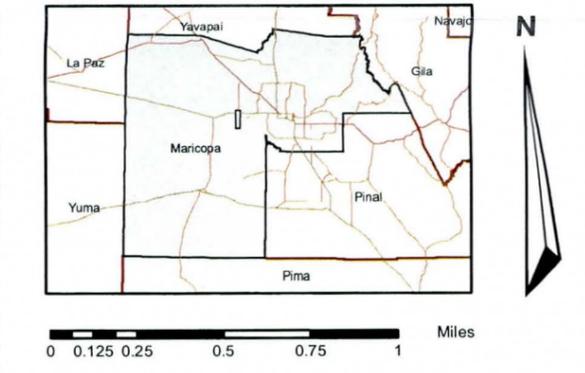
- Legend**
- Compatibility Class 1
  - Compatibility Class 2
  - Compatibility Class 3
  - Compatibility Class 4
  - Compatibility Class 6

Landscape Character Units	Flood Protection Method					
	Non-Structural	Soft Structural	Semi-Soft Structural	Hard Structural w/ Aesthetic Treatment	Semi-Hard Structural	Hard Structural
Sonoran Desert Landscape Character Type Units						
Natural and Pastoral Arroyo	C	C	C	IC	IC	IC
Natural and Pastoral Bajada	C	C	C	IC	IC	IC
Natural and Pastoral Foothills	C	C	C	IC	IC	IC
Natural and Pastoral Mountain	C	C	C	IC	IC	IC
Natural and Pastoral River Channel	C	C	C	IC	IC	IC
Natural and Pastoral River Terrace	C	C	C	IC	IC	IC
Natural and Pastoral Valley Plain	C	C	C	IC	IC	IC
Natural and Pastoral Valley River & Washes	C	C	C	IC	IC	IC
Natural and Pastoral Volcanic Field	C	C	C	IC	IC	IC
Rural Arroyo	C	C	C	IC	IC	IC
Rural Bajada	C	C	C	IC	IC	IC
Rural Foothills	C	C	C	IC	IC	IC
Rural Mountain	C	C	C	IC	IC	IC
Rural River Channel	C	C	C	IC	IC	IC
Rural River Terrace	C	C	C	IC	IC	IC
Rural Valley Plain	C	C	C	IC	IC	IC
Rural Valley River & Washes	C	C	C	IC	IC	IC
Rural Volcanic Field	C	C	C	IC	IC	IC
Suburban Arroyo	C	C	C	IC	IC	IC
Suburban Bajada	C	C	C	IC	IC	IC
Suburban Foothills	C	C	C	IC	IC	IC
Suburban Mountain	C	C	C	IC	IC	IC
Suburban River Channel	C	C	C	IC	IC	IC
Suburban River Terrace	C	C	C	IC	IC	IC
Suburban Valley Plain	C	C	C	IC	IC	IC
Suburban Valley River & Washes	C	C	C	IC	IC	IC
Suburban Volcanic Field	C	C	C	IC	IC	IC
Urban Arroyo	C	C	C	IC	IC	IC
Urban Bajada	C	C	C	IC	IC	IC
Urban Foothills	C	C	C	IC	IC	IC
Urban Mountain	C	C	C	IC	IC	IC
Urban River Channel	C	C	C	IC	IC	IC
Urban River Terrace	C	C	C	IC	IC	IC
Urban Valley Plain	C	C	C	IC	IC	IC
Urban Valley River & Washes	C	C	C	IC	IC	IC
Industrial Arroyo	C	C	C	IC	IC	IC
Industrial Bajada	C	C	C	IC	IC	IC
Industrial Foothills	C	C	C	IC	IC	IC
Industrial Mountain	C	C	C	IC	IC	IC
Industrial River Channel	C	C	C	IC	IC	IC
Industrial River Terrace	C	C	C	IC	IC	IC
Industrial Valley Plain	C	C	C	IC	IC	IC
Industrial Valley River & Washes	C	C	C	IC	IC	IC

Compatibility Levels  
 C= Complementary and Compatible  
 IC= Not Complementary or Compatible

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Compatibility Classes	Compatibility Classes					
	Non-Structural	Soft	Semi-Soft	Hard w/ Aesthetic Treatment	Semi-Hard	Hard
Compatibility Class 1						
Compatibility Class 2						
Compatibility Class 3						
Compatibility Class 4						
Compatibility Class 5						
Compatibility Class 6						



**Loop 303 Candidate**  
**Assessment Report**

**Exhibit 4B:**  
**Future Scenic Resource**  
**Compatibility**

**Legend**

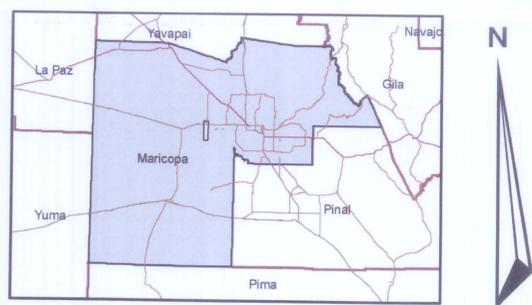
- Compatibility Class 1
- Compatibility Class 2
- Compatibility Class 3
- Compatibility Class 4
- Compatibility Class 6

Landscape Character Units	Flood Protection Method					
	Non-Structural	Soft Structural	Semi-Soft Structural	Hard Structural w/ Aesthetic Treatment	Semi-Hard Structural	Hard Structural
<b>Sonoran Desert Landscape Character Type Units</b>						
Natural and Pastoral Arroyo	C	C-	C-	IC	IC	IC
Natural and Pastoral Bajada	C	C	C	IC	IC	IC
Natural and Pastoral Foothills	C	C	C	IC	IC	IC
Natural and Pastoral Mountain	C	C	C	IC	IC	IC
Natural and Pastoral River Channel	C	C-	C-	IC	IC	IC
Natural and Pastoral River Terrace	C	C	C	IC	IC	IC
Natural and Pastoral Valley Plain	C	C	C	IC	IC	IC
Natural and Pastoral Valley River & Washes	C	C-	C-	IC	IC	IC
Natural and Pastoral Volcanic Field	C	C	C	IC	IC	IC
Rural Arroyo	C	C-	C-	IC	IC	IC
Rural Bajada	C	C	C	IC	IC	IC
Rural Foothills	C	C	C	IC	IC	IC
Rural Mountain	C	C	C	IC	IC	IC
Rural River Channel	C	C-	C-	IC	IC	IC
Rural River Terrace	C	C	C	IC	IC	IC
Rural Valley Plain	C	C	C	IC	IC	IC
Rural Valley River & Washes	C	C-	C-	IC	IC	IC
Rural Volcanic Field	C	C	C	IC	IC	IC
Suburban Arroyo	C	C	C	IC	IC	IC
Suburban Bajada	C	C	C	IC	IC	IC
Suburban Foothills	C	C	C	IC	IC	IC
Suburban Mountain	C	C	C	IC	IC	IC
Suburban River Channel	C	C	C	IC	IC	IC
Suburban River Terrace	C	C	C	IC	IC	IC
Suburban Valley Plain	C	C	C	IC	IC	IC
Suburban Valley River & Washes	C	C	C	IC	IC	IC
Suburban Volcanic Field	C	C	C	IC	IC	IC
Urban Arroyo	C	C	C	IC	IC	IC
Urban Bajada	C	C	C	IC	IC	IC
Urban Foothills	C	C	C	IC	IC	IC
Urban Mountain	C	C	C	IC	IC	IC
Urban River Channel	C	C	C	IC	IC	IC
Urban River Terrace	C	C	C	IC	IC	IC
Urban Valley Plain	C	C	C	IC	IC	IC
Urban Valley River & Washes	C	C	C	IC	IC	IC
Industrial Arroyo	C	C-	C-	IC	IC	IC
Industrial Bajada	C	C	C	C	C	C <sup>a</sup>
Industrial Foothills	C	C	C	C	C	C <sup>a</sup>
Industrial Mountain	C	C	C	C	C	C <sup>a</sup>
Industrial River Channel	C	C	C	IC	IC	IC
Industrial River Terrace	C	C	C	IC	IC	IC
Industrial Valley Plain	C	C	C	C	C	C <sup>a</sup>
Industrial Valley River & Washes	C	C-	C-	IC	IC	IC

Compatibility Levels  
 C= Complimentary and Compatible  
 C- = Not Complimentary or Compatible

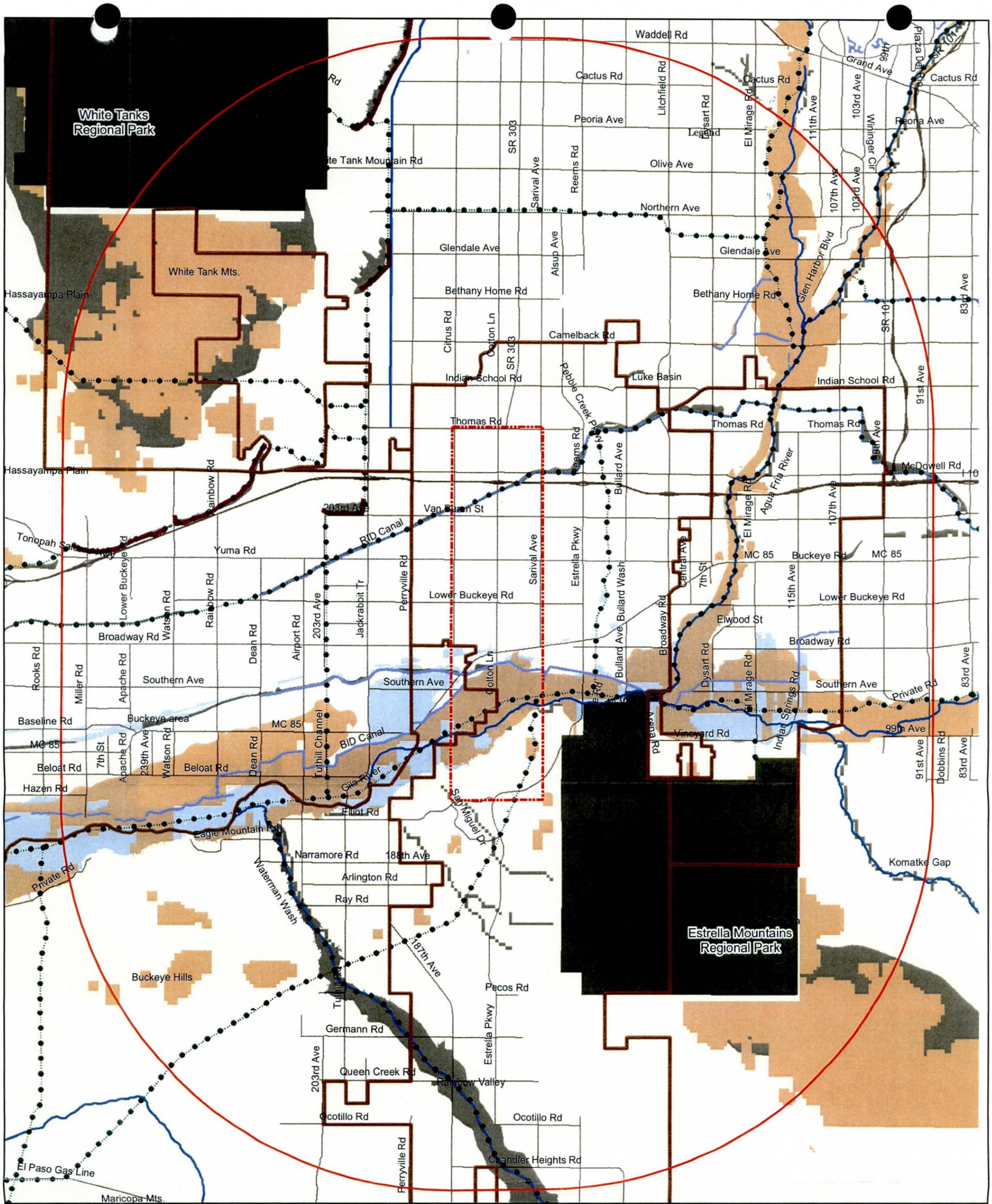
<sup>a</sup> Also achieves compatibility through the introduction of positive visual variety that enhances the character of the landscape setting.  
<sup>b</sup> Not compatible with Flood Retarding Structures.  
<sup>c</sup> Hard structures are incompatible when adjacent to or visible from an adjacent landscape character unit that is incompatible with a hard structure or when located within an industrial park.

Compatibility Classes	Compatibility Classes					
	Non-Structural	Soft	Semi-Soft	Hard w/ Aesthetic Treatment	Semi-Hard	Hard
Compatibility Class 1						
Compatibility Class 2						
Compatibility Class 3						
Compatibility Class 4						
Compatibility Class 5						
Compatibility Class 6						
Incompatible						



**Loop 303 Candidate**  
**Assessment Report**

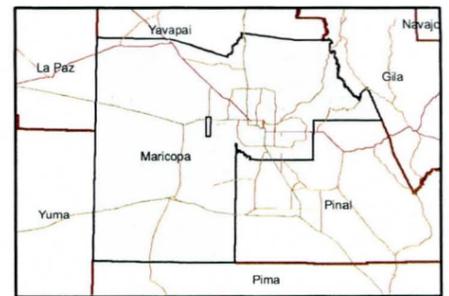
**Exhibit 5: Regional Recreation  
Resources Inventory**



**Exhibit 5:  
Regional Resource Inventory**

**Legend**

- 1Mile Boundary
- 10Mile Boundary
- Goodyear/Avondale Boundary
- Maricopa Regional Park Trails
- FCD Dams
- Maricopa Regional Trail
- Lakes
- Water Drainages
- Canals
- Arterial Streets
- Floodway
- Regional, County Regional Parks
- Regional, County Recreation Areas
- Regional, City Regional Parks
- Regional, City Mountain Preserves
- Regional, County Open Spaces, Retention Areas
- Regional, County Open Spaces, Conservation Areas



0 0.5 1 2 3 4 5 Miles

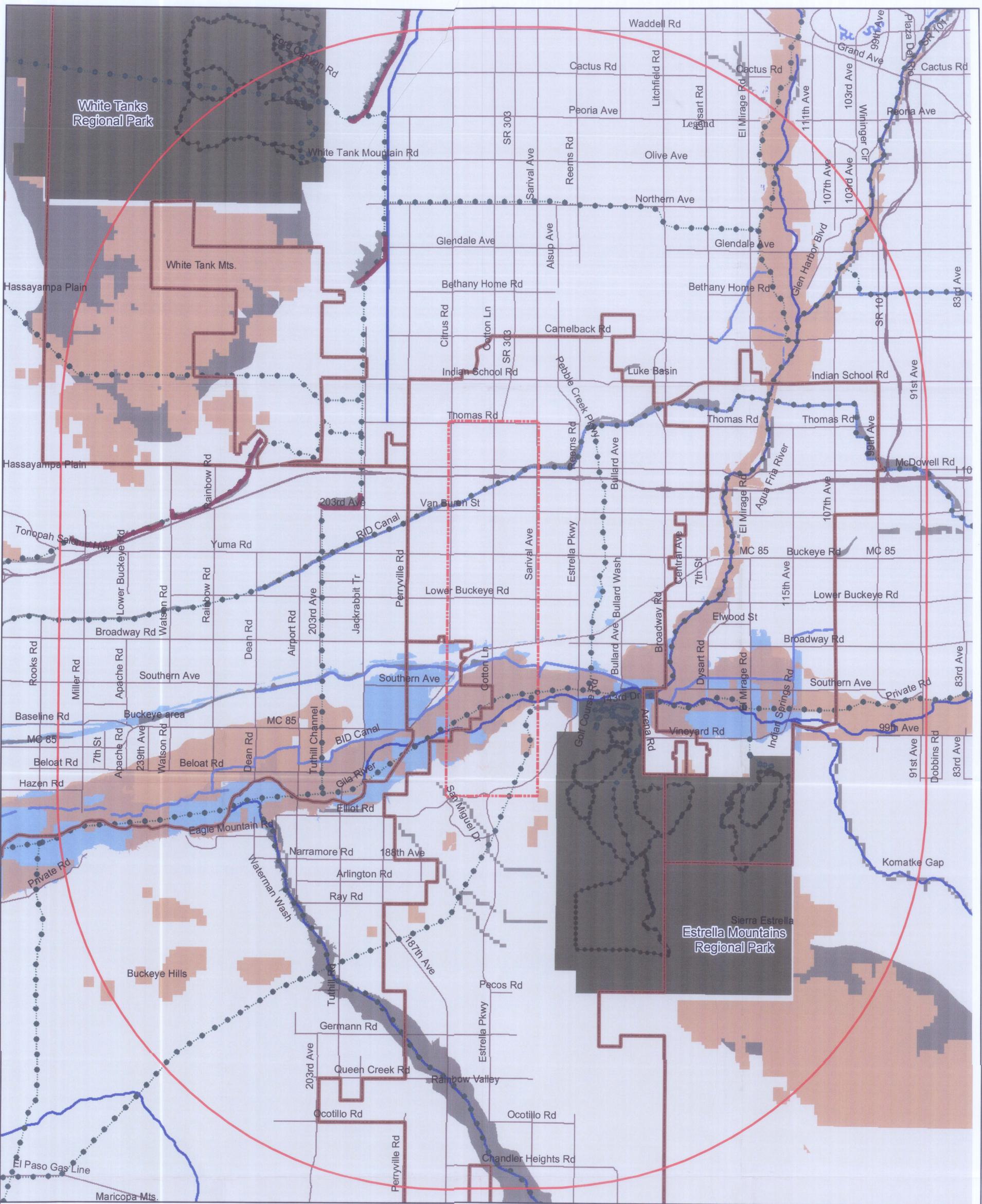
**Loop 303 Candidate  
Assessment Report**

FLOOD CONTROL DISTRICT OF  
MARICOPA COUNTY

Prepared by: **EDAW** AECOM

08-28-2006

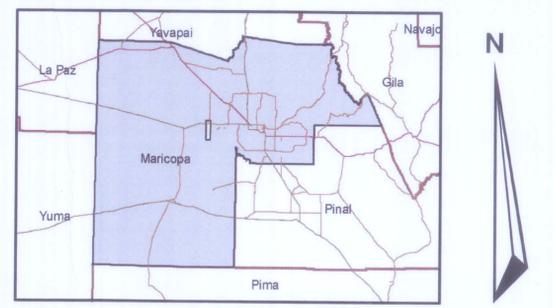




**Exhibit 5:  
Regional Resource Inventory**

**Legend**

- 1Mile Boundary
- 10Mile Boundary
- Goodyear/Avondale Boundary
- Maricopa Regional Park Trails
- FCD Dams
- Maricopa Regional Trail
- Lakes
- Water Drainages
- Canals
- Arterial Streets
- Floodway
- Regional, County Regional Parks
- Regional, County Recreation Areas
- Regional, City Regional Parks
- Regional, City Mountain Preserves
- Regional, County Open Spaces, Retention Areas
- Regional, County Open Spaces, Conservation Areas



**Loop 303 Candidate  
Assessment Report**

FLOOD CONTROL DISTRICT OF  
MARICOPA COUNTY

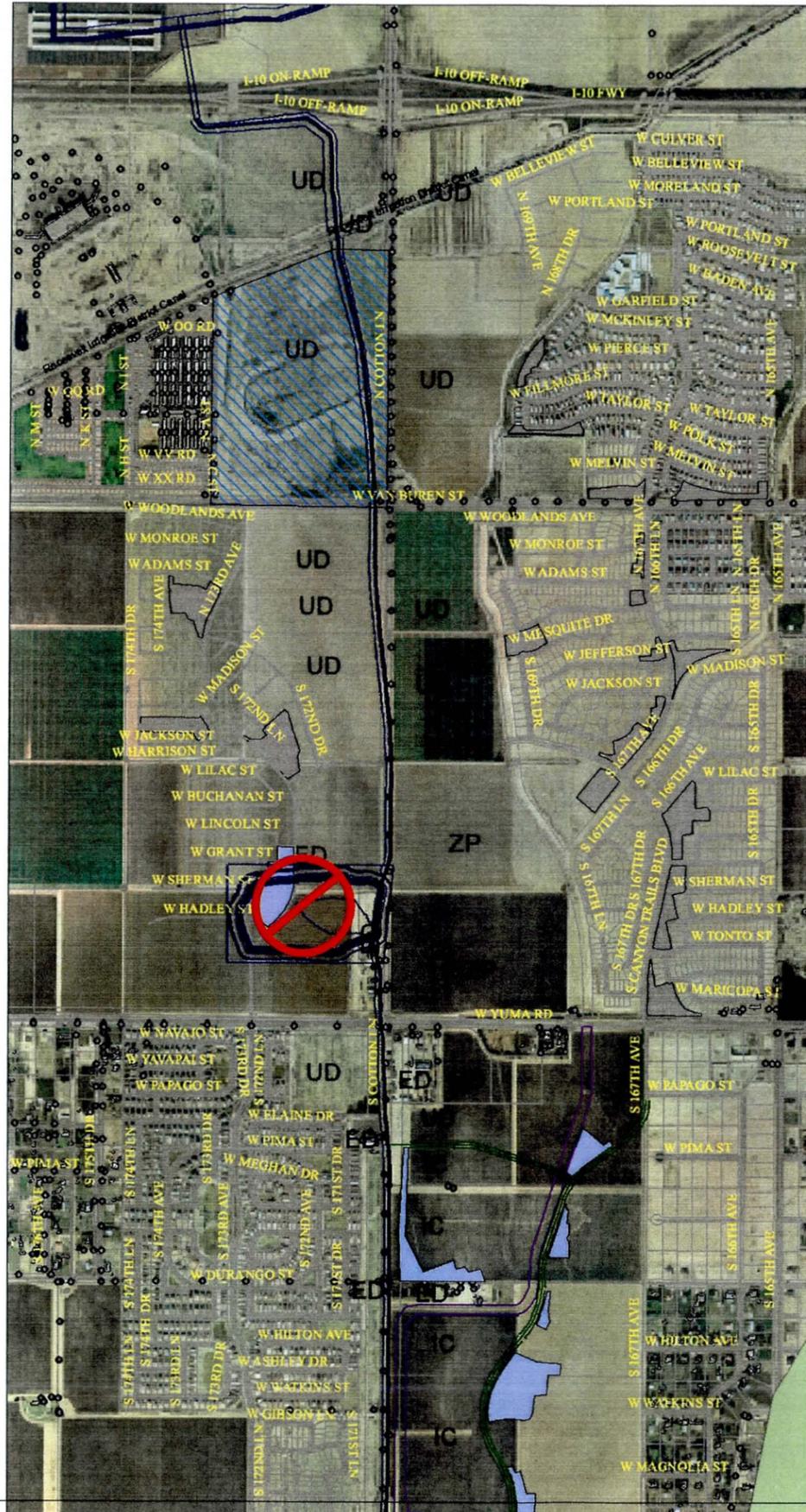
Prepared by: **EDAW** | **AECOM**

08-28-2006



**Exhibit 6: Seed Alternatives  
1 through 10**

Matchline See Left Sheet



Matchline See Right Sheet



Flight Date Nov 2004

# Exhibit 6 - Seed Alternatives Flood Control District of Maricopa County



AUG 2006

### Legend

- Loop 303
- SR801
- ADMP Proposed Channel
- Cottonlane Bridge
- Future Roads
- Endangered Species Areas
- Future Channel
- FEMA Flood Zone
- Bird Strike Zone
- State Trust
- Erosion Hazard zone
- Future basin
- Morocco Ruin
- Palo Verde cooling line
- Powerpoles
- Wells
- Culvert
- Utilities
- Canal
- Hazardous Sites
- Structures
- Waterlines
- Sewerlines
- Existing Basins
- Parcels
- Railroad
- Historical Mining Locations
- Roadway Centerlines

UD= Undeveloped  
 ED= Existing Development  
 IC= In Construction  
 PA= Preliminary Plats Approval Process  
 ZP= Zoning Process



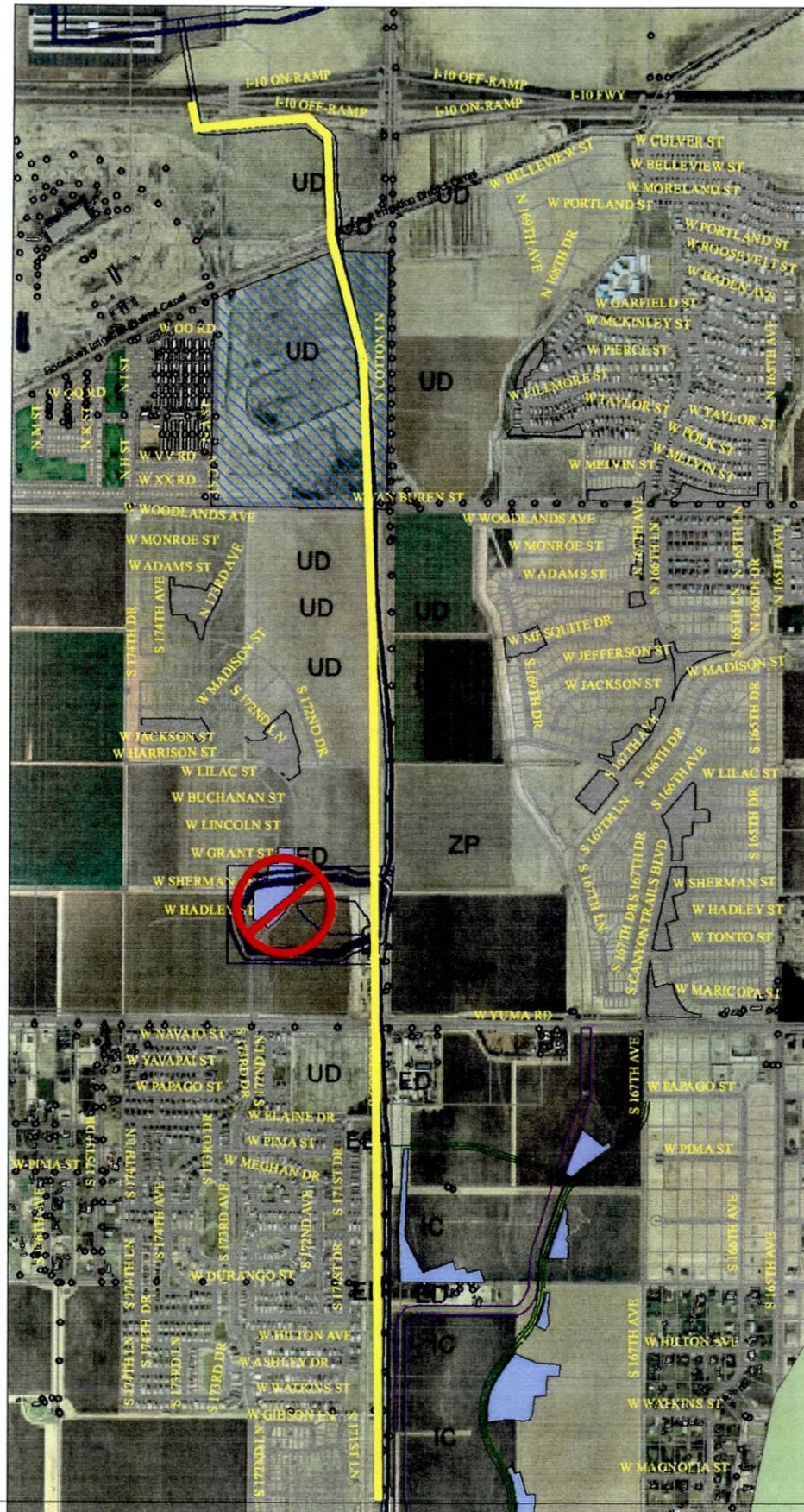
## ALTERNATIVE 1 - "NO ACTION" OR KEEP ADMPU PLAN



PROJECT ENGINEERING CONSULTANTS  
 2310 W. MISSION LANE, STE 4  
 PHOENIX, AZ 85021



Matchline See Left Sheet



Matchline See Right Sheet

Matchline See Left Sheet



Flight Date Nov 2004

# Exhibit 6 - Seed Alternatives

## Flood Control District of Maricopa County



AUG 2006

### Legend

- Loop303
- SR801
- ADMP Proposed Channel
- Cottonlane Bridge
- Future Roads
- Endangered Species Areas
- Future Channel
- FEMA Flood Zone
- Bird Strike Zone
- State Trust
- Erosion Hazard zone
- Future basin
- Morocco Ruin
- Palo Verde cooling line
- Powerpoles
- ▲ Wells
- Culvert
- Utilities
- Canal
- Hazardous Sites
- Structures
- Waterlines
- Sewerlines
- Existing Basins
- Parcels
- Railroad
- Historical Mining Locations
- Roadway Centerlines

- UD= Undeveloped
- ED= Existing Development
- IC= In Construction
- PA=Preliminary Plats Approval Process
- ZP= Zoning Process



### ALTERNATIVE 2 - CONCRETE CHANNEL



PROJECT ENGINEERING CONSULTANTS  
 2310 W. MISSION LANE, STE 4  
 PHOENIX, AZ 85021



# Exhibit 6 - Seed Alternatives Flood Control District of Maricopa County



AUG 2006

## Legend

- Loop303
- SR801
- ADMP Proposed Channel
- Cottonlane Bridge
- Future Roads
- Endangered Species Areas
- Future Channel
- FEMA Flood Zone
- Bird Strike Zone
- State Trust
- Erosion Hazard zone
- Future basin
- Morocco Ruin
- Palo Verde cooling line
- Powerpoles
- Wells
- Culvert
- Utilities
- Canal
- Hazardous Sites
- Structures
- Waterlines
- Sewerlines
- Existing Basins
- Parcels
- Railroad
- Historical Mining Locations
- Roadway Centerlines

UD= Undeveloped  
 ED= Existing Development  
 IC= In Construction  
 PA=Preliminary Plats Approval Process  
 ZP= Zoning Process

0 1,000 2,000 4,000 Feet

## ALTERNATIVE 3 - STATE LAND BASIN



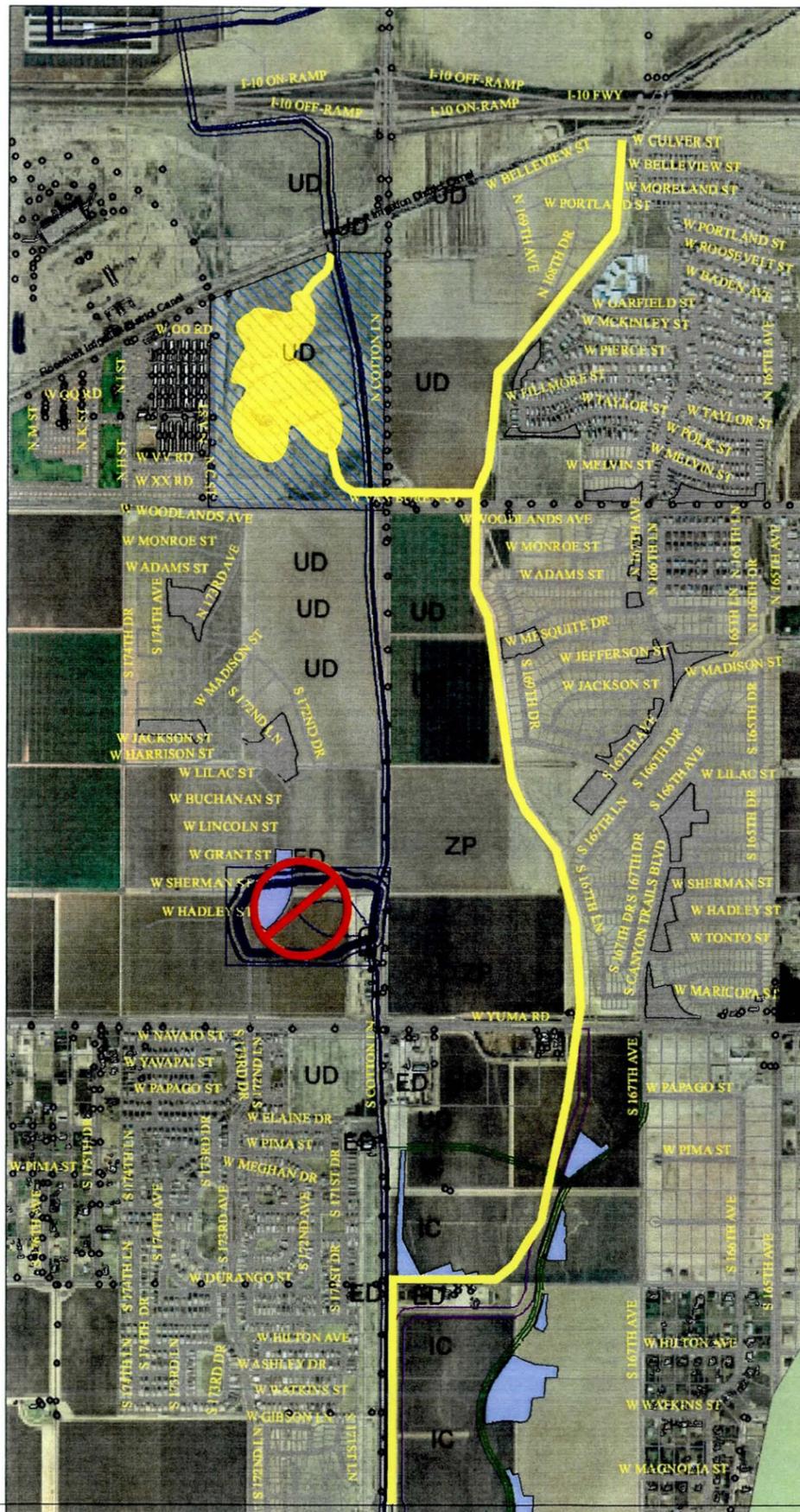
PROJECT ENGINEERING CONSULTANTS  
 2310 W. MISSION LANE, STE 4  
 PHOENIX, AZ 85021

Matchline See Left Sheet

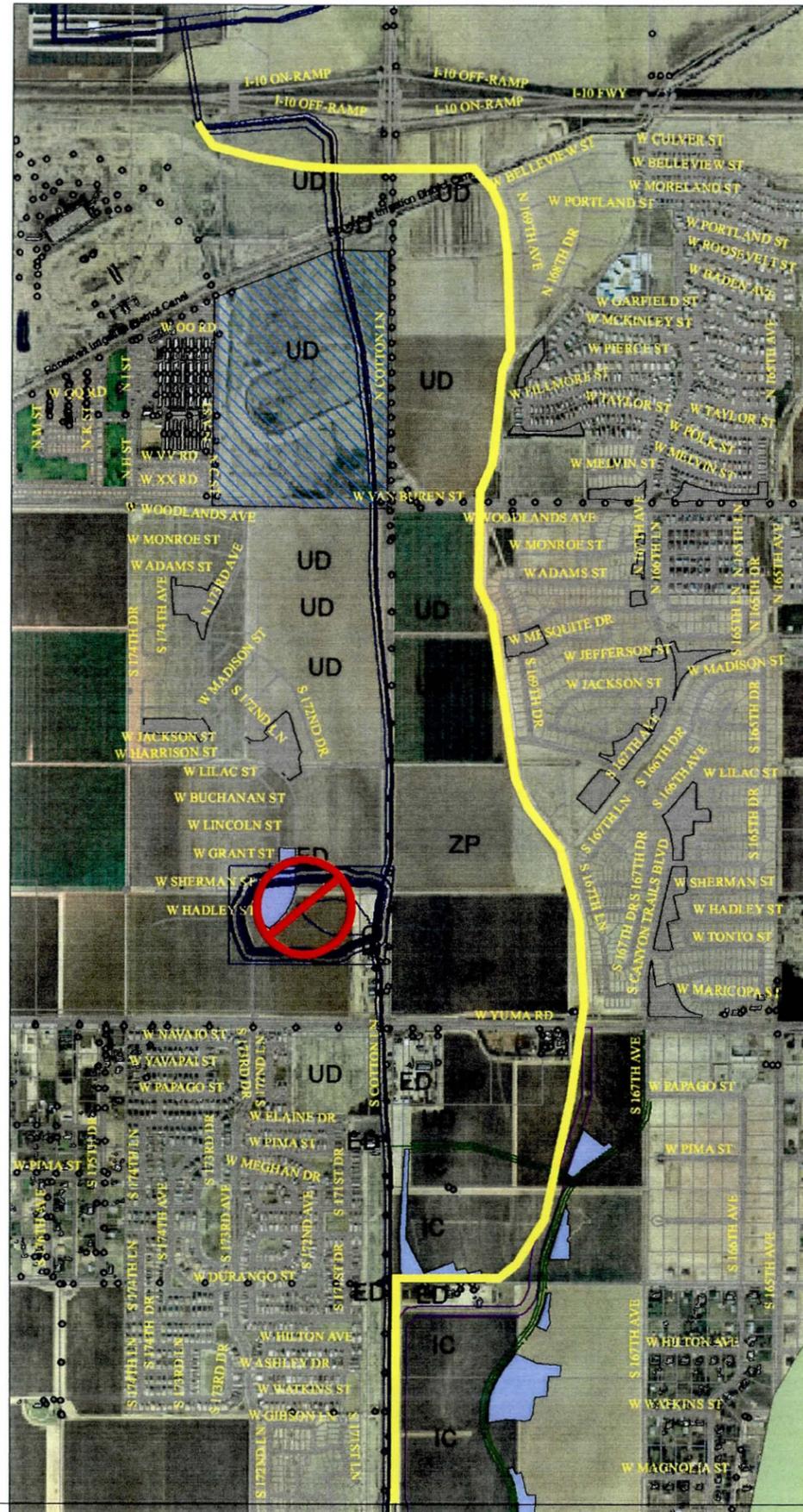


Flight Date Nov 2004

Matchline See Right Sheet



Matchline See Left Sheet



Matchline See Right Sheet



Flight Date Nov 2004

# Exhibit 6 - Seed Alternatives Flood Control District of Maricopa County



AUG 2006

### Legend

- Loop 303
- SR801
- ADMP Proposed Channel
- Cottonlane Bridge
- Future Roads
- Endangered Species Areas
- Future Channel
- FEMA Flood Zone
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- Utilities
- Canal
- Hazardous Sites
- Structures
- Waterlines
- Sewerlines
- Existing Basins
- Parcels
- Railroad
- Historical Mining Locations
- Roadway Centerlines

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IC= In Construction  
PA=Preliminary Plats Approval Process  
ZP= Zoning Process



## ALTERNATIVE 4 - ENLARGED CHANNEL



PROJECT ENGINEERING CONSULTANTS  
2310 W. MISSION LANE, STE 4  
PHOENIX, AZ 85021







# Exhibit 6 - Seed Alternatives Flood Control District of Maricopa County



AUG 2006

### Legend

- Loop 303
- SR801
- ADMP Proposed Channel
- Cottonlane Bridge
- Future Roads
- Endangered Species Areas
- Future Channel
- FEMA Flood Zone
- Bird Strike Zone
- State Trust
- Erosion Hazard zone
- Future basin
- Morocco Ruin
- Palo Verde cooling line
- Powerpoles
- Wells
- Culvert
- Utilities
- Canal
- Hazardous Sites
- Structures
- Waterlines
- Sewerlines
- Existing Basins
- Parcels
- Railroad
- Historical Mining Locations
- Roadway Centerlines

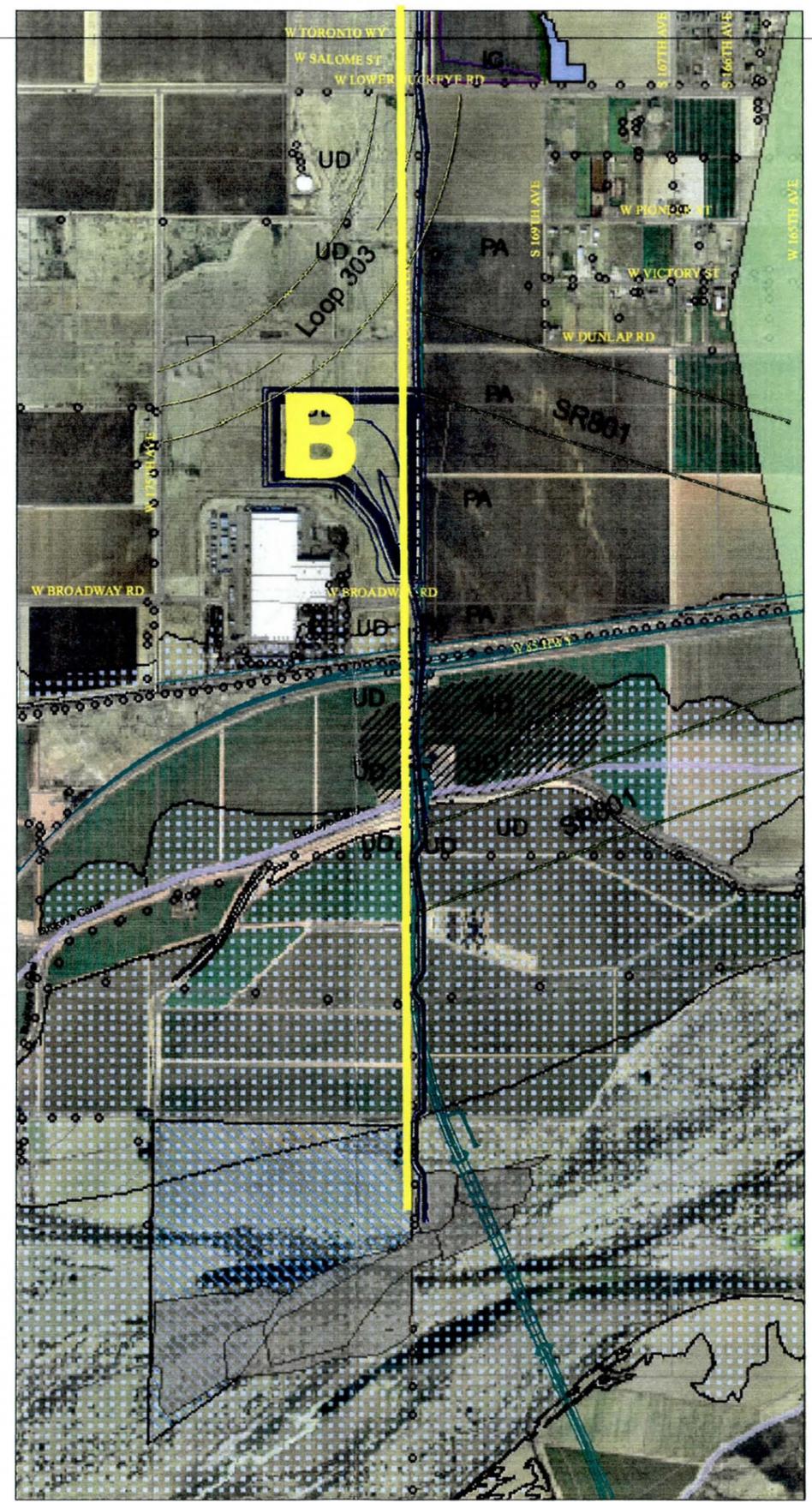
UD= Undeveloped  
 ED= Existing Development  
 IC= In Construction  
 PA= Preliminary Plats Approval Process  
 ZP= Zoning Process



## ALTERNATIVE 7 - MESQUITE DRIVE BASIN EAST

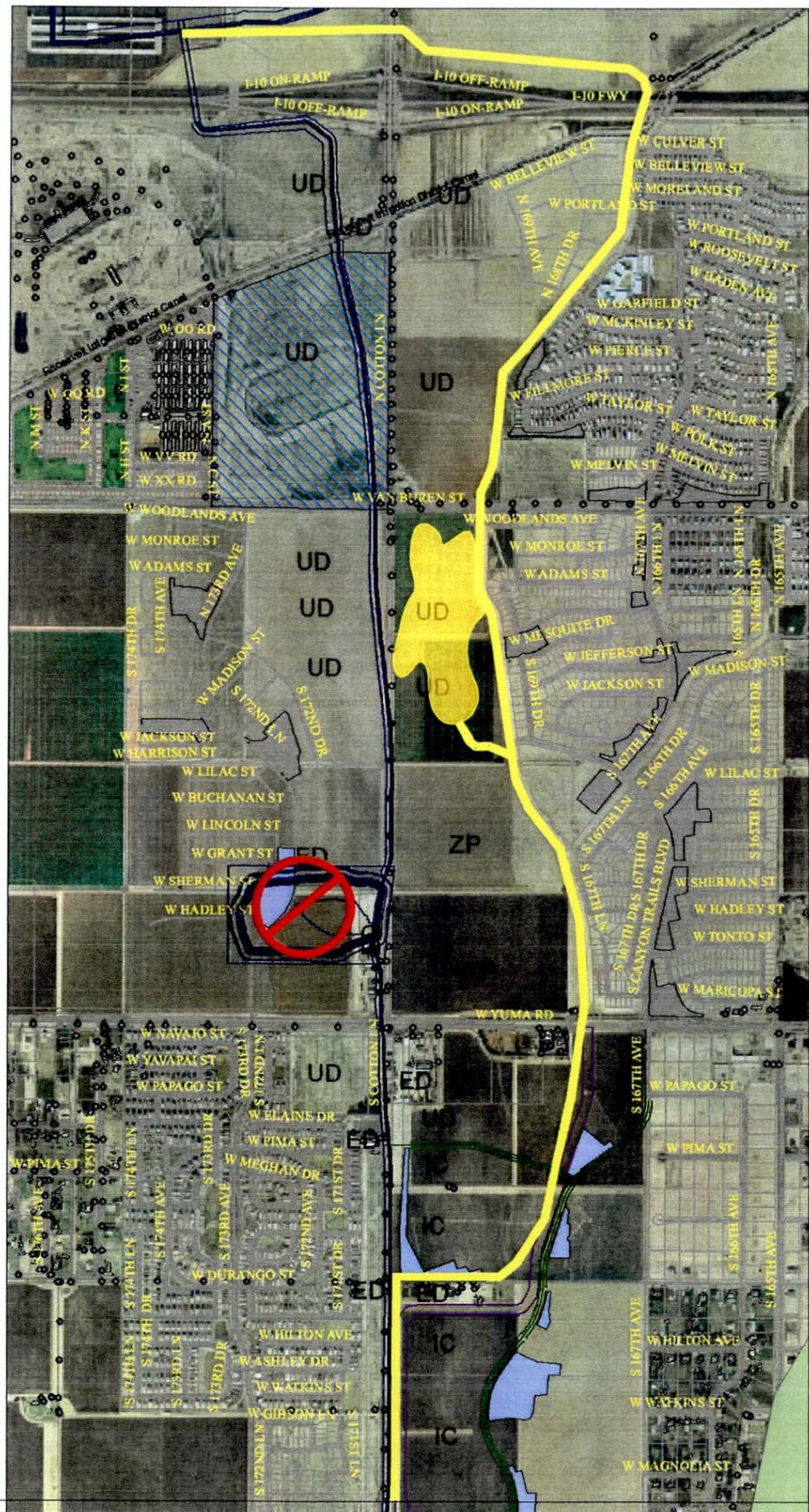
PROJECT ENGINEERING CONSULTANTS  
 2310 W. MISSION LANE, STE 4  
 PHOENIX, AZ 85021

Matchline See Left Sheet



Flight Date Nov 2004

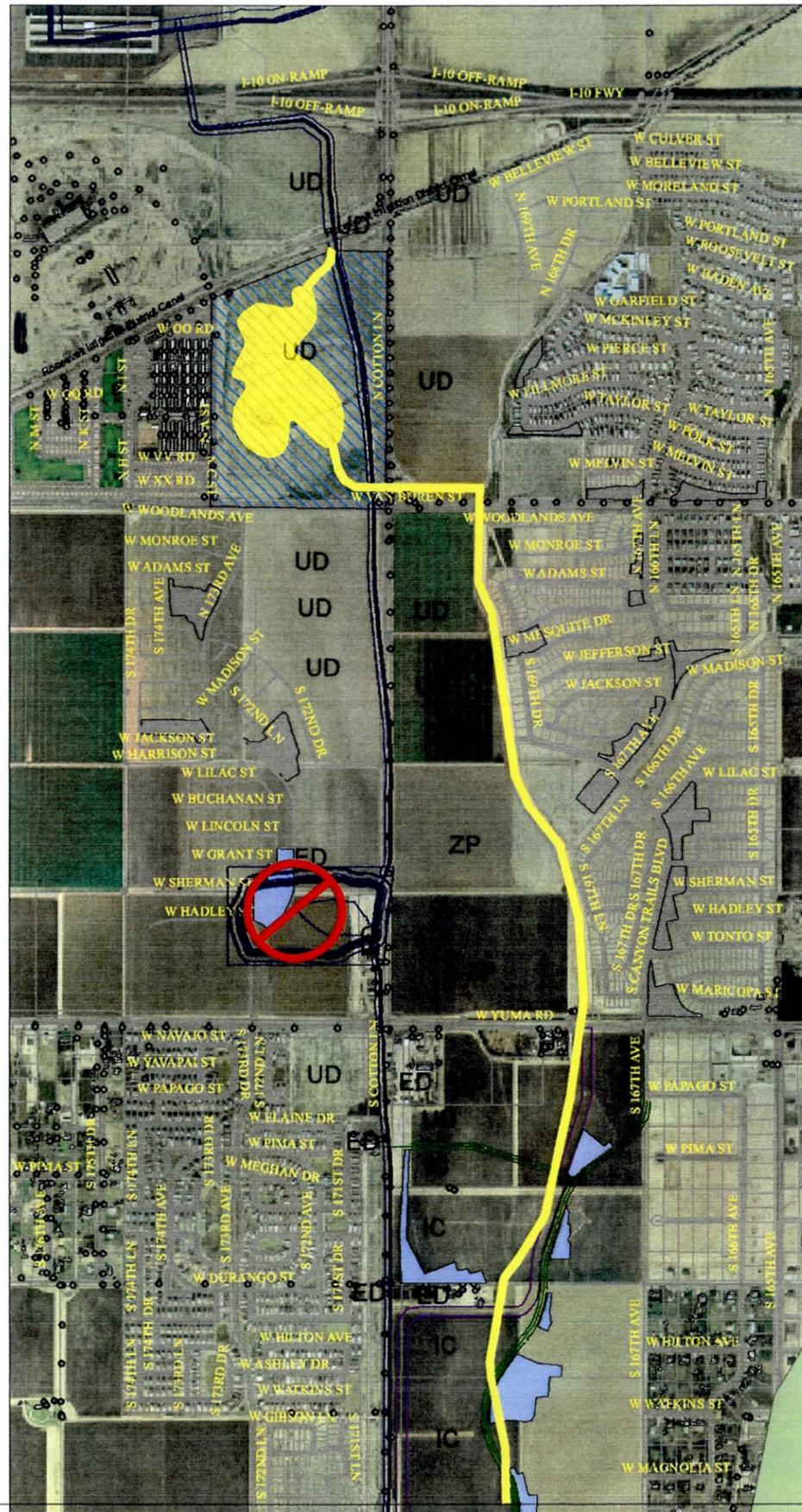
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Matchline See Left Sheet



Matchline See Right Sheet



Flight Date Nov 2004

# Exhibit 6 - Seed Alternatives

## Flood Control District of Maricopa County

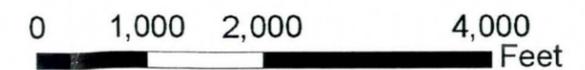


AUG 2006

### Legend

- Loop 303
- SR 801
- ADMP Proposed Channel
- Cottonlane Bridge
- Future Roads
- Endangered Species Areas
- Future Channel
- FEMA Flood Zone
- Bird Strike Zone
- State Trust
- Erosion Hazard zone
- Future basin
- Morocco Ruin
- Palo Verde cooling line
- Powerpoles
- ▲ Wells
- Culvert
- Utilities
- Canal
- Hazardous Sites
- Structures
- Waterlines
- Sewerlines
- Existing Basins
- Parcels
- Railroad
- Historical Mining Locations
- Roadway Centerlines

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 ED= Existing Development  
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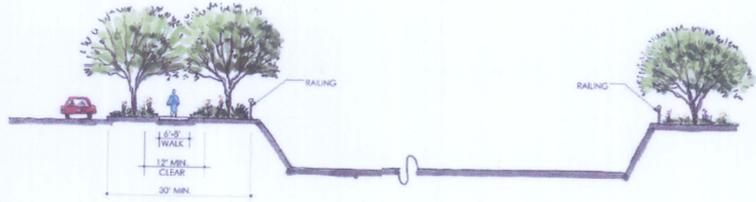
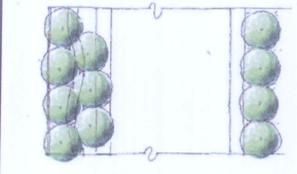
### ALTERNATIVE 10 - OFF ALIGNMENT CHANNEL



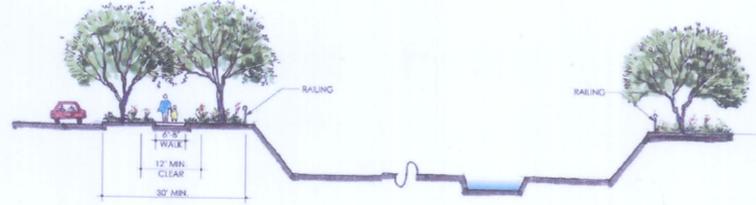
PROJECT ENGINEERING CONSULTANTS  
 2310 W. MISSION LANE, STE 4  
 PHOENIX, AZ 85021



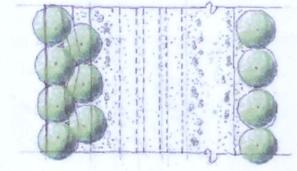
**Exhibit 7:  
Conceptual Channel Treatment  
Methods**



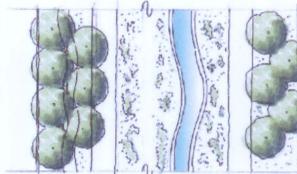
CONCRETE CHANNEL



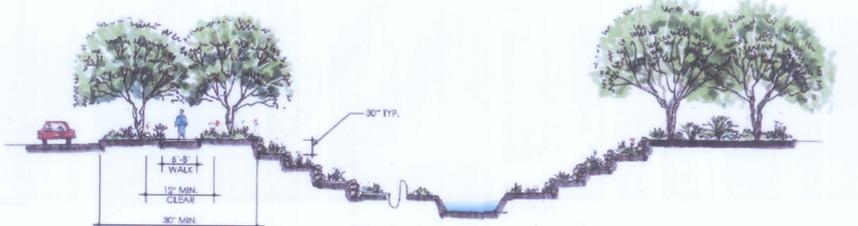
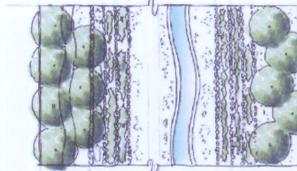
CONCRETE CHANNEL W/ LOW FLOW



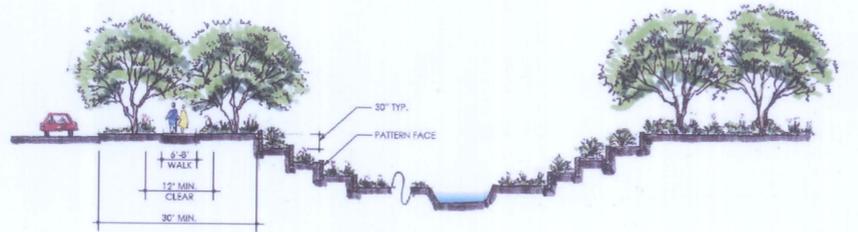
NATURAL BOTTOM



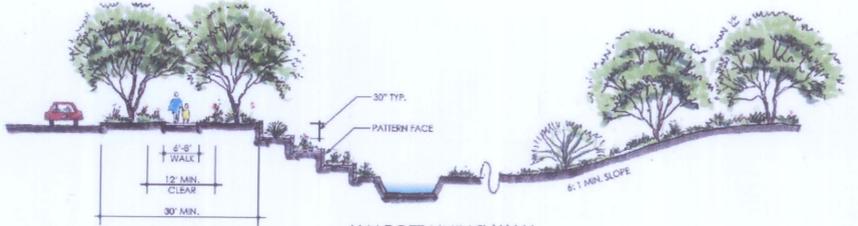
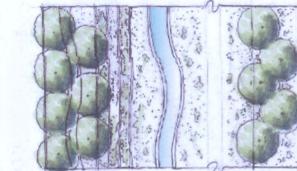
BOULDER RETAINING WALL



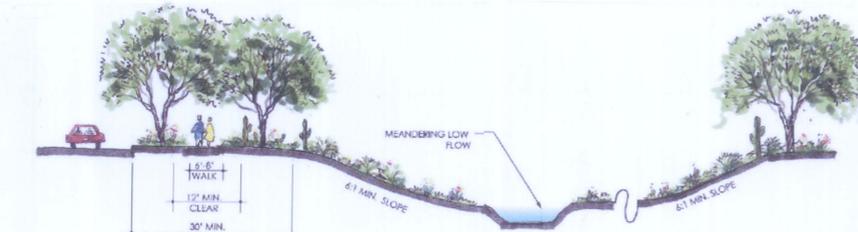
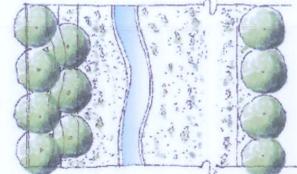
FULL RETAINING WALL



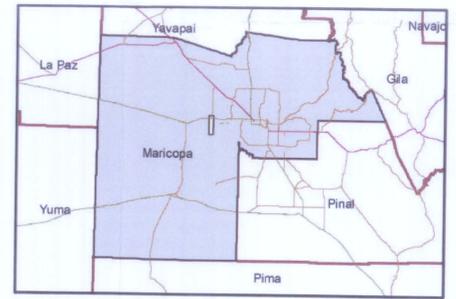
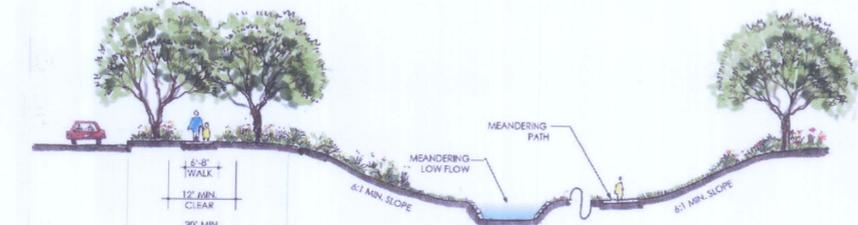
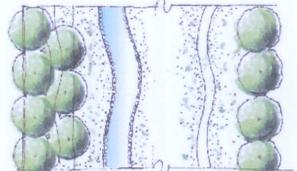
HALF RETAINING WALL



NATURAL CHANNEL



GRASS CHANNEL



**Loop 303 Candidate  
Assessment Report**

FLOOD CONTROL DISTRICT OF  
MARICOPA COUNTY

Prepared by: **EDAW** | **AECOM**

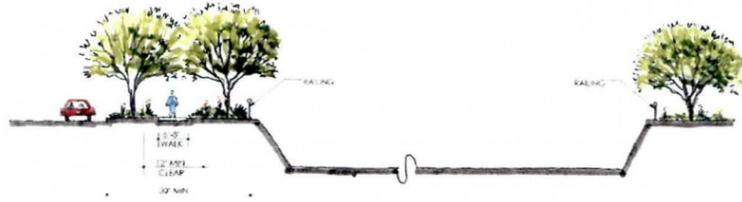
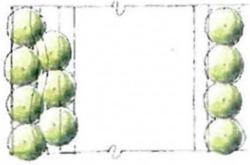


08-28-2006

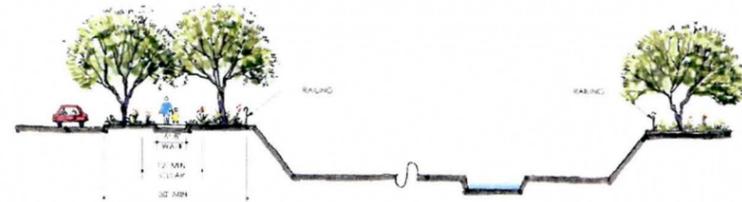
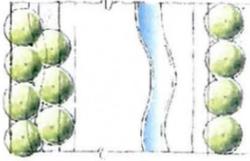
**Exhibit 7: Conceptual Channel  
Treatment Methods**

Exhibit 7:

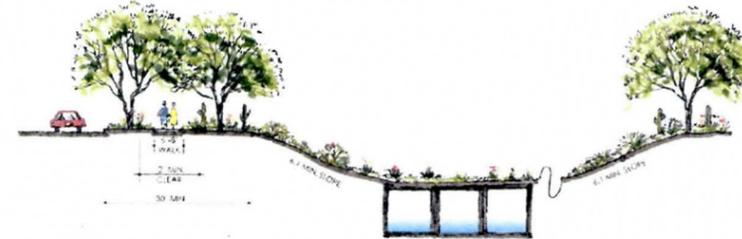
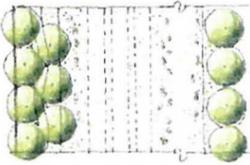
Conceptual Channel Treatment Methods



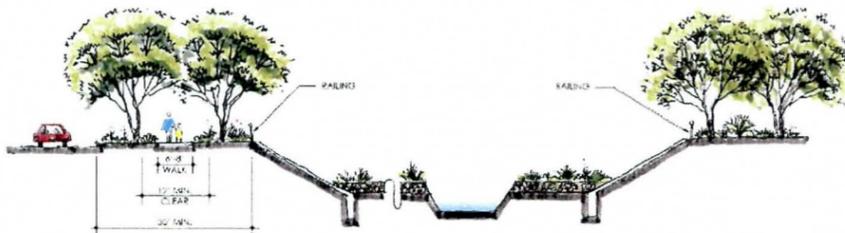
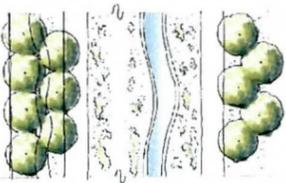
CONCRETE CHANNEL



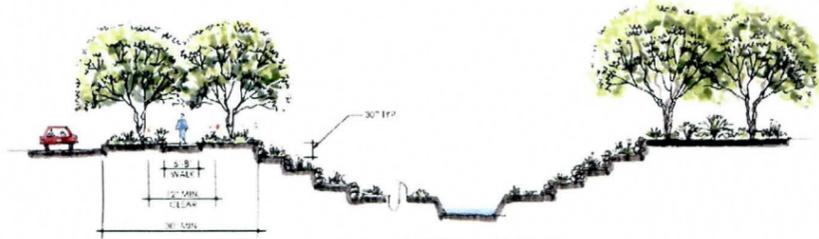
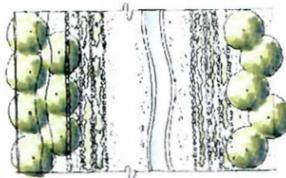
CONCRETE CHANNEL W/ LOW FLOW



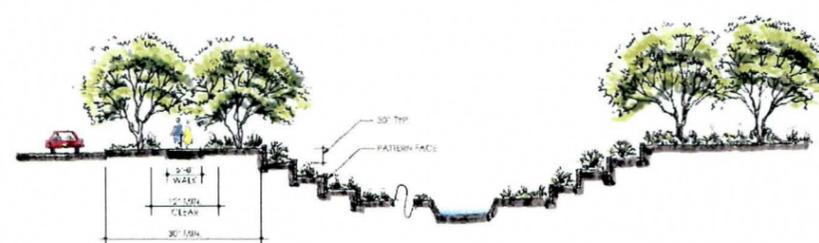
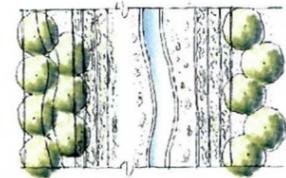
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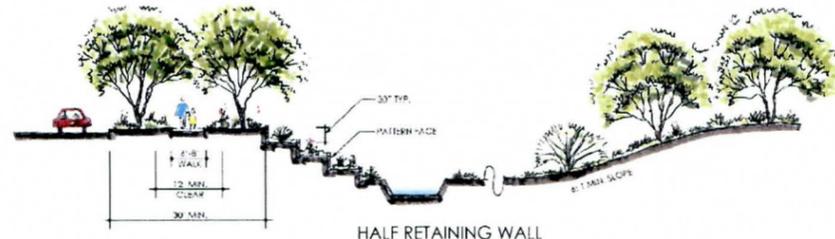
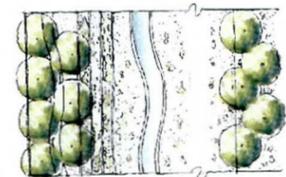
BOULDER RETAINING WALL



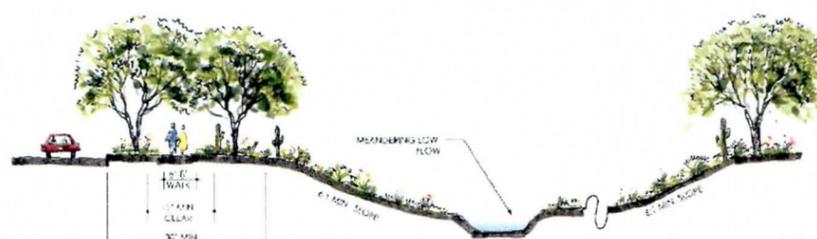
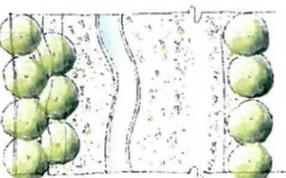
FULL RETAINING WALL



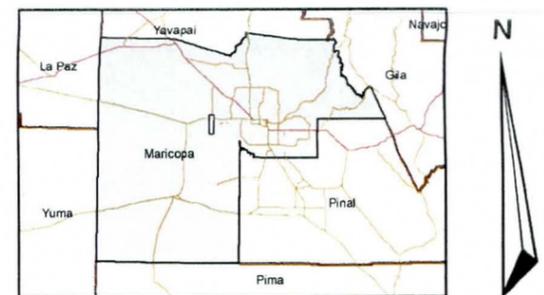
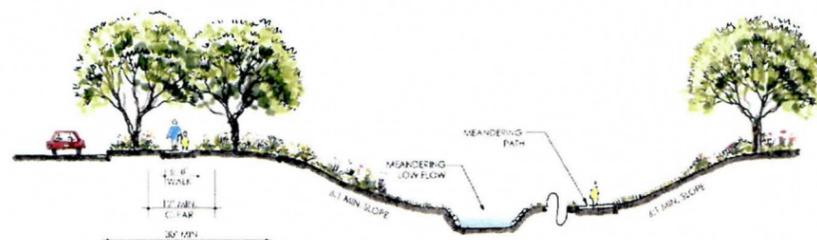
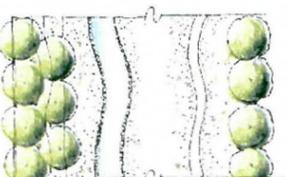
HALF RETAINING WALL



NATURAL CHANNEL



GRASS CHANNEL



Loop 303 Candidate Assessment Report

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Prepared by: EDAW | AECOM



08-28-2006

# **Exhibit 8: Evaluation Matrix**

## Alternatives Selection Matrix

Loop 303 Candidate Assessment Report

8.1.06

Relative Importance (1-3)		1	1	2	2	1	3	2	1	
Scoring values:		1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	
Option	Description	Environmental Impacts	Multi Use Oppurtunities	Aesthetics - Visual Quality & Landscape Context	Partnering Potential	Constructability	R/W Availability	Capital Cost	Operation and Maintenance	Alternative Weighted Average
1	"No Action"									
2	Concrete Channel									
3	State Land Basin									
4	Enlarged Chanel									
5	Enlarged Chanel w/ Basin									
6	Railroad & Mesquite Basin									
7	Mesquite Drive Basin - East									
8	Mesquite Drive Basin - West									
9	Multi-Small Basin									
10	Off Alignment Channel									

Scoring Explanation: 1=Poor Value; 2=Average Value; 3=Excellent Value