



Sun Valley

Area Drainage Master Plan

Planning and Regulatory
Coordination



December 2006



SUN VALLEY AREA DRAINAGE MASTER PLAN

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PLANNING / REGULATORY COORDINATION

1. Introduction

The Sun Valley Area Drainage Master Plan (Sun Valley ADMP), initiated by the Flood Control District of Maricopa County (FCDMC) seeks to further develop flood protection, mitigation strategies and the visual character in the Sun Valley study area. Developers, property owners and jurisdictions may use this study and recommendations to develop implementation plans to alleviate or manage flooding within the study area. The Sun Valley ADMP and water shed area includes portions of unincorporated Maricopa County and the Town of Buckeye and a small portion of the City of Surprise comprising approximately 183 square miles (Figure 1, Project Area and Significant Features).

2. Purpose and Need

The purpose of the Sun Valley ADMP is to analyze and develop alternatives to mitigate the identified flood and erosion hazards within the plan area. A drainage plan will be developed that focuses on the hydrological and geomorphologic characteristics of the area, while taking into consideration proposed developments, existing man made structures, environmentally and visually sensitive sites and generally accommodating public need for the integration of recreational elements with the flood control alternatives proposed.

The Sun Valley ADMP will also direct the enhancement of the visual appearance and character of the natural Sonoran Desert landscape through the protection of the local historical character and the enhancement of those areas that may have been disturbed. Additionally, the Sun Valley ADMP will enhance the public value of the District's facilities by designing them to provide for opportunities for incorporating year round recreation open space multi-uses. The multi-use assessment helps to identify trails and open space linkages planned in the region, and supports overall recreational and multi-use connectivity. Through the identification of the visual resources and planned recreational opportunities at the onset of the project, the integration of these aspects into the final alternative of the development will lead to greater viability of the project area.



SUN VALLEY AREA DRAINAGE MASTER PLAN

3. Overview

The Planning and Regulatory Coordination Report investigates existing federal, state and local codes and ordinances that guide the development within the Sun Valley ADMP study area. Planning and regulatory components that influence the mode of development include adopted master plans, specific area plans, local and state laws and federal regulations.

Included in this report is an inventory of the existing and proposed new developments within the Sun Valley ADMP project area. It also includes information and recommendations from relevant regional planning studies conducted for the area including: The Town of Buckeye General Plan and Building Codes, Buckeye Recreational Master Plan, City of Surprise General Plan, Maricopa Regional Trail System Plan, Tonopah Arlington Area Plan, Southwest Area Transportation Plan and MAG Regional Transportation Plan.

The inventory of existing and proposed developments within the project area permits the identification of the cumulative impacts of planned uses in terms of expected building density, extent of coverage, projected population increase and proposed alterations and modifications to the existing landscape. A brief description of current policy thinking and planning tools that aid in mutual development agreements and uphold an optimal process of development is also included.

3.1 Project Area

The Sun Valley ADMP is located in western Maricopa County and is the northern portion of the Buckeye/Sun Valley Area Drainage Master Study (Buckeye/Sun Valley ADMS). The Sun Valley ADMP encompasses approximately 183 square miles, which includes the Town of Buckeye, a minor portion of the City of Surprise and unincorporated portions of Maricopa County. The watershed is generally bounded by Gates Road on the north, the White Tank Mountains on the east, I-10 on the south, and the Hassayampa River on the west.

The planning area comprises Areas 3 and 4 defined in the Buckeye/Sun Valley ADMS of the Sun Valley watershed north of I-10 and west of the White Tank Mountains. Area 3 is approximately 110 square miles, and includes the southern portion of the watershed tributary to the Buckeye FRS. Area 4 includes the north Sun Valley area and covers approximately 91 square miles. Other than Sun Valley Parkway and the Central Arizona Project (CAP) Canal, this area is predominantly natural desert.



SUN VALLEY AREA DRAINAGE MASTER PLAN

3.2 *Planning Issues*

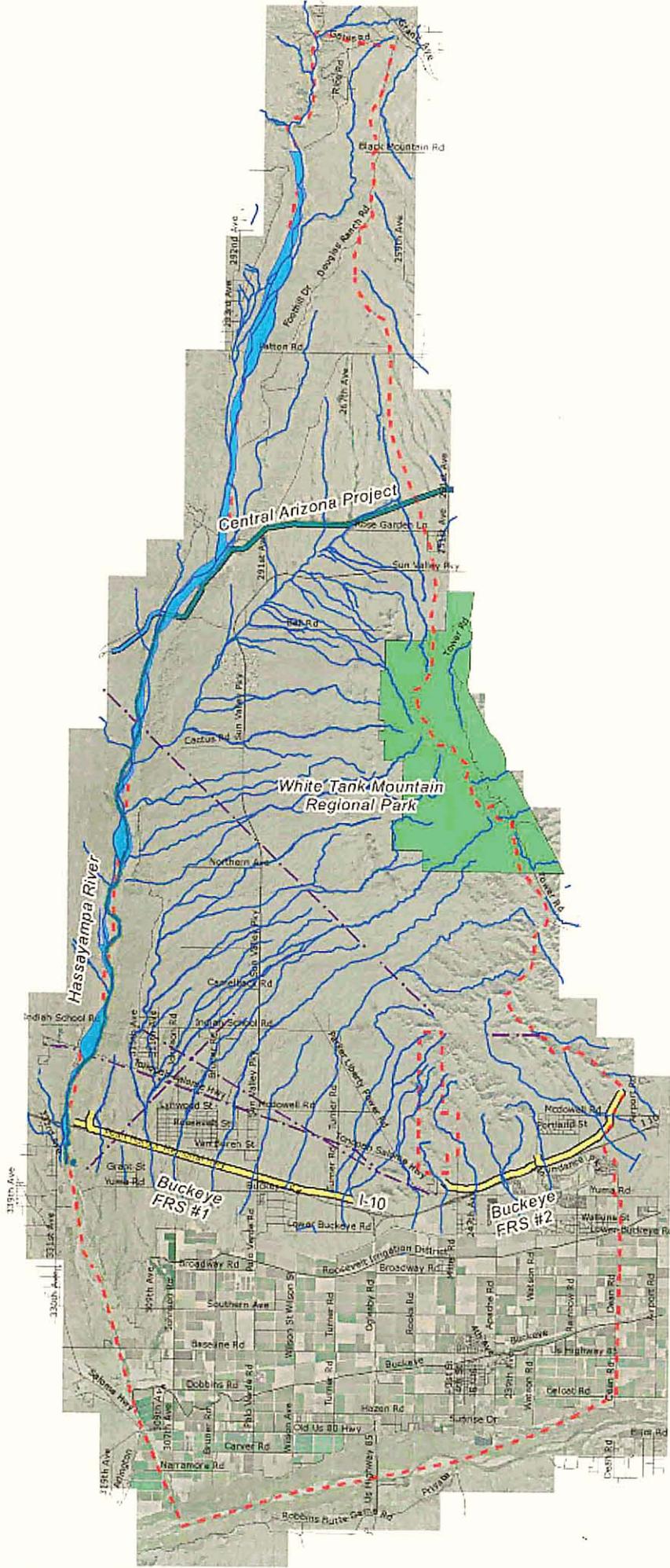
Significant natural features within the planning area include the White Tank Mountains to the east, the Hassayampa River to the west. In addition, several significant washes include Wagner Wash and White Tank Wash. There are also a couple of man-made features within the project which include the CAP Canal, Sun Valley Parkway, Flood Retarding Structures 1 and 2, several major power line corridors and I-10 (Figure 1). Identifying the undeveloped Hassayampa River corridor as a significant amenity, developers have proposed several new communities that will capitalize on the river environment, the vast network of natural drainage washes, the scenic vistas of the White Tank and the Belmont and Vulture Mountains. By developing along the river, new planned communities have the opportunity to create a major network of linear natural open space that is continuous through adjacent developments and link to regional open space amenities such as the White Tank Mountain Regional Park, the Hassayampa River and the Gila River.

Situated between the White Tank Mountains and the Hassayampa River, the project area is also the subject of a vast and complex drainage network of washes and alluvial fans. Currently, a majority of the master planned communities being developed within the project area overlap several major alluvial fans and drainage washes.

Ecological processes such as infiltration and surface run off are impacted by the increased occurrence of impermeable surfaces such as concrete paving, roof surfaces and parking lots. The grading associated with building pads and road alignments results in the alteration or blockage of most minor and some major washes that convey flows to the river. In addition, the removal of vegetation and scrub results in an overall loss of friction that previously contributed to slower run off times and balanced sediment yields to the river. Generally, changes in drainage dynamics could result in the migration of alluvial fans and their corresponding apices resulting in unpredictable direction of flows and flow quantities possibly leading to unstable active areas. This could also result in the degradation of channel banks, increased sediment loads, lateral migration of flows, channel down cutting and increased flood events.

**Figure No. 1
PROJECT AREA &
SIGNIFICANT FEATURES
LEGEND**

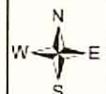
-  Sun Valley ADMP
-  CAP Canal
-  Streets
-  Power Lines
-  FCD Structures
-  River/Washes/Canals
-  White Tank Mountain Park
-  Rivers



 **FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY**

**SUN VALLEY
AREA DRAINAGE MASTER PLAN
PROJECT AREA &
SIGNIFICANT FEATURES**

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JULY 2005

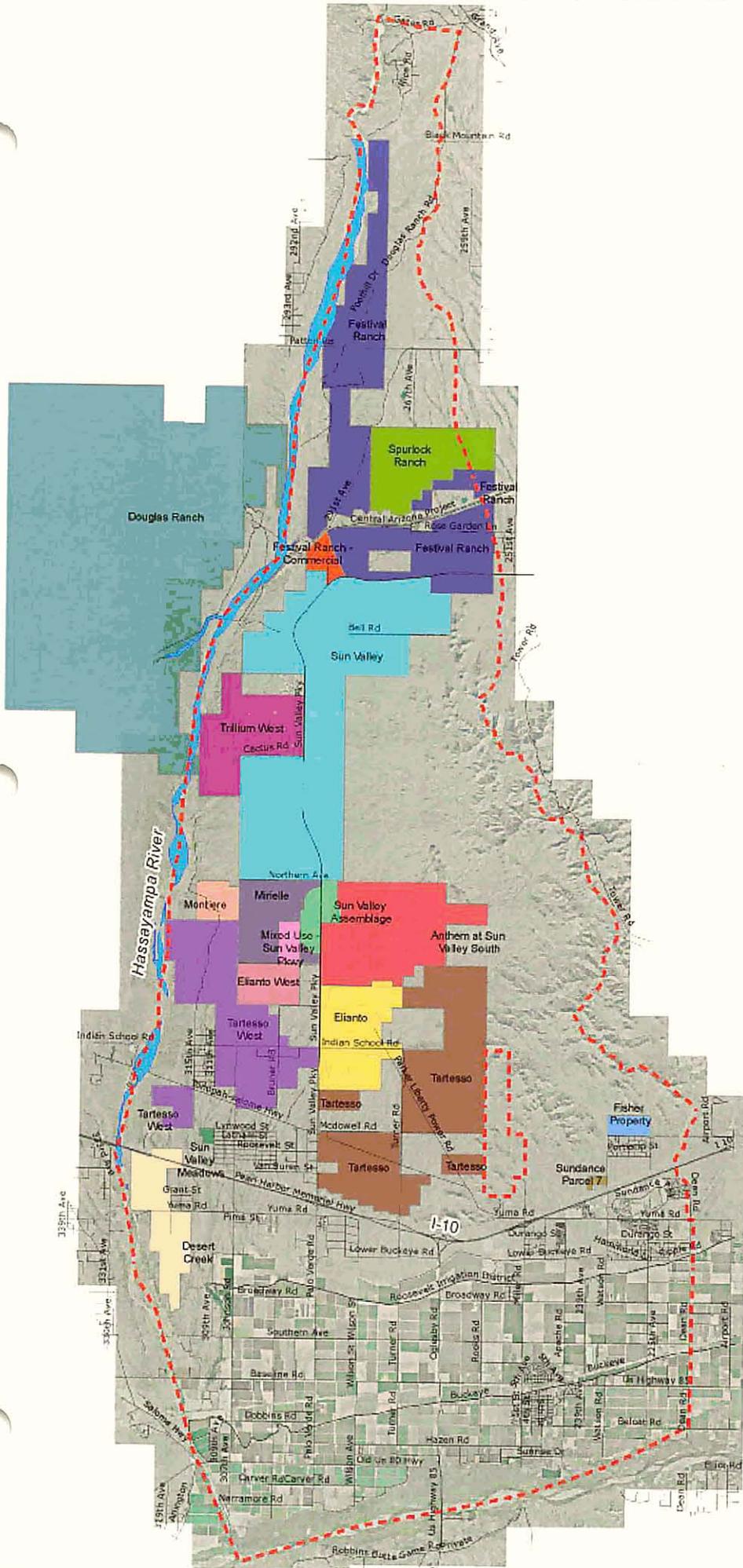


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**Figure No. 2
NEW DEVELOPMENTS
LOCATION**

LEGEND

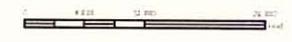
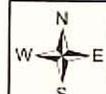
-  Sun Valley ADMP
-  Streets
-  Rivers
-  Anthem at Sun Valley South
-  Desert Creek
-  Douglas Ranch
-  Elianto
-  Elianto West
-  Festival Ranch
-  Festival Ranch - Commercial
-  Fisher Property
-  Mirielle
-  Mixed Use - Sun Valley Pkwy
-  Montiere
-  Spurlock Ranch
-  Sun Valley
-  Sun Valley Assemblage (SVA)
-  Sun Valley Meadows
-  Sundance Parcel 7
-  Tartesso
-  Tartesso West
-  Trillium West



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**SUN VALLEY
AREA DRAINAGE MASTER PLAN
NEW DEVELOPMENTS
LOCATION**

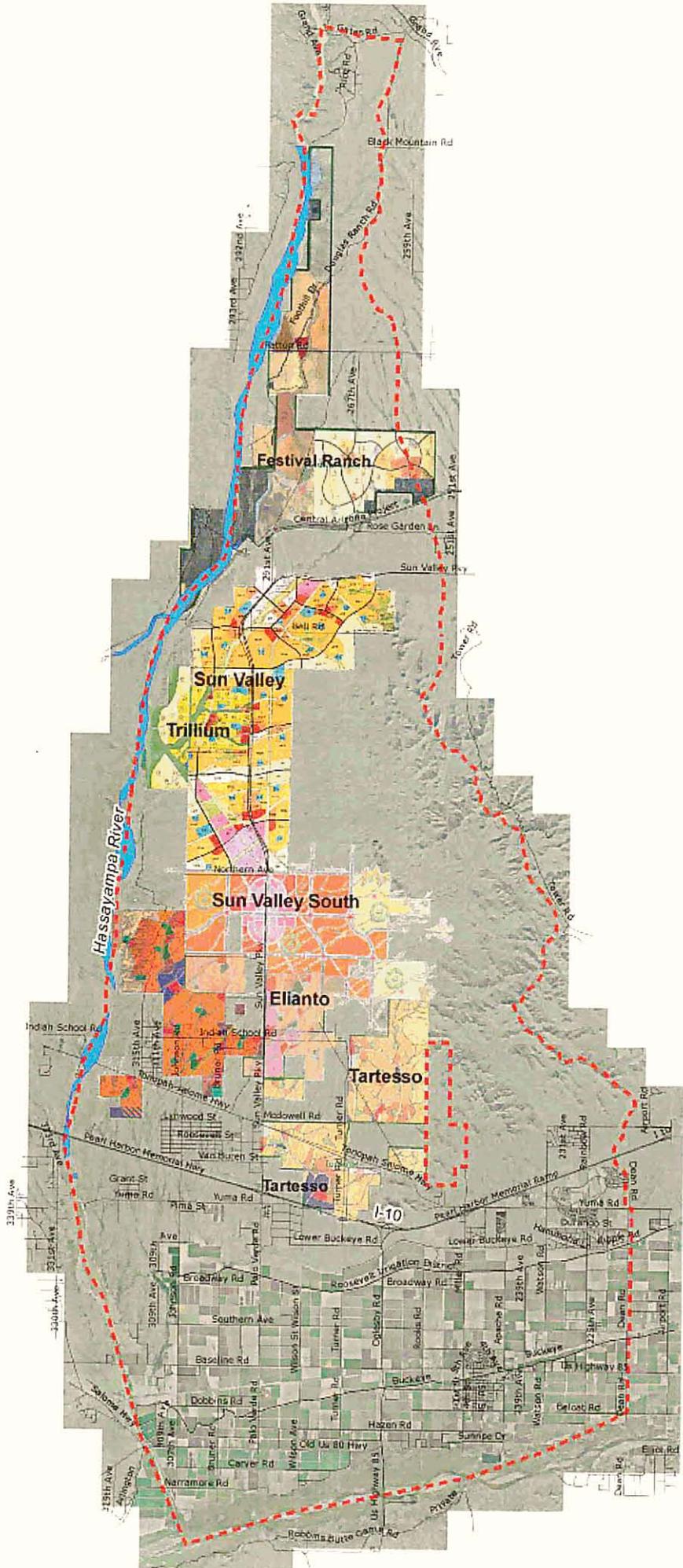
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**Figure No. 3
NEW MASTER PLANNED
COMMUNITIES**

- LEGEND**
-  Sun Valley ADMP
 -  Streets
 -  Rivers

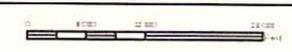
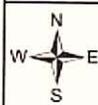


 **FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY**

**SUN VALLEY
AREA DRAINAGE MASTER PLAN**

**NEW MASTER PLANNED
COMMUNITIES**

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SUN VALLEY AREA DRAINAGE MASTER PLAN

3.2 *Planning Issues continued*

Biologically, the proposed developments may also impact natural habitat, wildlife populations and disrupt wildlife interactions. The fragmentation or loss of movement corridors, nesting areas and foraging areas could also result in wildlife population and community shifts.

Planning and regulatory functions guide development processes in a manner that help avoid, minimize or mitigate adverse impacts to the environment as well as ensure the health, safety and welfare of the community. Typically it is beneficial to develop an area drainage master plan before land development significantly affects or impacts the drainage characteristics of the watershed. The area drainage master plan allows the formulation of drainage and flood control solutions that utilize and optimize the natural drainage features, complement the physical and natural environment and typically cost less compared to implementing post-development flood mitigation measures.

Existing adopted plans, local, state and federal laws, regulations and guidelines are a key resource in aiding the decision making process as these determine how developments may or may not occur. Typically they are put in place to regulate growth and to encourage prudent and sustainable use of land resources in a manner that is sensitive to the natural environment and responsive to future growth requirements.

4. *New Master Planned Communities*

New communities planned along the Hassayampa River within the project area include Festival Ranch, Sun City Festival, Spurlock Ranch, Trillium, Tartesso, Sun Valley (Vistoso), Sun Valley South (Anthem, Sun Valley Assemblage, Mirielle and Montiere) and Ellianto. Figure 2, New Developments Location, identifies the locations of the new communities within the project area. Overall, approximately 200,000 dwelling units are projected to occur directly associated with the river environment. Descriptions of each of the known developments are included as part of this report (Figure 3 through 11). Due to the ever-changing development market, the illustrations and descriptions of the individual developments should be utilized as only a general overview. The Town of Buckeye should be contacted to verify the latest development plans for specific developments.

SUN VALLEY AREA DRAINAGE MASTER PLAN

4.1 Festival Ranch

Covering an area of 10,105 acres, Festival Ranch is located on the east side of the Hassayampa River, north of the CAP Canal. On completion it will provide approximately 24,200 housing units and up to 7 million square feet of commercial space. Educational facilities as part of the Wickenburg Unified School District and Morrystown Elementary School District will be built. Envisioned as a series of planning unit areas; current planning efforts are focused on Planning Unit One also known as Sun City Festival.

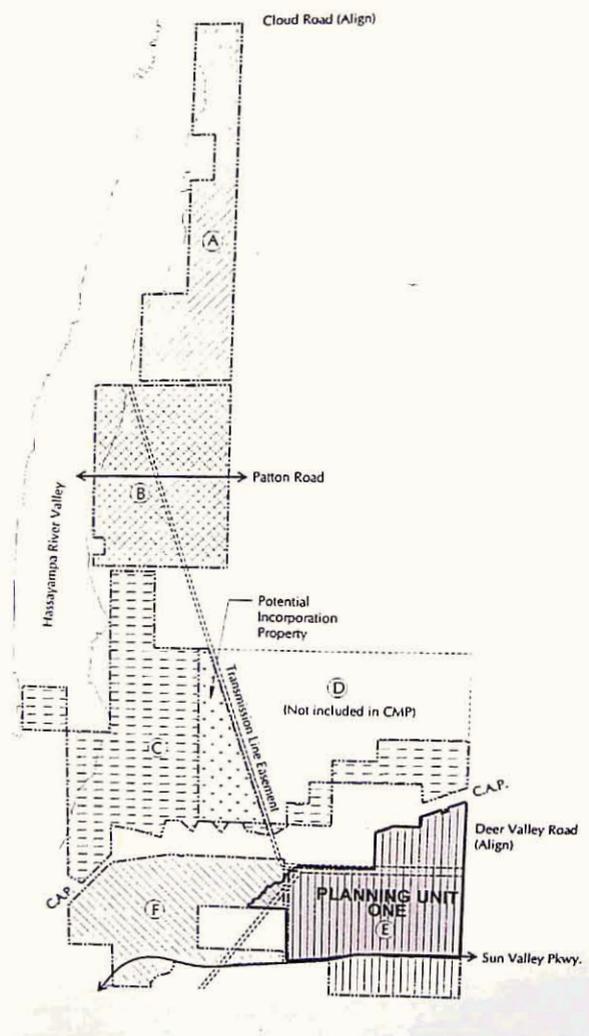


Figure 4- Festival Ranch



SUN VALLEY AREA DRAINAGE MASTER PLAN

4.3 Trillium

Trillium covers 3,042 acres and is located approximately 15 miles north of I-10, along the west side of Sun Valley Parkway. It is located between the White Tank Mountains and the Belmont Mountains, and abutting the Hassayampa River on its western boundary. It has magnificent mountain views as well as the unique and relatively unspoiled Sonoran desert environment along the Hassayampa River. A major drainage and waterway traverses the site from east to west (to Wagner Wash) and then north to south (to the Hassayampa River). These waterways will offer trail, open space and view opportunities as well as the opportunity to preserve much of the natural desert habitat of the area.

The Trillium community master plan proposes 8,816 dwelling units and schools, and combined commercial uses to help create a more diverse and economically viable community. The residential areas will allow up to 3 dwelling units per acre (Du/Ac) in the low-density areas, up to 6 Du/Ac in the medium-density and up to 20 Du/Ac in the high-density areas. One hundred eight acres are planned for commercial/ employment space and 33% of the site will remain as open space.

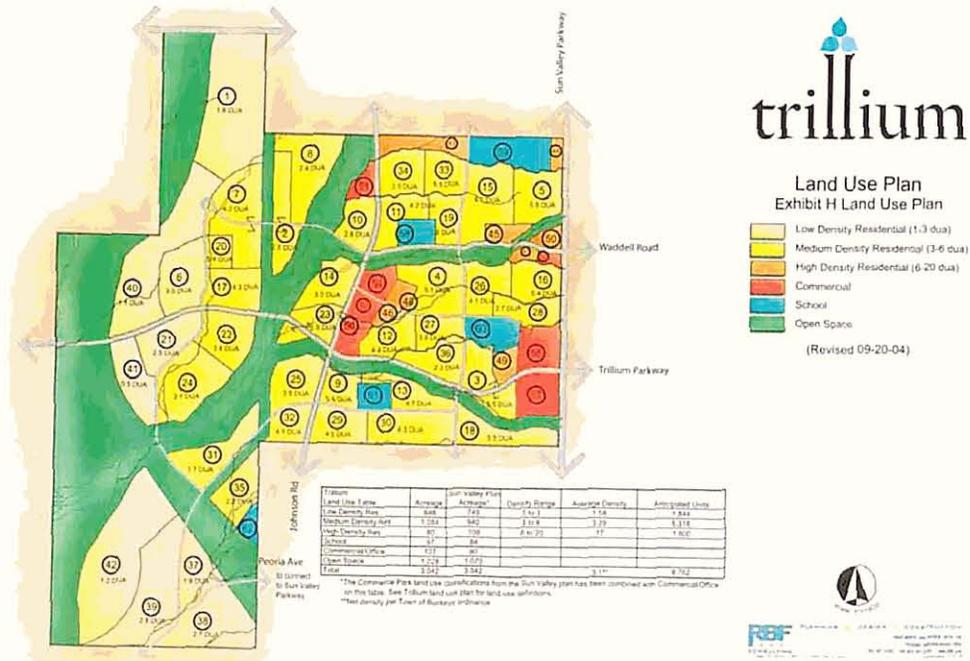


Figure 6- Trillium

SUN VALLEY AREA DRAINAGE MASTER PLAN

4.4 *Spurlock Ranch*

The Spurlock Ranch master planned community consists of approximately 2,840 acres and is centrally located in the north Buckeye area. The community is envisioned as a well-balanced master planned community that will provide a full range of housing opportunities to accommodate differing income levels, family types and lifestyles. Providing 7,329 dwelling units, the community is in conformance with the Festival Ranch Area Plan and uses the concept of a self-sustaining ‘village’ with important planned commercial centers surrounded by appropriately placed residential land uses. Moving away from the commerce parks, the density of the surrounding residential land decreases to lower intensity, eventually transitioning into lower density golf communities. In addition to an extensive trail network, open space in Spurlock Ranch includes neighborhood parks, community parks, pocket parks, school playfields and golf courses.

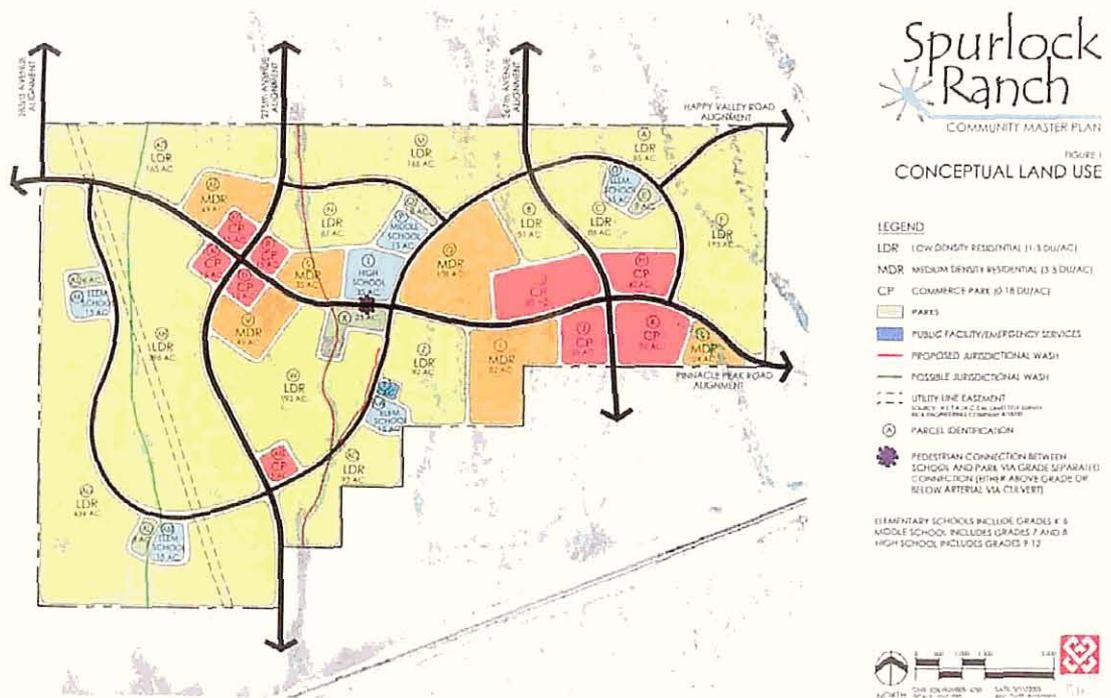


Figure 7- Spurlock Ranch

SUN VALLEY AREA DRAINAGE MASTER PLAN

4.5 Tartesso

Covering an area of 3,186 acres, Tartesso has a total of 11,437 dwelling units planned and 57.3 acres set aside for commercial/employment space. The open space will consist of 26 parks. The largest of these will feature full-size baseball fields, lighted basketball courts, facilities for smaller children and picnic areas. The open space will also consist of passive pocket parks, a trail system, neighborhood parks, a recreational center, a sports park and an urban center. Tartesso will be easily accessible from I-10 by two existing interchanges at Sun Valley Parkway and Miller Road. As part of the development, three additional interchanges will be installed at Johnson Road, Bruner Road and Wilson Avenue

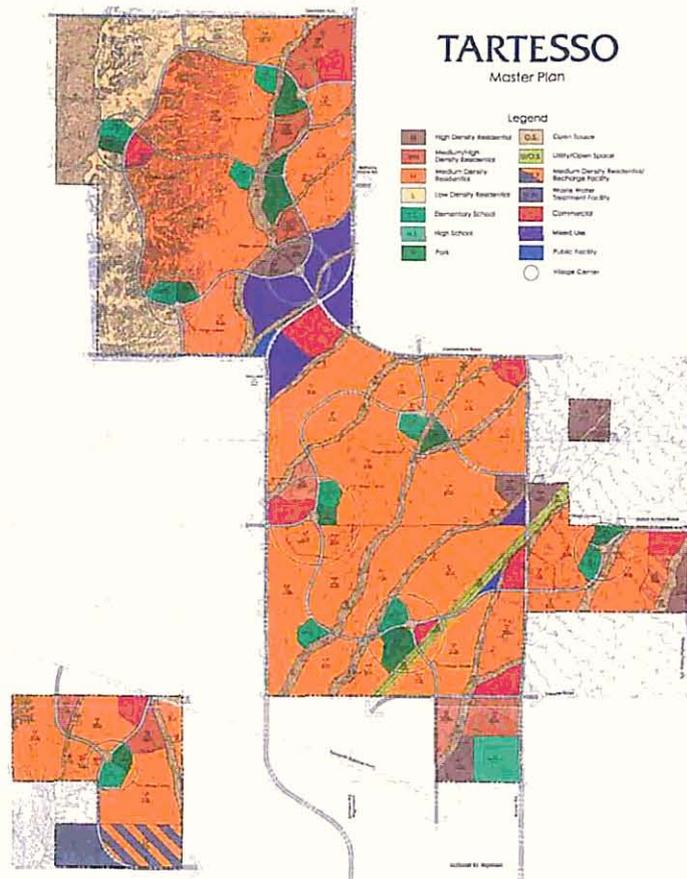


Figure 8- Tartesso



SUN VALLEY AREA DRAINAGE MASTER PLAN

4.6 Sun Valley Area Plan

Sun Valley straddles Sun Valley Parkway and covers a total of 16,266 acres. North of the CAP Canal, the northern portion of the property that falls within the Hassayampa floodway will be proposed for interim use for sand and gravel mining operations under a conditional permit process. Eventually, the site will be reclaimed and used as a 404 mitigation site. A mix of uses including medium density, several school sites and limited commercial and high density uses are located adjacent to Wagner Wash. In addition, low density residential uses and dedicated open spaces are located adjacent to the Hassayampa River. Schools will be made up of 26 elementary and 4 high schools and open space will total 3,760 acres. This area will include washes, easements, golf, slope and the 1,447 acre Hassayampa area. The Trillium Community is part of the Sun Valley Area Plan.

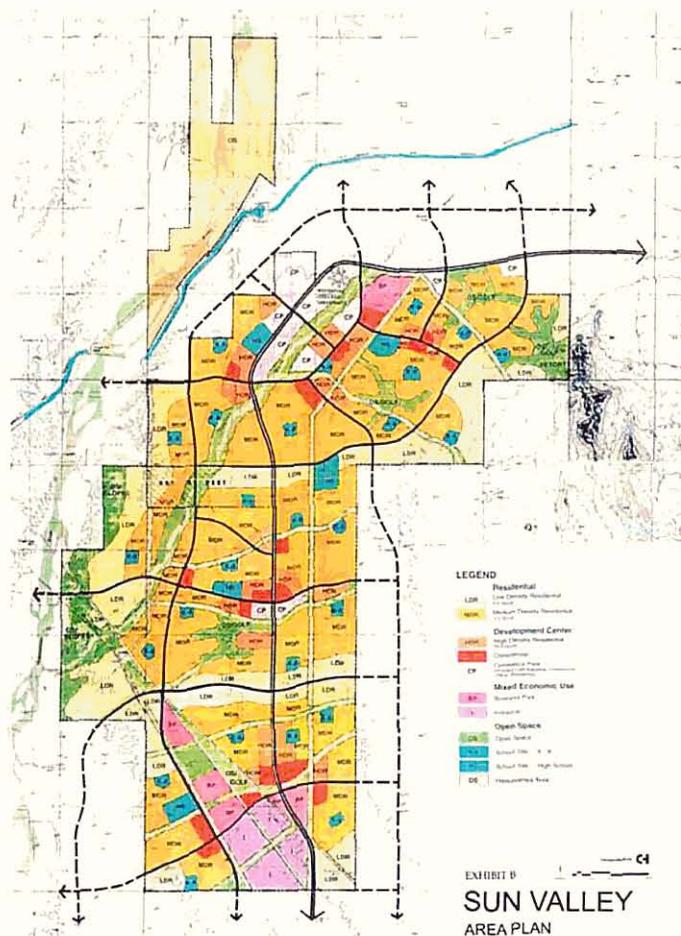


Figure 9- Sun Valley Area Plan

SUN VALLEY AREA DRAINAGE MASTER PLAN

4.7 Sun Valley South

Sun Valley South covers an area of 11,193 acres with 29,218 planned dwelling units. The development will use 276 acres for schools (ten K-6th grade, four 7th-8th grade schools and two 9th-12th grade schools). The commercial area covers 988 acres which also includes 277 acres of village and neighborhood shopping. Open space will cover 3,200 sq.ft., consisting of a trail system that connects the schools, community parks, neighborhood parks and golf courses.

Since the development of Sun Valley South, property ownership exchanges have occurred. Four main communities including Anthem West, Sun Valley Assemblage, Mirielle and Montierre now occupy what was originally the Sun Valley South Area Plan.

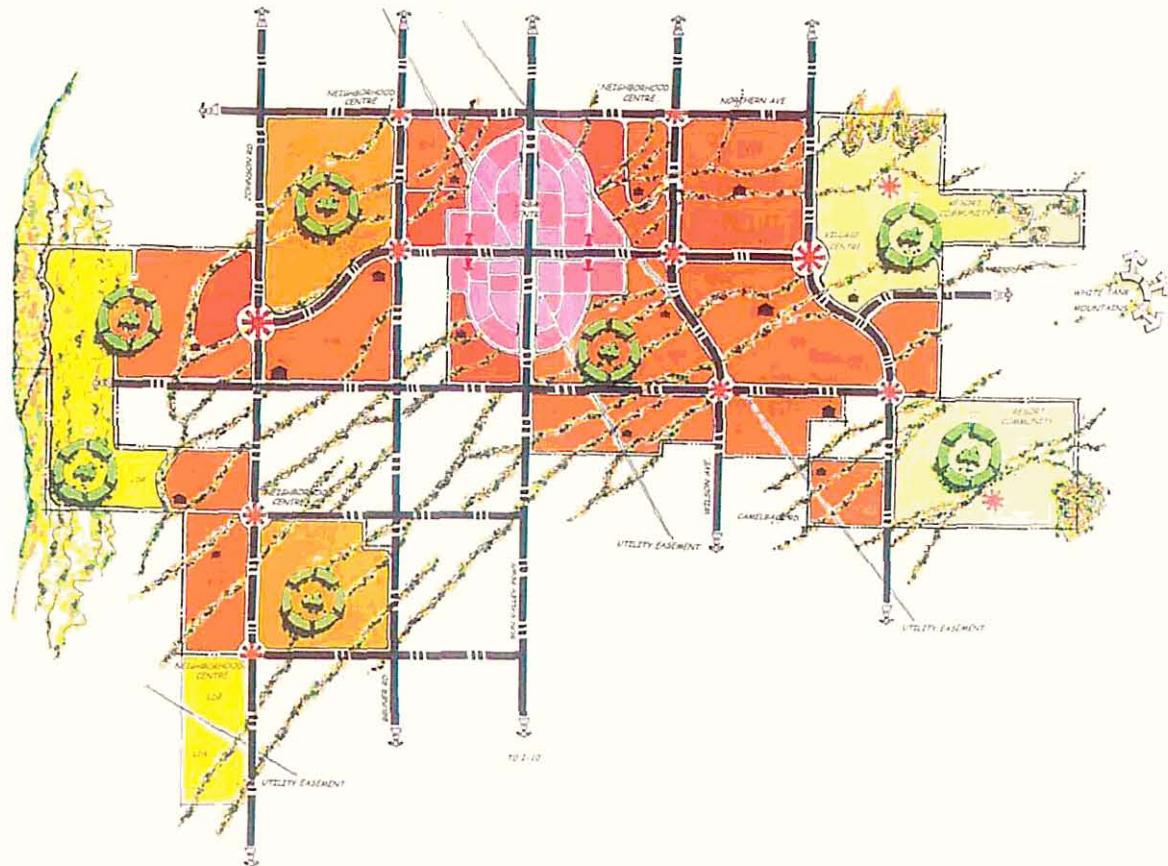


Figure 10- Sun Valley South

SUN VALLEY AREA DRAINAGE MASTER PLAN

4.8 Elianto

Replacing what was formerly known as the Tartesso North Community Master Plan, and amended to reflect its own individuality; the Elianto master plan proposes to introduce new design themes and a unique community character. Elianto is planned as a series of four villages which are primarily residential in character and supporting non-residential, mixed use and commercial uses and an extensive recreational and open space system. Five schools are provided throughout the community. Covering an area of 3,751 acres, the plan provides approximately 13,661 dwelling units, with 26.8% of the site devoted to community open spaces, schools, parks, trails and wildlife habitats.

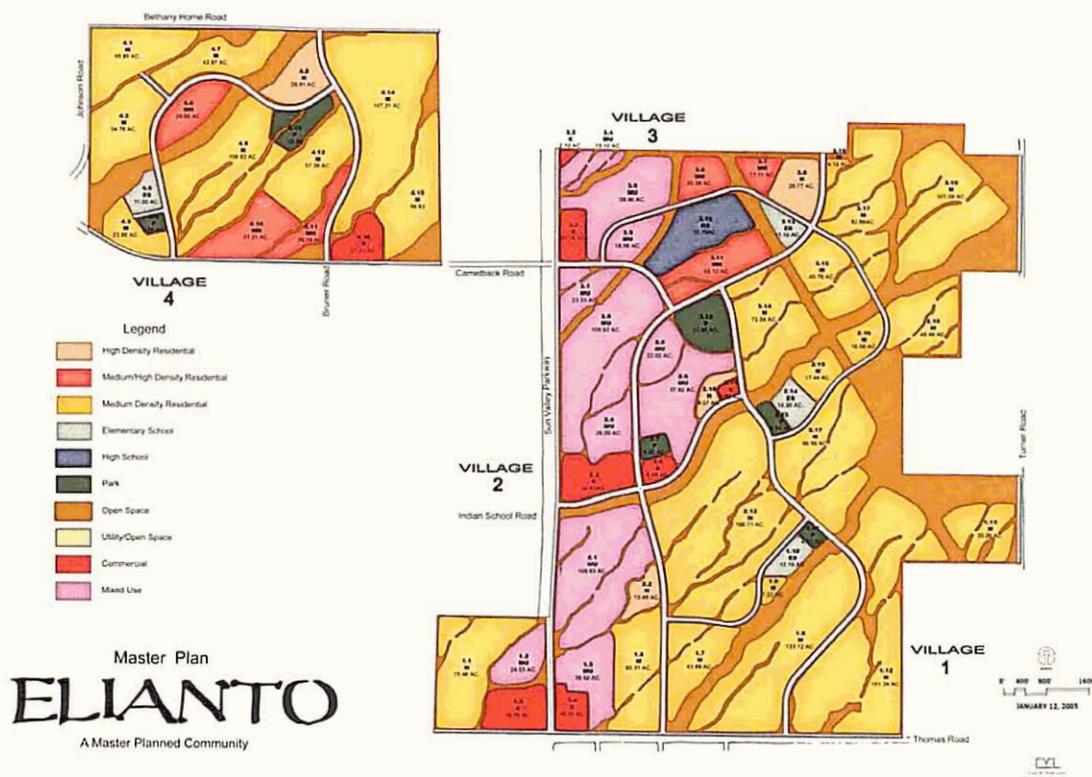


Figure 11- Elianto



SUN VALLEY AREA DRAINAGE MASTER PLAN

5. Land Ownership Within the Project Area

Land ownership within the project area (Figure 14) includes Bureau of Land Management, State Trust lands, Luke Air force Base and military reservations and private property all within unincorporated Maricopa County the Town of Buckeye or the City of Surprise.

Bureau of Land Management (BLM) –As directed by the 1976 Federal Land Policy and Management Act, it is the policy of the United States to retain public lands in federal ownership unless it is determined, through a land use plan, that disposal of a particular parcel will serve national interest. Several BLM parcels are scattered within the project area, the largest of which, located south of the White Tank Mountains is under consideration by the Town of Buckeye to be included in its regional open space network.

State Trust Lands – Significant tracts of State Trust Land occur adjacent to the White Tank Mountains. The Arizona State Land Department administers State Land by providing lease contracts or offering land for sale. Leases and sales must occur at public auction if they over 10 years. In addition, only non-roadway easements over 10 years go to auction but others do not. Several of the State Land tracts within the project area are facing imminent disposition, including a large tract west of the White Tank Mountains.

Luke Air Force Base and Military Reservations – Luke Air Force Base constitutes the second largest concentration of federally owned property in the West Valley. The Base is located about five miles north of Interstate 10, five miles west of Route 101, and two miles east of Loop 303. The Department of Defense also owns and operates some land which lies north or the White Tanks Mountain Regional Park.

Private Property- See Section 4 for New Master Planned Communities

White Tanks Regional Park- The Park is made up of approximately 30,000 acres, making it the largest park in Maricopa County. It consists mainly of rugged White Tank Mountains on the Valleys west side. The range rises from its base to peak at over 4,000 feet.



SUN VALLEY AREA DRAINAGE MASTER PLAN

5.1 Project Area Jurisdiction

The jurisdictional entities that guide the development within the project area include the Town of Buckeye and Maricopa County (Figure 12), while minimally bordering on the City of Surprise. The United States Army Corps of Engineers has jurisdiction over the Hassayampa River and any washes that constitute 'Waters of the United States' under the Clean Water Act.

Town of Buckeye – A majority of the project area falls within incorporated Town of Buckeye and mainly consists of new planned communities.

Unincorporated Maricopa County – Land governed by Maricopa County includes several scattered tracts and one acre lots north of I-10 and the White Tank Regional Park. Maricopa County manages the White Tank Regional Park which covers approximately 23,667 acres. The county regional park lies in its natural state and offers mostly passive recreation opportunities. Most of the developed facilities, trail access points and amenities are located on the eastern portion of the regional park outside the project area.

City of Surprise – A very small area at approximately Sun Valley Parkway and 251st Avenue falls within the City of Surprise.

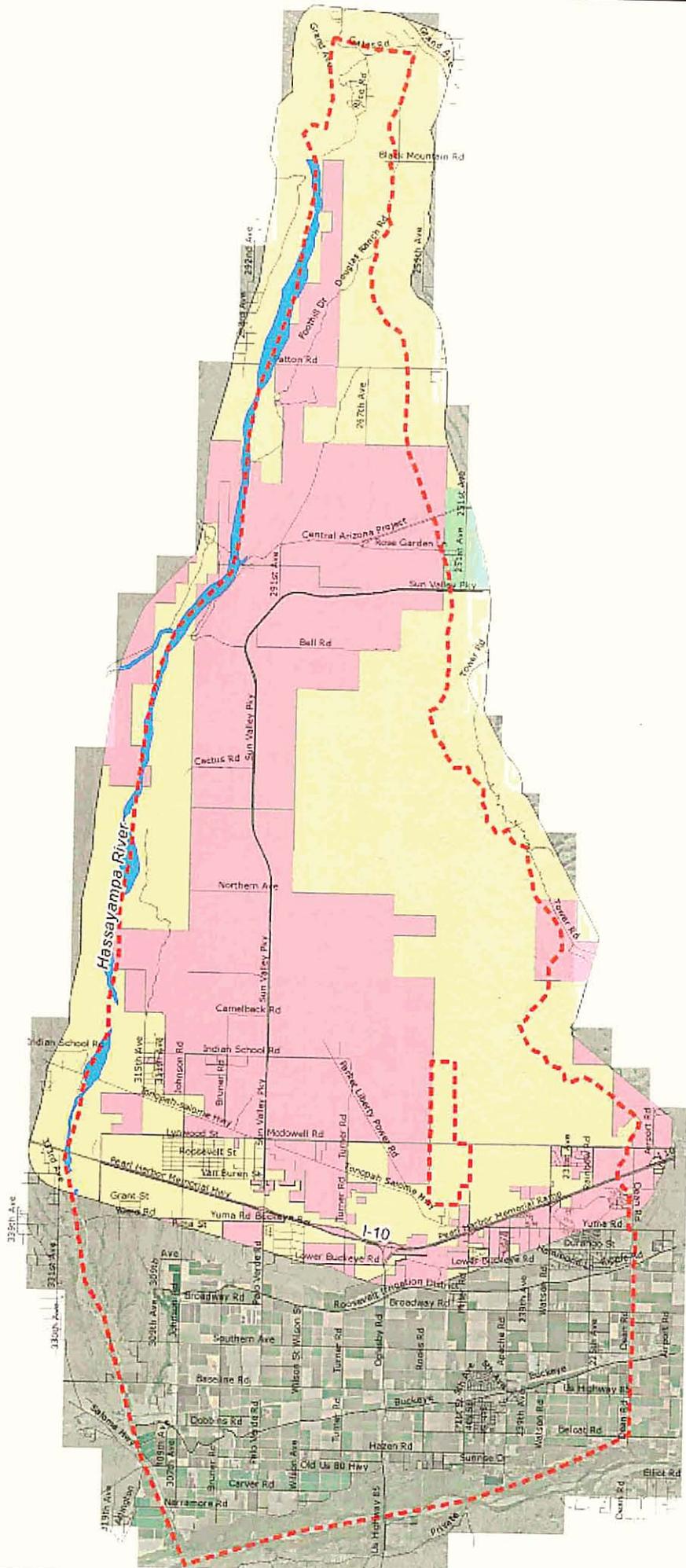
5.2 MAG Land Use

The Maricopa Association of Governments (MAG) serves as the lead regional planning agency for the metropolitan Phoenix area which includes 24 cities, two Indian Communities and Maricopa County. MAG is responsible not only for regional transportation plans, but also for land use, air quality, water quality, solid waste and human services planning. MAG uses regional standard land use categories to develop a common land use scheme for the whole of Maricopa County. Disparate local land use categories and densities identified by unique member agencies are first converted to the regional standard in association with each member agency. The General Plan Land Use developed by MAG within the project area (Figure 13) identifies the major uses as Neighborhood Development Area, Specialty Mixed-Use Area and Recreational and Open Space Area.

**Figure No. 12
JURISDICTIONAL
BOUNDARY**

LEGEND

-  Sun Valley ADMP
-  Streets
-  Buckeye
-  Maricopa UnIncorporated
-  Surprise
-  Rivers

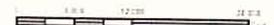
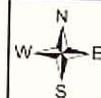


**FLOOD CONTROL DISTRICT
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**SUN VALLEY
AREA DRAINAGE MASTER PLAN**

**JURISDICTIONAL
BOUNDARY**

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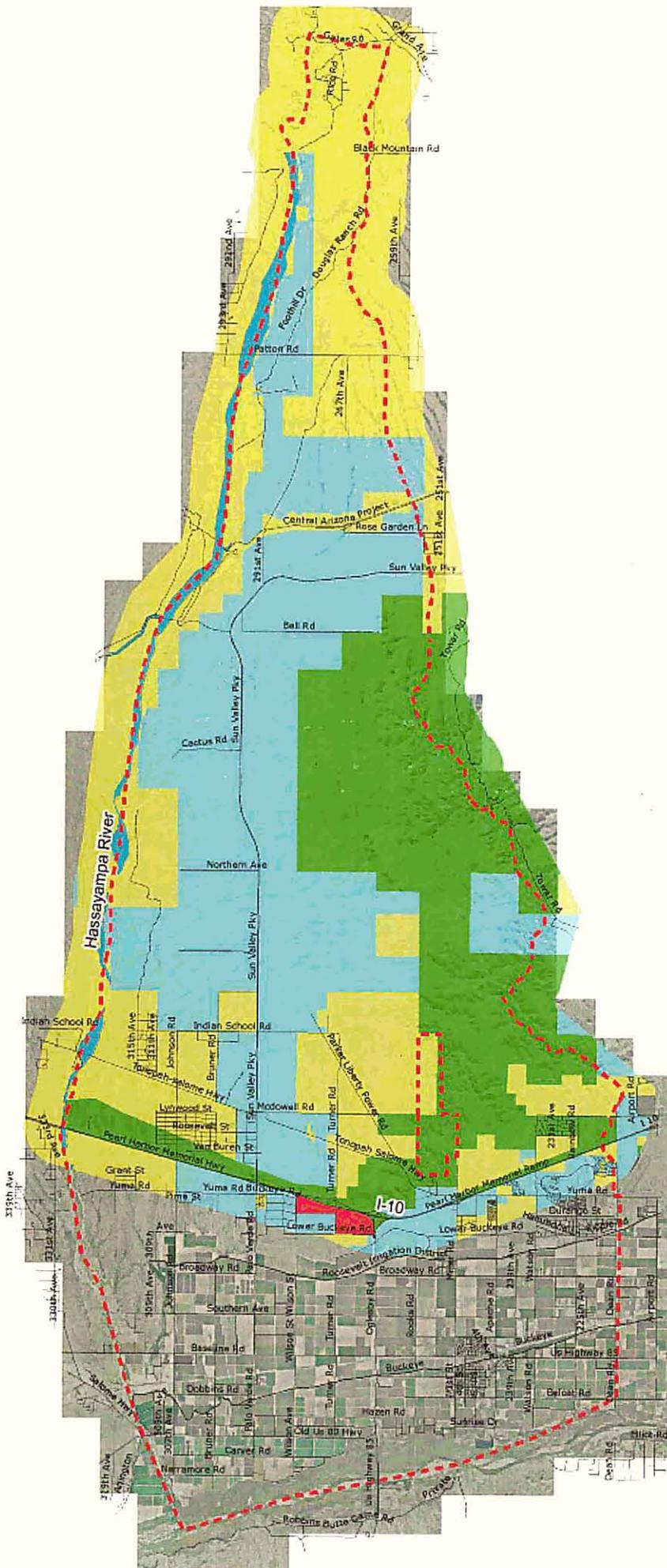


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**Figure No. 13
MAG LANDUSE**

LEGEND

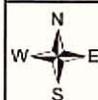
-  Sun Valley ADMP
-  Streets
-  Regional Commercial Area
-  Business and Industrial Area
-  Speciality Mixed Use Area
-  Recreational and Open Space Area
-  Neighborhood Development Area
-  Rivers



**FLOOD CONTROL DISTRICT
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**SUN VALLEY
AREA DRAINAGE MASTER PLAN
MAG LANDUSE**

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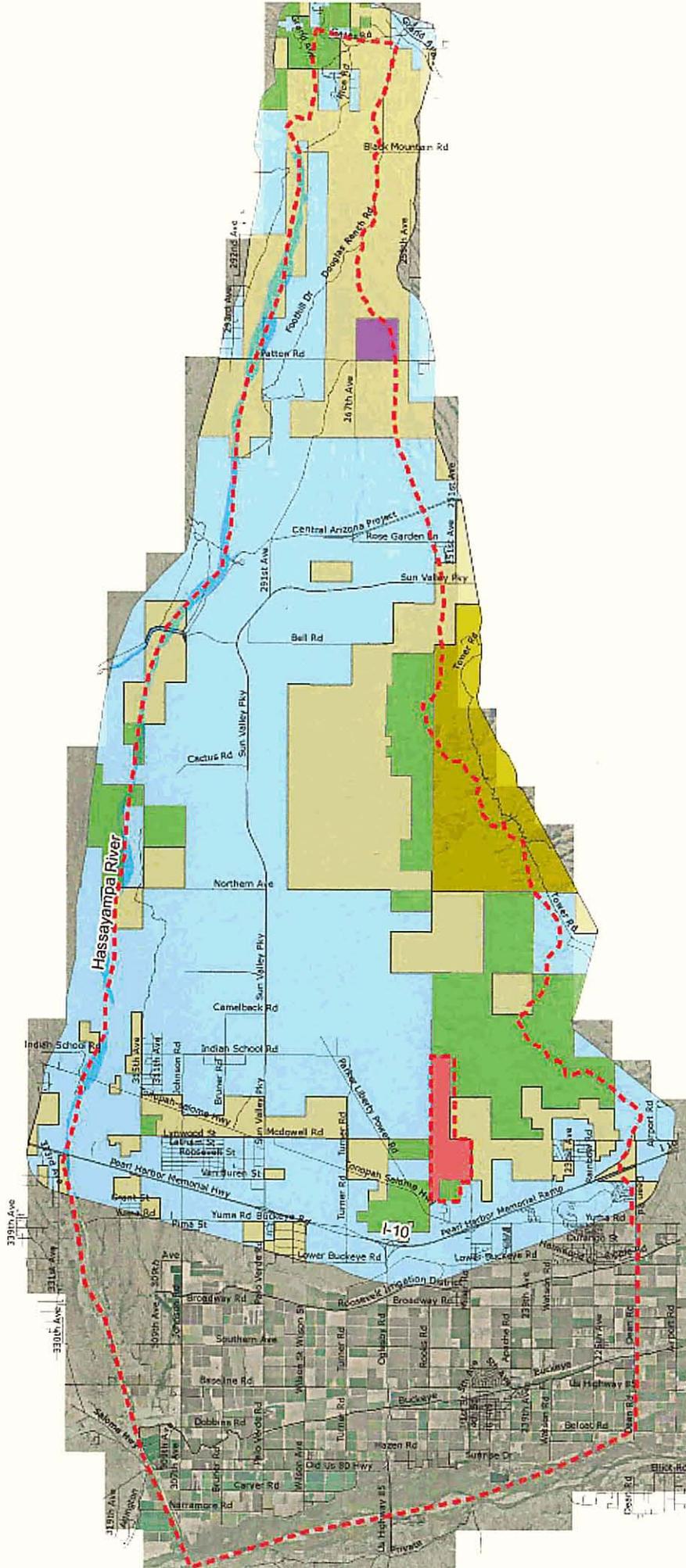


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**Figure No. 14
PROPERTY OWNERSHIP**

LEGEND

-  Sun Valley ADMP
-  Streets
-  Rivers
-  Bureau of Land Management
-  Luke Air Force Base
-  Military Reservation
-  Parks & Recreation
-  Private
-  State Trust

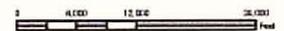
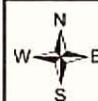


**FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY**

**SUN VALLEY
AREA DRAINAGE MASTER PLAN**

**PROPERTY
OWNERSHIP**

FCD 2004C049
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Relevant Planning Documents

- Town of Buckeye General Development Plan – Adopted September 18, 2001
- Maricopa Regional Trails Plan, MAG 2003
- Desert Spaces Plan, MAG 1995
- White Tanks / Grand Avenue Area Plan - Maricopa County 2020, Eye to the Future, 2002
- Parks, Trails and Open Space Master Plan, Town of Buckeye, 2006
- MAG Regional Transportation Plan, 2003
- Northwest Transportation Area Plan, 2003

6. Town of Buckeye General Development Plan

The Town of Buckeye General Development Plan and Development Code set forth the Town of Buckeye's community goals and policies directing future growth. There are thirteen elements or policy areas that are focused on. The Land Use District Map for the Town of Buckeye is the land use plan prescribed by the General Plan.

6.1 Land Use Districts

Land Use Districts prescribes the different land uses appropriate within the Town of Buckeye and include Rural Residential, Planned Residential, Mixed Residential, Planned Community, Commercial Center, General Commerce and Special Uses.

Planned Community (PC) is the predominant use designation within the portion of the project area located in the Town of Buckeye.

6.2 Area Plan

Typically planning large parcels of land involve the development of an Area Plan which, not only serves to identify general land use, densities and public facility requirements on individual properties, but also helps to define regional transportation capacity, water availability and compatibility with adjacent land holdings. An Area Plan is implemented through the adoption of a Community Master Plan (CMP).



SUN VALLEY AREA DRAINAGE MASTER PLAN

6.3 *Community Master Plan*

The CMP serves as the primary means for regulating the development of large master planned communities which is an allowed use within the PC District. The CMP is required to conform to the goals and policies of the General Plan, however it does have the ability to achieve conformity through flexible means and as approved by the council. A CMP establishes land use, densities, provision of public facilities, design standards, phasing schedules, and procedures for administration and all other regulatory provisions necessary for the development of the master planned community. Within the CMP designation, master planned communities more than 640 acres (one square mile) in size are given the option of developing unique zoning and design standards independent of the town's adopted development code. CMP approvals do not result in changes to the zoning (Land Use District) map, but are governed through a separate development agreement between the master developer and the Town council.

7. **Buckeye Code of Development**

Buckeye's Development Code contains minimum standards for development to regulate parking, densities, lot specifications, setbacks, street design, landscaping and other site planning considerations; Excerpts from the Buckeye Code of Development that are considered relevant to the alternatives formulation for the Sun Valley ADMP are included below. For further details and explanations refer to the Buckeye Development Code. Property development standards specific to the following sections are briefly addressed.

Air Quality - The developer, prior to approval, shall prove conformity to the state air quality plan, as developed by the Maricopa Association of Governments.

Building Construction – The following codes shall apply:

- Uniform Building Code, 1997 edition, published by the International Conference of Building Officials,
- National Electrical Code, 1996 edition, published by the National Fire Protection Association,
- Uniform Plumbing Code, 1997 edition, published by the International Association of Plumbing and Mechanical Officials,



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- Uniform Mechanical Code, 1997 edition, published by the International Association of Plumbing and Mechanical Officials,
- Uniform Fire Code, 1997 edition, published by the International Conference of Building Officials and the Western Fire Chiefs Association,
- Uniform Code for the Abatement of Dangerous Buildings, 1997 edition, published by the International Conference of Building Officials, and any and all supplements to said codes.

Residential Density – The maximum density within an approved CMP shall be three dwelling units for each acre (3 du/ac). If a plat is deemed of exceptional quality, based on the amount of common area provided, the maximum residential density within a single subdivision plat may be increased as described in Table 1.

Table 1
Residential Density Bonus

Note: Only those developments deemed "exceptional quality" are eligible for a density bonus	
Common Area	Density Bonus
Ten (10%) percent or more	0.5
Fifteen (15%) percent or more	1.0
Twenty (20%) percent or more	1.5
Twenty-five (25%) percent or more	2.0

Density Bonus is added dwelling unites per acre allowed in addition to Subsection 7-5-4 (D)
Common Area is the amount of common area provided within an approved plat as a percentage of the total land area within said plat.

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Flood Control - Because of its applicability to the Sun Valley ADMP, Section 7-5-5 of the Town of Buckeye Development Code that addresses flood control is provided in its entirety:

A. *FLOODPLAIN MANAGEMENT*

The Maricopa County Flood Control District is responsible for all floodplain management activities within the Town corporate limits of the Town. The District is authorized to exercise the powers and duties set forth in Title 45, Chapter 10, Article 4, Arizona Revised Statutes, within all areas of the Town.

B. *DRAINAGE PROVISIONS*

1. *GENERAL REQUIREMENTS*

Provisions for drainage shall meet the requirements of the Uniform Drainage Policies and Standards for Maricopa County. Facilities shall be installed to provide for the adequate containment and disposal of surface water and to maintain any natural drainage course, on any property or parcel within or affecting the Town.

2. *DRAINAGE PROVISIONS*

Prior to approval of any commercial, industrial, multiple family residential or subdivision development, a drainage report shall be submitted to and approved by the Town Engineer.

3. *DRAINAGE CLEARANCE*

Drainage Clearance shall be required prior to permit issuance for any development or substantial improvement which may have an adverse effect on existing drainage.



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4. FINAL INSPECTION

Drainage Inspection Approval shall be obtained prior to issuance of a Certificate of Occupancy or final building inspection of any site or structure.

C. DRAINAGE DESIGN

1. GENERAL

The entire drainage detention and runoff conveyance system shall be designed to eliminate or minimize storm water runoff effects and convey the runoff through development with minimum detrimental effect. No system shall be approved if the effect may cause an increase in the peak discharge, volume or velocity of runoff or change the point of entry of drainage onto other property during the runoff event.

2. STORM FREQUENCY CRITERIA

The rainfall event, based upon the one hundred (100) year storm duration generating the peak discharge for the area contributing runoff to the development shall be used in designing the overall drainage system.

3. RETENTION OF STORM DRAINAGE

- a. The retention system shall be designed to reduce the post-development runoff to less than or equal to the pre-development runoff. For rural developments, on-lot retention is encouraged. For urban developments, on-site two (2) hour one hundred (100) year retention volume may be required.*
- b. On-site retention facilities may include natural depressions or human-made basins. Dry wells are prohibited.*
- c. Individual lot retention shall not be permitted in residential subdivisions with a lot size less than one-half (½) acre, except in conjunction with multiple family development.*
- d. If reasonable alternatives are not available, retention in the Town's right-of-way may be allowed upon approval of the Public Works Director.*



- e. *A public utility easement shall not be designated for retention without approval of affected utility companies.*
- f. *Off-site drainage shall either be to the street or to a designated drainage easement with adequate outfall.*

4. *STORM WATER DISPOSAL*

On-site runoff that has been retained shall be disposed of within thirty-six (36) hours either by percolation, catch basins or drainage into an approved drainage way. Flows from basins shall not exceed pre-development flows and shall be in the location and direction of the historic flows.

5. *FINISHED FLOOR ELEVATION*

Finished floors shall be elevated a minimum of one (1) foot above the high point of the building site. A finished floor elevation may be other than the minimum permitted provided it is determined by technical data certified by an Arizona Registered Professional Engineer to be the minimum necessary to be safe from inundation by the one hundred (100) year peak runoff event. Finished floor elevation shall be referenced to a known benchmark.



Table 2
Required Building Setback for New Development

	Front Setback	Interior Side Setback	Street Side Setback	Rear Setback
Rural Residential	40	20	20	40
Planned Residential	Setbacks shall be as required by the Rural Residential district or as determined by an approved plat			
Mixed Residential	10	5	5	10
Planned Community	Setbacks shall be as required by the Rural Residential district or as determined by an approved plat			
Commercial Center	0	0	0	15
General Commerce	20	50	50	50
Special Use	40	30	40	40

*Rear setbacks shall be for principal buildings only.
 *All distances are in feet and are measured from their respective property line.
 *Residential setbacks in existing subdivisions shall be those in place at the time of plat approval.
 *Commercial uses in Mixed Residential may use setbacks stated for the Commercial Center district.

Table 3
Restrictions on Building Height and Separation for New Development

	Maximum Building Height	Minimum Building Separation
Rural Residential	30	20
Planned Residential	30	20
Mixed Residential	30	20
Planned Community	Building heights and separation will be as allowed in the Rural Residential District or if approved, as determined by the Community Master Plan	
Commercial Center	45	20
General Commerce	45	25
Special Use	45	25



Table 4

Required Minimum Lot Area for New Development	
Rural Residential	Ten (10) acres unless part of an approved subdivision, in which case the minimum lot size shall be one (1) acre per dwelling unit.
Planned Residential	Lot size shall be as required in the Rural Residential district unless part of an approved subdivision, in which case there shall be no minimum lot size
Mixed Residential	Ten thousand (10,000) square feet for single-family dwellings or two thousand (2,000) square feet per multiple family dwelling.
Planned Community	Lot size shall be as required in the Rural Residential district unless part of an approved Community Master Plan, in which case there shall be no minimum lot size.
Commercial Center	Ten thousand (10,000) square feet or three thousand (3,000) square feet per dwelling unit.
General Commerce	One (1) acre unless part of an approved subdivision, in which case there shall be no minimum lot size.
Special Use	Ten (10) acres

*Lot area is the amount of land contained within a lot, measured in acres or in square feet.

Topography – The orientation of individual building sites shall be such as to maximize natural topography. Topography, areas of intense vegetation, and natural drainage ways shall be treated as fixed determinants for road and lot configuration. The landscape shall be preserved in its natural state, insofar as practicable, by minimizing plant and soil removal.

Hillside development standards apply to all land wherever the natural terrain of the proposed disturbance within any lot or parcel has a slope of 15% or greater.

The maximum height of any cut or fill used to establish a building site or a driveway shall not exceed fifteen feet. The maximum height of any cut or fill used to establish a road or roadway shall not exceed thirty feet.

Retaining walls and erosion control measures – raw spill slopes are prohibited. Retaining walls shall not exceed twenty feet in height. If additional height is needed, the wall shall be offset at a minimum of four feet or one foot per one foot of height.



8. Current Developmental Planning Tools

8.1 *Growing Smarter Legislation*

“Growing Smarter” legislation was passed in 1998 by the Arizona Legislature that required Cities and Towns to update their General Plans to plan for future growth in a way that would enhance the quality of life. The five mandated elements include Open Space, Environmental Planning, Water Resources, Growth Areas and Costs of Development. According to “Growing Smarter at the Edge,” a recent publication put out jointly by the Lincoln Institute of Land Policy, the Sonoran Institute and the City of Tucson, illustrates that many of the master planned communities being developed in the the Town of Buckeye exhibit encouraging trends that follow the basic elements of Smart Growth including the following:

- Integrated, accessible, natural open space;
- Mixed public, commercial, and residential uses;
- Pedestrian orientation;
- A range of housing densities and prices;

The aforementioned factors not only beneficially contribute to the future residents but are also seen to provide a market advantage for developers. Other existing concepts that contribute to the livability and economic vitality of master planned communities were also investigated and are briefly described as part of this section:

8.2 *Established Planning Process*

Clear definition by the planning entities that define what their expectations are with respect to new development; The Town of Buckeye’s code requirements are meant to be flexible enough to allow master plan creativity, while insisting that developing sectors bring positive contributions to the community. The introduction of new self-contained communities is encouraged while respecting its traditional rural character.

The Town of Buckeye is currently in the process of updating and revising its General Plan. The scheduled date of completion for the update is slated for the end of December, 2006.



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8.3 Infrastructure Investment

Expenses associated with new infrastructure development are generally borne by the developers for which several mechanisms are in place. Expenditures necessary to support new development include roads, open space, storm water drainage, facilities for public safety, schools, libraries and parks. Funding mechanisms such as Communities Facilities Districts (CFD) and Impact Fee Assessments provide a means by which infrastructure costs to most locations and of such large scales may be financed.

Communities Facilities District - In 1988, the Arizona Communities Facilities District Act became effective, which allows municipalities to form special districts for the purpose of financing the installation, operation, and/or maintenance of public infrastructure. Homeowners are then assessed the costs over time and in most cases completed facilities are turned over to the municipality. The Town of Buckeye regularly utilizes CFD agreements with developers to pay for new development infrastructure and public facilities.

Development Impact Fee - The Town's Development Impact Fee structure serves as a foundation for cost efficient, equitable capital investment. Impact Fees are essentially user fees charged in anticipation of expanding the capacity of existing services to handle additional demand brought about by new development. The funds collected cannot be used for operation, maintenance, repair, alteration or replacement of existing facilities.

9. Parks, Trails and Open Space Plan, Town of Buckeye, 2005

The Buckeye Parks, Trails and Open Space Master Plan provides direction for development of the Town's park and open space system that takes into account a holistic view of its regional assets and utilizes them in a positive manner. The document also helps to ensure that Buckeye, despite the tremendous growth and urbanization planned for its future, retains its sense of small town agrarian image through traditional parks development, natural preservation and agrarian park systems. The master plan provides principles that establish a comprehensive framework for its open space network identifying opportunities for protection of environmentally sensitive areas, creation of linkages and ensuring quality development and adequate level of service for future growth. Refer to Figure 15 for the Buckeye Open Space Master Plan.

SUN VALLEY AREA DRAINAGE MASTER PLAN

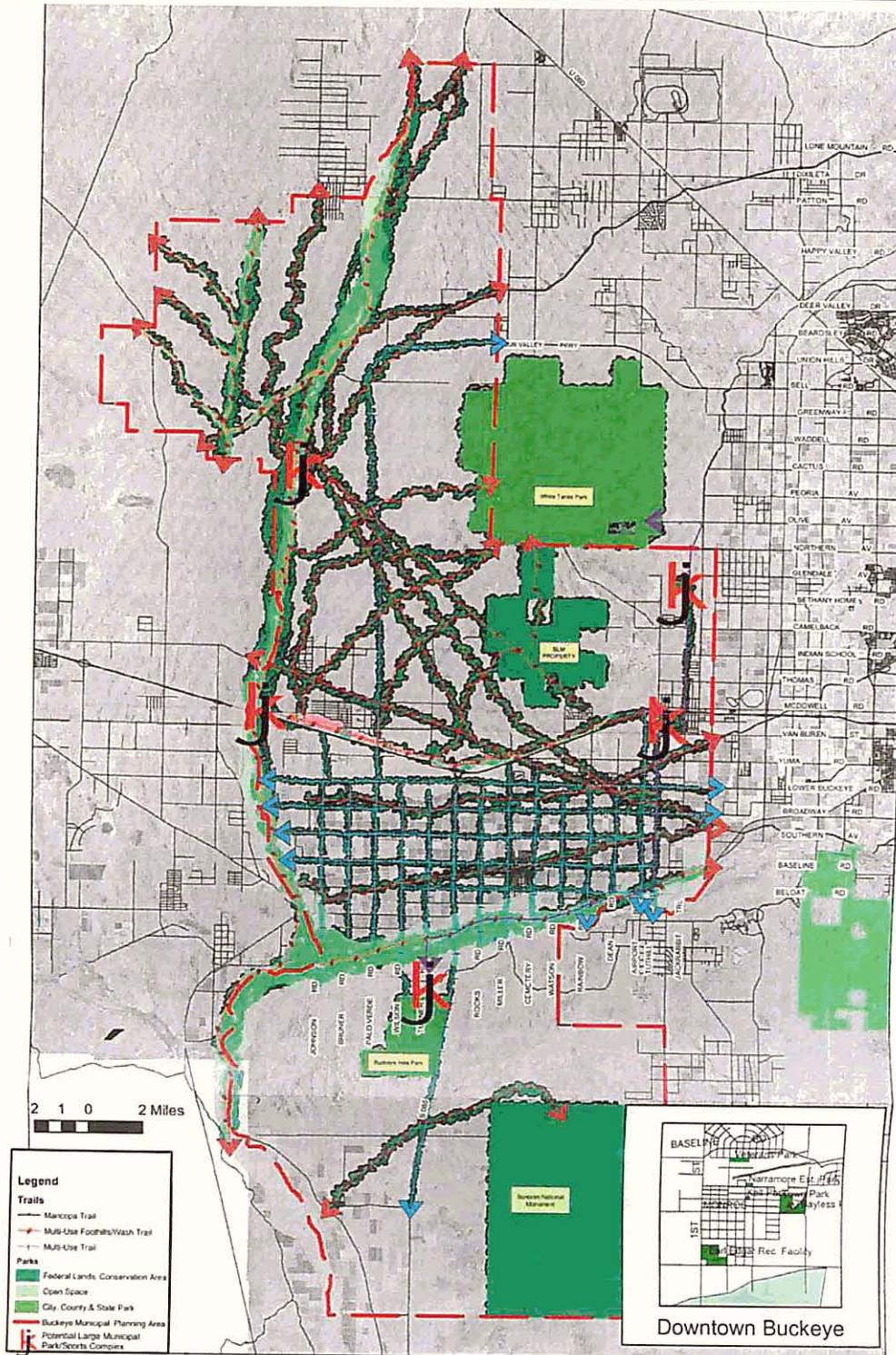


Figure 15- Town of Buckeye Parks, Trails, and Open Spaces

Source: Buckeye Vision Plan



SUN VALLEY AREA DRAINAGE MASTER PLAN

10. Maricopa Regional Trail System Plan, MAG, 2003

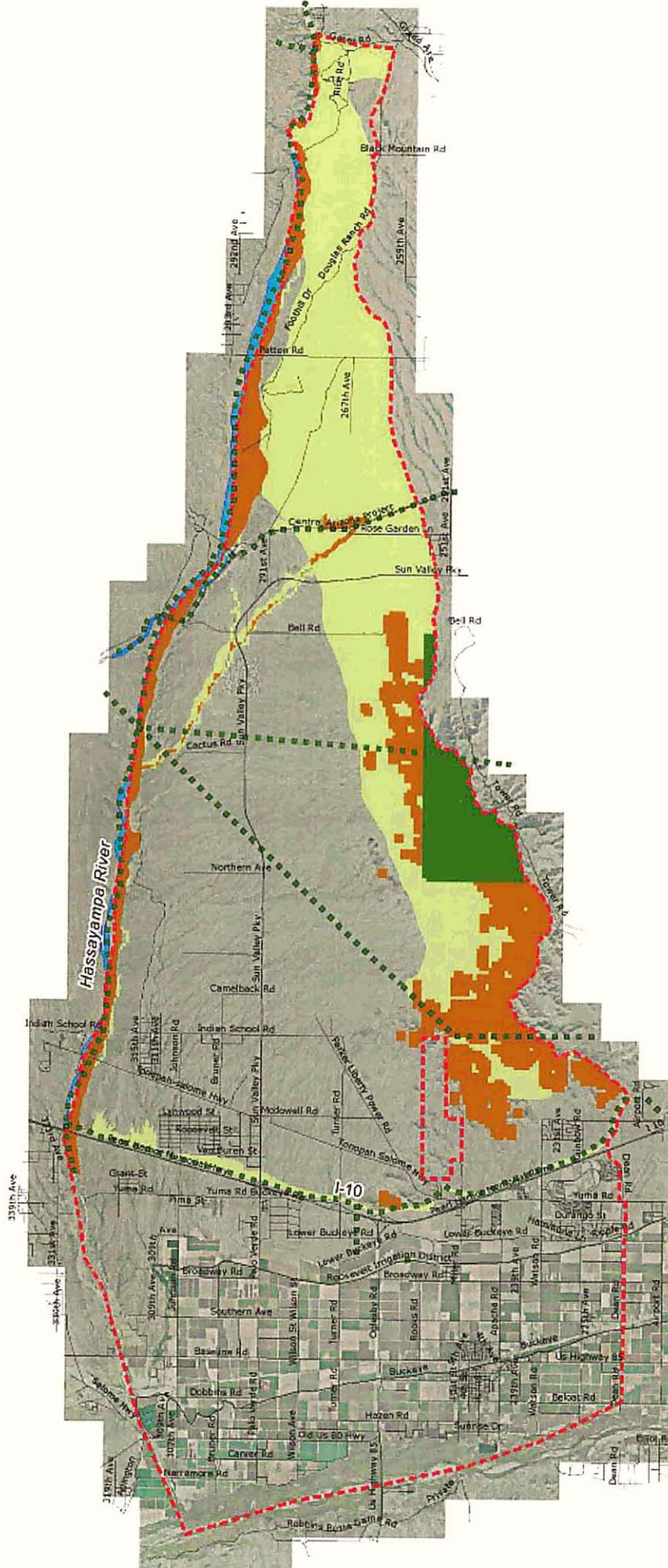
The Maricopa Regional Trail System represents a comprehensive system of non-motorized trail corridors that connects Maricopa County's regional parks. The system further links metropolitan areas, municipal trails, communities and neighborhoods with regional non-motorized multi-modal corridors. It also provides open space corridors that protect natural and cultural resources from development. The trail capitalizes on existing rights-of-way such as canals, parks, utility corridors and flood control projects.

The 1,521 miles of the Maricopa County Regional Trail System are organized into identifiable segments and priorities. These priorities serve as a guide for planners to use when implementing the trail plan. Within the project area, portions of the regional trail are identified by segment and priority and consist of trails designated as Priority 2, 3 and 4. Generally, the Priority 1 segments are those comprised of the Sun Circle Trail and the Maricopa Trail. Priority 2 segments are important regional corridors that connect to the Maricopa Trail and may provide connections to regional park systems. Priority 3 segments are regional corridors that are not currently key components of the regional trail but may become important future trails. All other trail corridors are assigned Priority 4. The Sun Valley ADMP project area is traversed by several priority 2, 3 and 4 corridors; significant segments of which run along the Hassayampa River, the Buckeye FRS 1 and 2 structures and the CAP Canal (Figure 16). The Central Arizona Project Aqueduct was identified by the Department of the Interior as a National Recreation Trail. As part of the recreational planning for the CAP, a 20-foot recreation corridor on canal right-of-way (facing downstream) is maintained. For detailed mapping of the Maricopa Regional Trail, refer to the Scenery Resource and Recreation Resource Assessment document developed as part of the Sun Valley ADMP project.

**Figure No. 16
DESERT SPACES AND
MARICOPA REGIONAL
TRAIL**

LEGEND

-  Sun Valley ADMP
-  Maricopa County Regional Trail
-  Conservation area
-  Retention area
-  Secured open space
-  Rivers



**FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY**

SUN VALLEY
AREA DRAINAGE MASTER PLAN

**DESERT SPACES AND
MARICOPA REGIONAL
TRAIL**

FCD 2004C049
JULY 2005



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11. MAG Desert Spaces Plan

The MAG Desert Spaces Plan (1995) was developed to provide guidance for regional open space planning in the metropolitan Phoenix area. The concept of the Desert Spaces plan is to preserve, protect and enhance regionally significant scenic, biological, archaeological, and recreational lands. Environmentally sensitive areas of upland Sonoran desert and floodplains of major rivers and washes that thread through the region are included in the Plan. The plan establishes policies for the conservation of the most important open space and the retention of and access to critical open space resources that are located in areas that are likely to be developed. Most of the Hassayampa floodplain area falls within the conservation area which denotes public and private lands that have outstanding open space value. These areas are recommended for protection from development, and management that will protect, maintain and enhance their intrinsic value for recreational, aesthetic and biological purposes. Refer to Figure 16 for a graphical representation of conservation, retention and secured open space within the project area.

12. White Tank / Grand Avenue Area Plan - Maricopa County Comprehensive Plan

The White Tank / Grand Avenue Area Plan was developed as part of 'Eye to the Future, 2020', the Maricopa County Comprehensive Plan. County area plans include areas generally located outside a municipal general plan, are approved by the county, and provide direction on land use decisions. Areas within the project area that are outside of existing municipal boundaries are considered part of unincorporated Maricopa County. These areas are expected to develop at rural densities unless higher densities are approved as part of a Development Master Plan (DMP).

The White Tank / Grand Avenue Area Plan focuses on four elements including land use, transportation, environmental and economic development. The formulation of the plan is based on a set of comprehensive goals, objectives and policies. Of the four elements, the environmental section is considered significant to the formulation of the Sun Valley ADMP. Key goals include the determination of adverse impacts on the natural and cultural environment, the preservation of highly valued open space, and the remediation of areas contaminated with hazardous materials. Other policies include the continued support and cooperation with the Flood Control District to minimize land development conflicts and to achieve compatibility with the development and implementation of Area Drainage Master Plan Studies.



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13. Northwest Area Transportation Study (2003)

The Northwest Area Transportation Study (NWATS) was prepared by the Maricopa County Department of Transportation in cooperation with the West Valley municipalities. It is a comprehensive plan that analyzes all surface transportation modes. This study produced a five-year capital program, a ten-year implementation plan, and a long-range (twenty-year) transportation program to support the transportation build out network already adopted. The long range transportation network contains an extensive expansion of roadways to the west and north of the currently urbanized area. Most of the new arterial facilities are tied to future developments that are expected to fund needed transportation projects in conjunction with land use improvements.

Regional highway issues identified within the project area include:

- The need for additional and improved roadway crossings
- The need for additional and improved freeway interchanges
- Sun Valley Parkway / Bell Road improvements; Sun Valley Parkway has been identified for possible extension northward to Grand Avenue
- Town of Buckeye has indicated that a connection between the CANAMEX Corridor and Sun Valley Parkway would provide better accessibility to areas west than simply relying on I-10
- Key locations identified for new interchanges include I-10 and Johnson Road, I-10 and Perryville Road and I-10 and Watson Road. Interchanges at Miller Road and Wilson Road are also indicated on the Map, Figure 17.
- Key elements of the future arterial network within the project area include widening Sun Valley Parkway / Bell Road to six lanes. It is the major arterial for development west of the White Tank Mountains in Buckeye. Also adjacent to the project area, Perryville Road is proposed for widening to six lanes but is undergoing further evaluation for feasibility.

14. Southwest Area Transportation Study Working Paper #6 (2003)

The Southwest Area Transportation Study (SWATS) was undertaken to provide recommendations for ultimate concepts for new and existing transportation facilities to be included in the MAG Regional Transportation Plan (RTP). Based on these recommendations the RTP identifies specific facilities for funding over the next twenty years.



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The numerous large, master planned communities under development in the Town of Buckeye must contribute positively to the transportation network in order to properly accommodate pedestrians, bicycles, automobiles, trucks, and other forms of transportation.

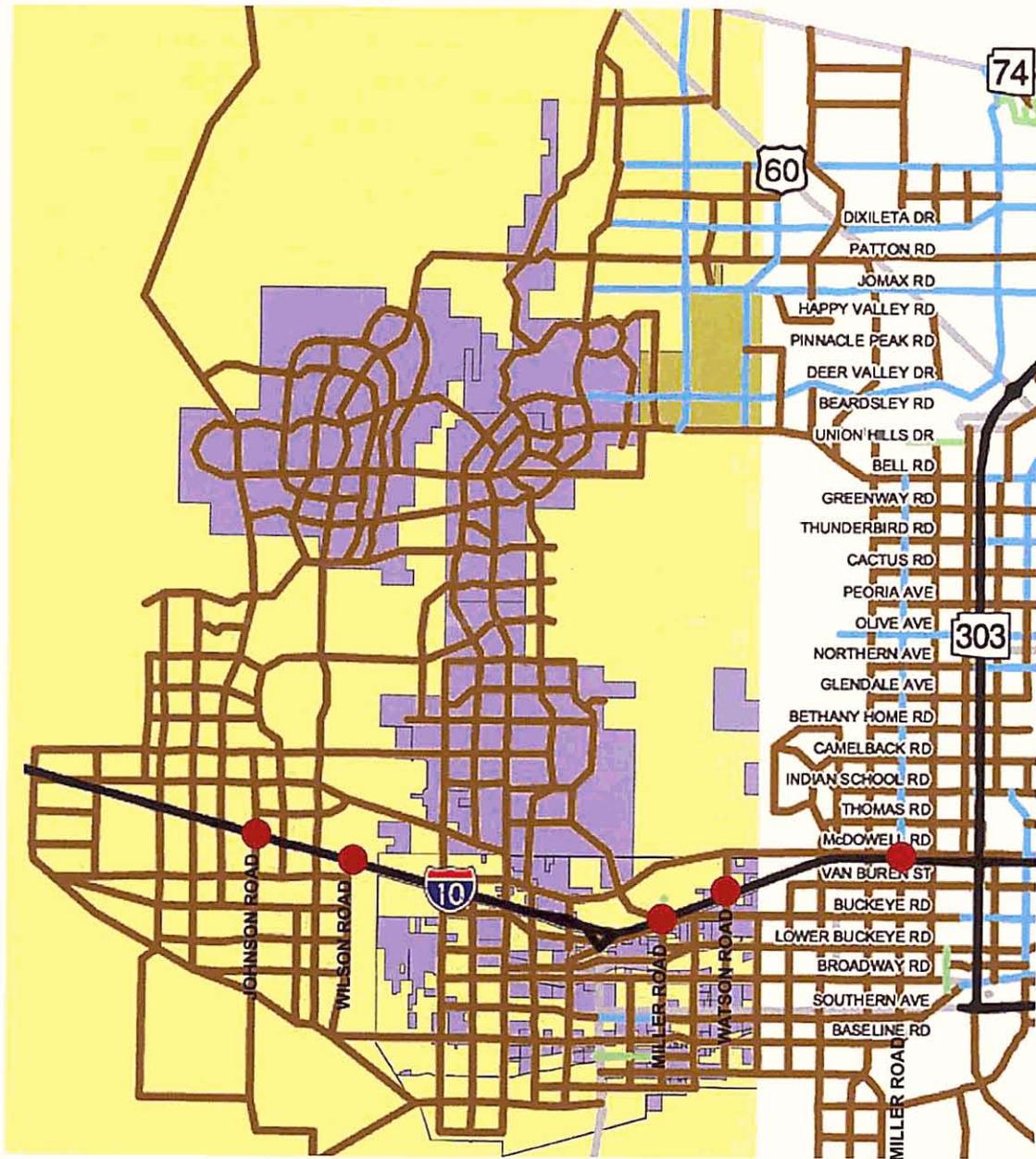
Completion of the arterial street grid system and improvement of existing roadways to ultimately plan half-street cross sections will progress as development occurs. Improvements to Watson Road and Airport Road will be funded by private development partners. A new traffic interchange along I-10 at the Wilson Avenue alignment, two miles west of SR-85 is also planned. Two new crossings of the Hassayampa River are planned at Camelback Road and the Tonopah-Salome Highway. Several other crossings are also planned as part of the new developments.

Transportation projects planned or proposed by the Town in various stages of planning include:

- Extension of Watson Road to MC-85, including construction of new crossings at existing the existing Union Pacific Railroad line and the Buckeye Canal.
- Acquisition of 66-foot right-of-way adjacent to existing Luke Air Force Base Auxiliary Airfield for future extension of Airport Road from Yuma Road to Roosevelt Street alignment.
- Realignment of Dean Road to shift ¼ mile to the east to avoid a large wash at the Yuma Road /Dean Road intersection.

15. MAG Regional Transportation Plan

The MAG Regional Transportation Plan identifies the future arterial network developed by MAG consultation with local agencies and a series of sub-regional studies conducted by MAG (NWATS and SWATS). The future arterial network extends the current mile arterial grid system concurrent with new development, and also closes gaps and improves connectivity in both developed and developing areas. While MAG is responsible for developing the RTP, local jurisdictions are primarily responsible for the maintenance of these facilities. Local plans for arterials are subject to change especially for rapidly growing areas.



● Key locations identified for new interchanges

Figure 17- Future Arterials Map

Source: MAG Regional Transportation Plan, 2004



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16. Compliance with Other Laws

Apart from planning and development guidelines, areas of regulatory control and compliance requirement are set forth by State and Federal Laws. It is imperative that applicable State and Federal laws are met to meet requirements defined by the Clean Air Act (CAA), the Clean Water Act (CWA), the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA) during development activity.

Per the United States Army Corps of Engineers (USACE) Regulatory Branch, applicable permits that apply to watercourse permitting include the following:

- A. Floodplain Use Permits
- B. NPDES Permit (Point Sources of Pollution)
- C. NPDES Storm Water General Permit (Construction Activities)
- D. NPDES Storm Water General Permit (Industrial Activities)
- E. Section 10 Permit (River and Harbor Act)
- F. Section 404 Permit (Clean Water Act)
- G. State Water Quality Certification (Section 401)
- H. Other state and local permits that may apply, depending upon location and activity
- I. Other Permits – A complete list and description of permits can be found on USACE's website: Source: <http://www.spl.usace.army.mil/regulatory/water.html>

17. United States Army Corps of Engineers Section 404

Any actions that result in a discharge of dredged or fill material into waters of the U.S., most likely will require a Section 404 permit. Generally, utility and road crossings, bank protection, boat launch ramps, sand and gravel mining and fill associated with residential and commercial development are typical activities which require 404 permits. In Arizona, the USACE has defined its jurisdiction as covering ephemeral washes. Any washes that fall under their jurisdiction must be covered by a 404 permit. Generally, the Corps defines the conditions under which these washes may or may not be disturbed. Within the project area, on a case by case basis, the USACE approves conditional permits that determine how development may or may not impact 404 washes.



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Associated with section 404 permitting is also the need for a cultural resources survey and a biological study in order to determine if valuable historic resources or endangered species are impacted by the proposed disturbance. Refer to the environmental assessment conducted as part of the Sun Valley ADMP project for detailed information.

Current regulations allow the use of compensatory mitigation for unavoidable impacts to jurisdictional “waters of the United States”. The USACE requires that any compensatory mitigation plan proposed be developed in accordance with criteria established in the April 19, 2004 Mitigation Guidelines and Monitoring Requirements prepared by the Los Angeles District Corps of Engineers. The Corps requires compensatory mitigation to offset adverse impacts to achieve a “no net loss” goal. However, under certain circumstances the Corps has determined that greater resource protection and conservation benefits may be offered if funds are collected in lieu of actual required mitigation actions. These funds may be applied to independent conservation projects that will result in better-designed and managed aquatic resource restoration projects. This allows for a holistic approach, allocating money to where there is greatest opportunity for long-term ecological benefit, rather than the creation of small developer managed isolated projects that currently occur under the traditional permitting approach.

Mitigation banking is defined as wetland restoration, creation, enhancement and preservation that are undertaken expressly for the purpose of compensating for unavoidable wetland losses in advance of development action, when such compensation cannot be achieved at the development site or may not be as environmentally beneficial. It typically involves the consolidation of small, fragmented wetland mitigation projects into one large contiguous site. Units of restored, created, enhanced or preserved wetlands are expressed as “credits” which may then be withdrawn to offset “debits” incurred at a project site. (USACE, Federal Guidance of the establishment, use and operation of mitigation banks).

18. Conclusion

Given the project area location and the impending population increase within the surrounding area, the District is carrying out its primary mission which is to safeguard populations downstream of the White Tank Mountains from future flood events. In order to properly identify and develop a proper guidance/criteria to manage flooding hazards and minimize adverse impact of existing and



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future developments, it is essential that the role of planning and regulatory components is appropriately coordinated between the various adopted master plans, specific area plans, local and state laws and federal regulations. The District is also accomplishing its vision in assuring the residents of Maricopa County and future generations fiscally responsible flood control solutions integrated with multi-use facilities that compliment and enhance the beauty of the desert environment.