US Highway 93 Corridor Area Plan

Draft: June 23, 2009

U.S. Highway 93 Corridor Area Plan

Prepared by Mohave County Development Services in association with
two citizen committees comprised of residents and land owners

June 23, 2009

Executive Summary

The purpose of the US Highway 93 Corridor Area Plan, or the Area Plan, is to recognize the unique character of the highway corridor and to encourage land use patterns that are consistent with the goals of the General Plan, the residents and the property owners.

The US Highway 93 Corridor Area Plan, a component of the General Plan, covers approximately 430 square miles of unincorporated land in Mohave County. The Area Plan, like the General Plan, is a flexible guide for land use and development for decision-makers. It is a statement of community values, ideals and aspirations about the best management of the natural and built environments. In addition to defining the County's view of the future, the Area Plan describes actions to be taken to achieve a desired future. The Area Plan uses text and diagrams to establish policies and programs to address those issues facing the highway corridor. The Area Plan is, thus, a tool for managing community change to achieve the desired quality of life.

In order to provide an overall guiding principle to develop the Area Plan, a vision statement was produced to read as follows:

- *Water and other vital natural resources shall be protected and conserved to allow for the creation of a self-sustaining and vibrant economy in perpetuity.*

- *To create communities that will provide both needed neighborhood and regional services while minimizing the change to the rural lifestyle of those currently living in or adjacent to the Corridor.*

- *Strive to preserve the rural and agricultural lifestyle of the area and provide protection and stewardship of the natural environment while allowing controlled, measured growth.*

The Area Plan includes three major sections. **Section I** introduces the Area Plan's purpose, content and effect, and describes the process used in preparing the Area Plan. Section I also presents the vision statement, and summarizes past, existing and anticipated conditions, including population growth trends affecting US Highway 93 Corridor.

Section II, the essence of the Area Plan, establishes goals, policies and implementation techniques for the three major elements:

1. Natural Resources
2. Water Resources
3. Public Safety
4 Economic Development
5. Transportation
6. Land Use and Housing

Each Area Plan Element begins with a statement summarizing the most important information gleaned from the base study research, public meetings with the Area Plan Committee, and other sources and is combined with the key planning issues relating to the Element.

The **Natural Resources Element** looks to preserve the natural resources in US Highway 93 Corridor. Key goals of the Natural Resources Element are as follows:

- Designate wildlife corridors going underneath Highway 93 as more commercial development comes into the area.
- Encourage the maintenance of and designate open space areas and landscape buffers.
- Learn to co-exist with and have good stewardship of native vegetation, significant landscape features, rock formations and wildlife with an emphasis along the base of mountains, foothills, slopes, and washes.
- Maintain air quality, desert views and scenic vistas.
- Limit exterior lighting and preserve dark skies.
- Minimize noise levels in a manner that is reasonable to both the local residents and the proposed development.
- Protect the historical, cultural, and archeological resources of the area.

The **Water Resources Element** looks to preserve the water supplies in US Highway 93 Corridor to comply with Growing Smarter Plus laws (ARS 11-821). Key goals of the Water Resources Element are as follows:

- Businesses should be required to use native vegetation and water conserving landscaping.
- Require or preserve native landscaping to be kept throughout the Corridor.
- Encourage and increase low-water use activities for conservation and encourage industries and businesses with limited water use.
- Require public agencies and public facilities to utilize water conservation and water saving devices.

Ensuring for adequate public services and mitigating fire hazards and enhancing emergency response is the focus of the **Public Safety Element**. Goals are as follows:

- Provide adequate sheriff and fire protection to all residents within the planning area, including transient services at travel centers.
- Decrease emergency response times.

Providing local employment opportunities at commercial centers is the key to the **Economic Development Element**. The region's natural attributes, including solar, should also be viewed a resource for a future green economy. Goals are as follows:

- Support commercial development that is determined by the local residents and local government to serve the needs of the residents and tourists.
- Encourage economic development activity at existing and planned traffic intersections along the corridor.

- Support organized recreation and tourists activities at appropriate locations.
- Recognize and maintain open space and vistas as an essential part of the community's attractiveness to residents and tourists.
- Allow only a limited amount of environmentally responsible industrial development.
- Allow only environmentally responsible development

Providing easy access to public facilities and private properties is the key to the **Transportation Element**. The low population density makes use of the private automobile the primary means of transportation. Goals are as follows:

- Maintain a reasonable free-flow of traffic along all County Maintained within the Planning Area.
- Reduce automobile dependency for short trips less than one mile.
- Improve existing roadways connecting to US Highway 93 to serve as access or frontage roads to avoid unnecessary highway trips and to provide an alternate access for those properties fronting along the highway.
- Upgrade roadway network to meet County design criteria for safe travel.
- Preserve and enhance existing trails and establish new trails throughout the Planning Area to create a comprehensive trail network.\
- Encourage telecommuting to reduce single occupancy vehicular trips to and from work.

The **Land Use Element** seeks to preserve a rural community atmosphere by maintaining the natural amenities that have attracted many buyers to area by focusing development around the highway intersections and areas facing growth pressure. Goals are as follows:

- Create commercial centers extending up to one mile along the highway from either end of the Traffic Interchanges and up to one half mile off of the highway fronting along the cross roads.
- Provide for highway-serving as well as general and neighborhood-serving commercial businesses at locations along the Corridor where similar land uses are established and in operation.
- Commercial development should have architecture that is aesthetically compatible with the natural environment.
- Establish Renewable Energy projects appropriate to and respectful of the land's carrying capacity.
- Create commercial recreational areas to serve local residents and tourists alike.
- Maintain the rural, low-density atmosphere in the planning area.
- Preserve the integrity of ranches and farms within and adjoining the planning area.
- Preserve the Rural to semi-Rural lifestyle for homes on smaller lots and parcels.
- Provide for higher density residential development in areas that are experiencing growth pressure.
- Create a diversified mix of quality, affordable housing to serve all members of the community.
- Establish Sufficient Public Facilities to Serve the Community.

- ♦ Ensure Infrastructure Concurrency in all Development Areas.

To ensure the goals and policies of the Area Plan are considered for each development proposal requiring review by the Planning and Zoning Commission and approval by Board of Supervisors, a final goal was added to establish a citizen advisory committee, with the County being responsible to do as follows:

- ✓ Notify the advisory committee of all development proposals within or adjoining the area plan boundary that involve a plan amendment, rezone, zoning use permit, or subdivision plat.

- ✓ Coordinate neighborhood meetings with the committee as needed that involve plan amendments, rezones, zoning use permits, or subdivision plats.

- ✓ Include the advisory committee's formal recommendation for each such proposal to the Planning and Zoning Commission and Board of Supervisors.

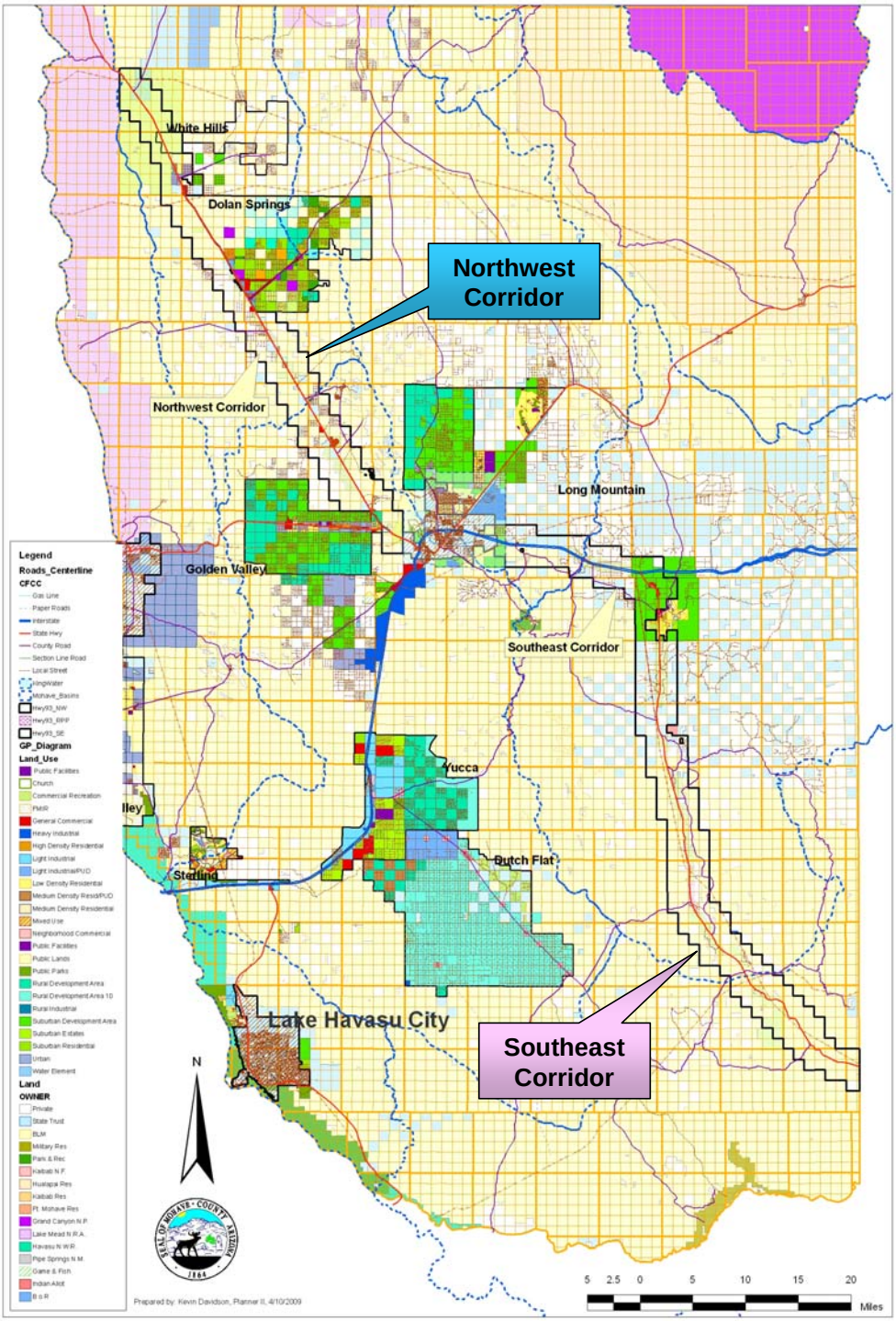
Section III provides, in tabular form, a brief overview of the key tools that can be used to implement this plan. This section is intended to give citizens and public officials a single reference source for information about the tools available to the County and other agencies in carrying out the plan.

The Area Plan is a guide to action. It is not, in itself, an implementation tool. By ensuring that individual County actions are consistent with the policies of the Area Plan, the community can effectively achieve its goals. For example, the Planning and Zoning Commission and Board of Supervisors will use the Plan's policies and Land Use Diagram to decide whether to approve a proposed rezoning or zoning use permit.

The Area Plan should be used to prepare road improvement plans, and other facilities and improvements. The Plan should be a dynamic document, subject to periodic modification when conditions within US Highway 93 Corridor change significantly. Periodic review and amendment of the Plan will be needed to ensure that it continues to address the needs of the community.

Vicinity Map

Land Ownership and General Plan Land Uses along Highway 93 Area Plan Boundary



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Section I

Introduction to the US Highway 93 Corridor Area Plan

Purpose

The proposed US Highway 93 Corridor Area Plan was recommended by the 2005 General Plan Update Committee to be one of staff's high priorities for area plan development after the re-adoption of the General Plan and as a response to several requests for highway-serving commercial development along the corridor received by staff since 2005, many of whom are anticipating an increased use of the highway following the completion of the Hoover Dam bypass bridge at the end of the decade. The Area Plan seeks to balance the anticipated growth along the Corridor as well as preserve the rural life style enjoyed by the existing resident landowners.

Contents and Organization

The Area Plan includes three major sections. Section I introduces the Area Plan's purpose, content and effect, and describes the process used in preparing the Area Plan. Section I also presents the vision statement, and summarizes past, existing, and anticipated conditions, including population growth trends affecting those lands adjacent to the US Highway 93.

Section II, the essence of the Area Plan, establishes goals, policies, and implementation techniques for the six major elements:

1. Natural Resources
2. Water Resources
3. Public Safety
4 Economic Development
5. Transportation
6. Land Use and Housing

Each Area Plan Element begins with a statement summarizing the most important information gleaned from the base study research, public meetings with the Area Plan Update Committee, and other sources to uncover key planning issues relating to the Element. This introduction gives the reader an understanding of the basis of the goals and policies which will be used by the County in making decisions on development approvals, public infrastructure financing, and other issues.

Section III provides, in tabular form, a brief overview of the key tools that can be used to implement this plan. This section is intended to give citizens and public officials a single reference source for information about the Area Plan's implementation process.

Effect

Planning is an on-going process, involving various players in the County, and does not "end" with the adoption of a particular document. As conditions change, there may be request to amend the Area Plan to take advantage of new opportunities as well as deal with new risks

arising along the Corridor. The Area Plan is not intended to be a static document, but a dynamic guide to help citizens shape the future of the community; however, any amendment must be in accordance with the guiding vision as further described and developed in more detail elsewhere in the planning document.

Goals are used to describe a desired state of affairs in the future. They provide a broad statement to which policies and programs may be directed and need not be tied to specific time lines. Goals in the Area Plan have been written to finish the sentence "Our goal is . . ."

Policies are statements of intent against which individual actions and decisions are evaluated. Policies are phrased as a sentence, with the agency responsible for implementing the policy clearly identified as an implementation measure. The Mohave County Departments of Development Services and Public Works are the main implementing agencies unless otherwise specified. The wording of policies conveys the intended level of commitment to action. For example, policies which use the word "shall" are mandatory directives, while those using "should" are statements to be followed unless there are compelling reasons to do otherwise.

Implementation techniques are actions recommended to carry out policies and procedures. They are not exhaustive, but give the Area Plan an initial agenda and means of implementation. The County will need to adopt future budgets, consider new ordinances, and provide staff resources to implement some of the Area Plan's goals.

The Area Plan is a guide to action. It is not a direct implementation tool such as an ordinance or regulation. The Area Plan should be used in evaluating rezoning and zoning use permit cases by staff, the Planning and Zoning Commission, and the Board of Supervisors, and to prepare road improvement plans and other facilities and improvements which can be created with a general improvement district, if any. The Area Plan should be a dynamic document, subject to periodic modification when conditions along the Corridor change. Periodic review and amendment of the Plan will be needed to ensure that it continues to address the needs of the community.

Area Plan Development

Notification letters were initially sent to 321 randomly selected landowners within one-half-mile of the highway right-of-way, plus another 38 properties with commercial improvements, covering all known businesses at the time of the sample.[1] Mail and e-mail notifications of the initial Area Plan meeting were sent to those with "interest" in the US Highway 93 Corridor, members of the public who participated in the 2005 General Plan update process and government agencies and service providers. Additional public notification was performed through the local newspaper in the form of display advertisements and special articles. Posters, noticing the first meeting, were placed along major thoroughfares. The first meeting was held in October, 2007, at the Board of Supervisors Auditorium where over 70 members of the public attended. Two Area Plan Committees were tentatively formed at this time to address the Northwest and Southeast portions of the Corridor. The two Committees met at least once a month for the next 14 months individually and five months jointly to discuss the issues faced along the Corridor and to develop the Area Plan. During this time, meeting minutes were mailed or e-mailed to

[1] A five percent sample was randomly selected from 6,428 Assessor parcels within the survey area.

interested individuals, most of whom were resident landowners. Meetings were typically attended by County officials, representatives from guest agencies such Arizona Department of Transportation and Arizona Department of Water Resources, realtors, residents, and others owning property within the study area. Northwest Committee meetings were held on weeknights at the Dolan Springs Community Center and in Chloride either at the local church or the Town Hall. The Southeast Committee meetings alternated between the Cedar Hill School and the Arizona Department of Transportation facility in Wikieup. Joint meetings were held at the County Administration building.

Vision for the Future

In order to provide an overall set of guiding principles to develop the Area Plan, a three-part vision statement was produced to read as follows:

- *Water and other vital natural resources shall be protected and conserved to allow for the creation of a self-sustaining and vibrant economy in perpetuity.*

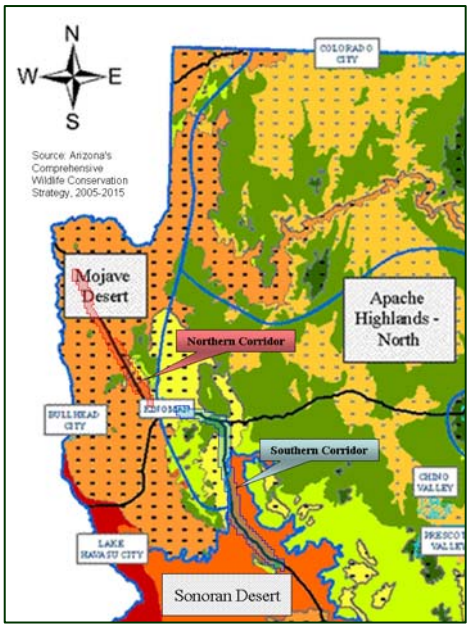
- *To create communities that will provide both needed neighborhood and regional services while minimizing the change to the rural lifestyle of those currently living in or adjacent to the Corridor.*

- *Strive to preserve the rural and agricultural lifestyle of the area and provide protection and stewardship of the natural environment while allowing controlled, measured growth.*

Each idea has been used by the Committee to guide the development of the goals and policies of the six Elements that constitute the Area Plan.

Natural Setting

The Mohave Desert Ecoregion, covering most of the Northwest Corridor, is a transitional region situated between the higher and cooler Great Basin Desert to the north and the warmer Sonoran Desert to the south (Lowe 1985). Elevation ranges from about 3,000 to 4,000 feet. This ecoregion features Basin and Range topography, with the broad Detrital and Sacramento Valleys separated by the Black and Cerbat Mountain ranges that trend from north to south. Precipitation ranges from about 5 to 11 inches per year, with slightly more winter than summer precipitation (CWCS).



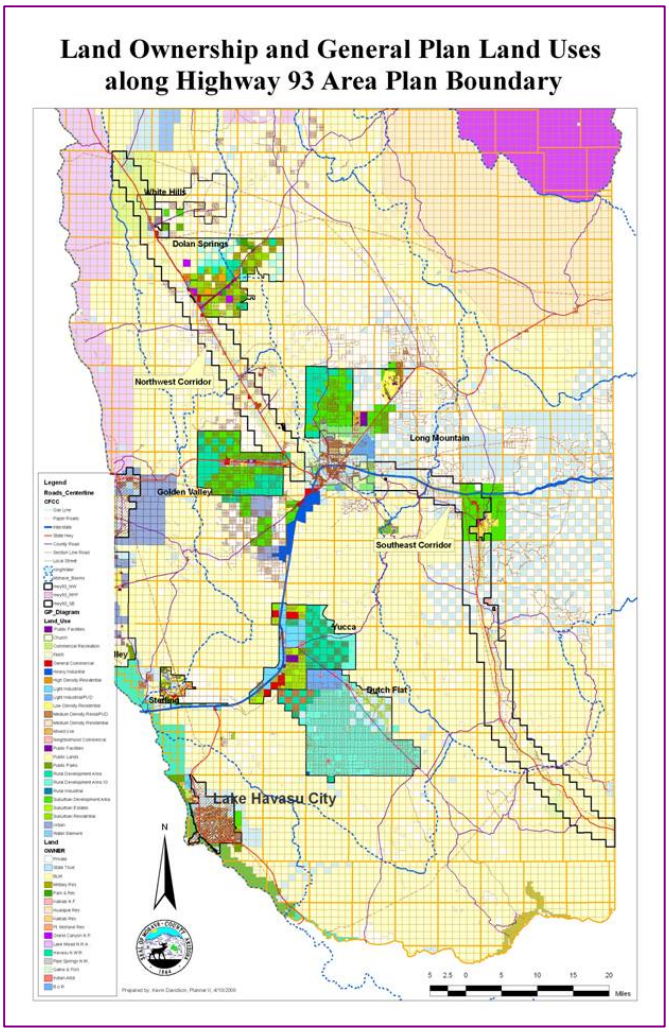
The Apache Highlands North Ecoregion is largely comprised of grasslands, chaparral, and pinyon/juniper woodlands (Marshall and others 2004). Elevation ranges from about 3,000 to 6,000 feet within the planning area. Precipitation ranges from 10 to 18 inches in this ecoregion,

with approximately equal portions falling in winter and summer. Drought is a large source of negative impact on the habitats and wildlife (CWCS). This ecoregion begins just east of the community of So-Hi and continues eastward along the Highway 93 Corridor to Round Valley and then south to Wikieup where it gives way to the Sonoran Desert. The dissected nature of the terrain causes differences in elevation, slope and aspect. Due to the highly dissected nature of its topography, the more rugged areas contain relatively low rural populations (CWCS).

The Sonoran Desert ecoregion is dominated by Desert Scrub communities (Marshall and others 2000, Phillips and Comus 2000). Elevation ranges from about 2,500 to 3,500 feet in the planning area. The ecoregion features Basin-and-Range topography, with the broad Big Sandy Valley separated by the Hualapai Mountains and Aquarius Mountains. Annual precipitation in the ecoregion ranges from about 3 to 17 inches, with slightly more annual rainfall within higher elevation inclusions of other vegetation types (CWCS).

Land Tenure

With nearly 430 square miles and over 8,500 individual parcels, the planning area encompasses a diverse and intermingled group of federal, state, and private land ownerships, each having unique and sometimes competing goals and aspirations for the land they own or manage on behalf of the public. Private land is primarily checker-boarded with BLM land along the Northwest Corridor as can be seen in the following diagram. Of the 168 square miles in this part of the Corridor, 100 square miles are under federal management. However, some 15,848 acres have been identified for disposal for private use potentially adding 25 square miles for development. Within the 259 square mile area of the Southeast Corridor, over 27,000 acres of Arizona State Trust lands are present, often interspersed with private land in a checkerboard pattern. These offer a challenge to management since access and control are often limited. The BLM also manages a significant portion of lands south of Cane Springs (see diagram) and has identified 6,350 acres of private land with valuable habitat for acquisition. The Hualapai Nation also has tribal lands adjoining the Southeast Corridor.



Adopting Resolution when available

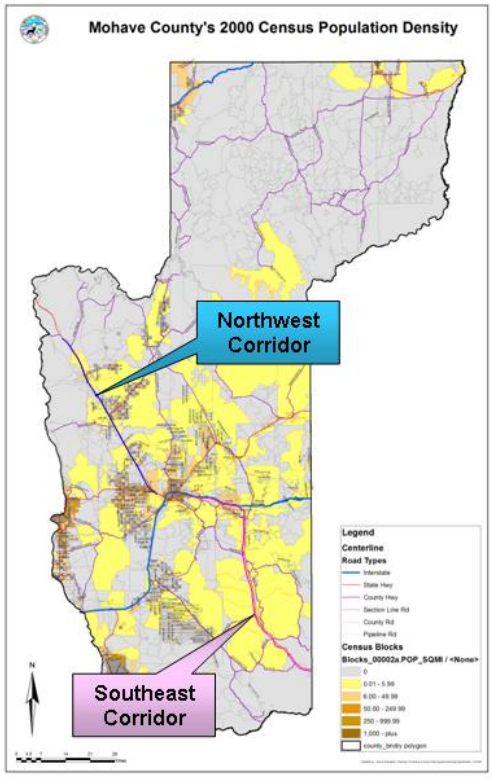
Community Background

Mining and livestock grazing were historically the primary land uses in these ecoregions and continues to a lesser extent today. Livestock grazing is common in the higher precipitation areas, which are typically in the foothills, higher basins and the mountain ranges with less activity at lower elevations where grazing is generally confined to ephemeral vegetation that is made possible by good winter rains. The rich gold, silver, and copper ore deposits that brought industry to Mohave County in the latter half of the 19th century have mostly been depleted. However, with the recent demand for copper and molybdenum, the Mineral Park Mine, located just east of the planning area, is beginning operations. Numerous abandoned mines and mining claims are scattered throughout all of the mountain ranges. Agriculture became established where water was available and is limited to flood plain areas of the Big Sandy. In most of the Big Sandy Valley, the primary river system, large tracts of desert remain, and plant and animal communities are relatively intact (CWCS).

Following the initial settlement of Mohave County, which has been mostly small town and rural in nature, and the various levels of natural resource development and extraction associated with this low-intensity settlement pattern, the next type of development is expected to be residential growth in the form of new urban housing tracts and town centers along US Highway 93. Migrating baby-boomers and retirees that are attracted by the mild climate of the area, some looking to live in the exurbia of Las Vegas, will be competing with new businesses along US Highway 93, all made possible by the construction of the Hoover Dam Bypass.

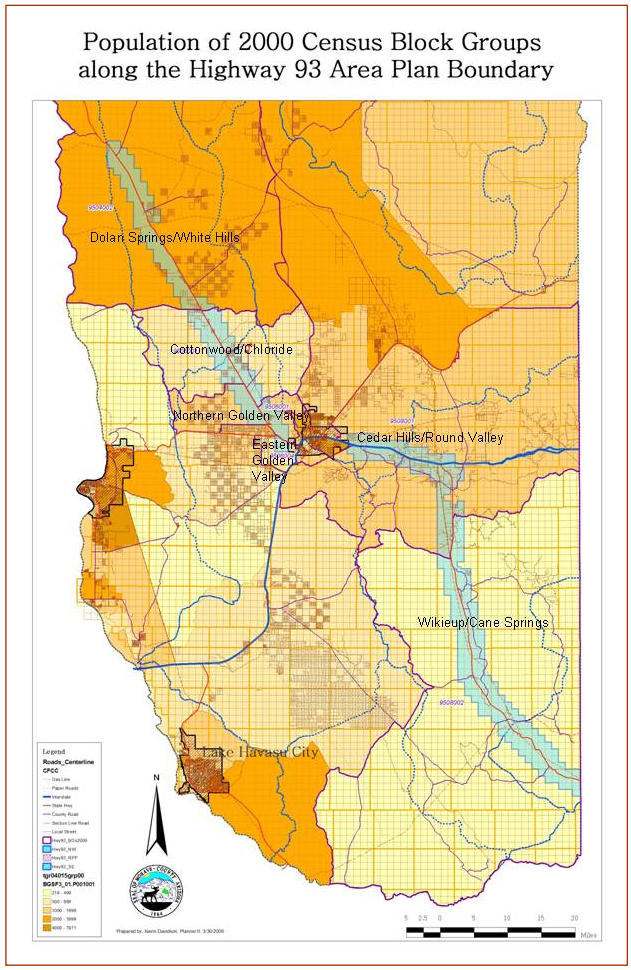
2000 Census Population

The majority of the planning area traverses regions of the County with fewer than six persons per square mile, the traditional definition of the American Frontier, ca. 1890. Areas where the population reaches 50 persons per square mile occur at the intersection of White Hills Road and the highway, So-Hi and vicinity, east of the highway, the neighborhoods of Cedar Hills and Cedar Mesa and the greater Wikieup area. The total population estimate for census blocks within the planning area was 1,399 in 2000 resulting in 3.25 persons per square mile. Annual population increases of approximately five percent per year may be assumed based on the growth in the Kingman area. The City of Kingman falls mid-way along the Corridor and is the primary population center with some 35,000 people in the city and the adjoining New Kingman/Butler area.



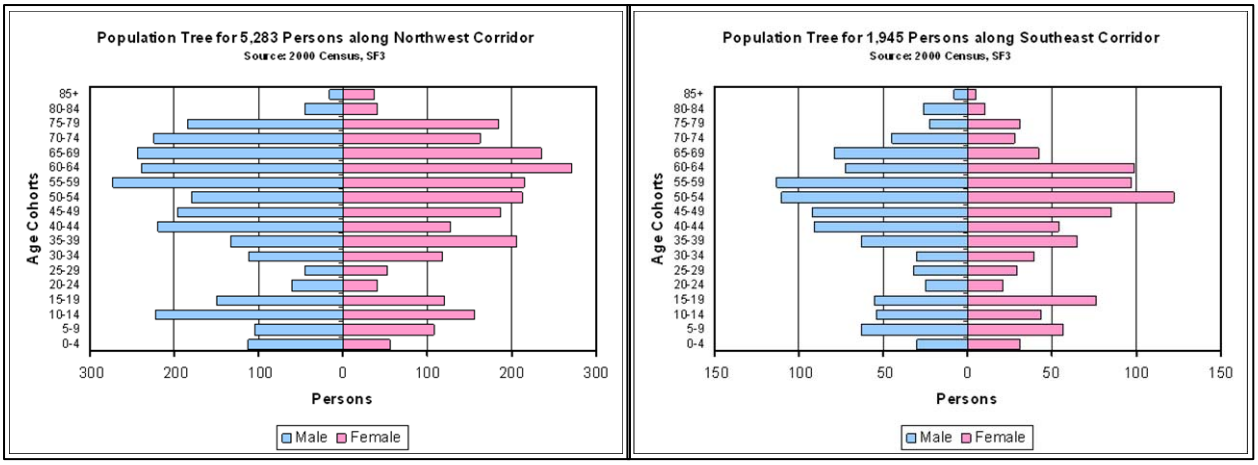
Along the Northwest Corridor four Census Block Groups representing, 1) Dolan Springs/White Hills and points north of Cottonwood Road, 2) Chloride/Grasshopper Junction, the area between

Cottonwood Road and Jurassic Drive, 3) northern Golden Valley bounded by Jurassic and Agua Fria Drives and 4) eastern Golden Valley located generally east of Bacobi Drive, contained 5,283 persons (see Block Group map). Along the Southeast Corridor, 1,945 persons resided within Census Block Groups for, 1) Cedar Hills/Round Valley, covering the area southeast of Kingman to nearly Cane Springs, and 2) Wikieup/Cane Springs including all land to the Yavapai County line along the highway. Population ranged from a high of 2,293 persons in Dolan Springs/White Hills to low of 423 persons in Wikieup/Cane Springs or less than one person per five square miles in the latter instance.



A review of the population distribution by age and gender shows a dearth of persons aged 20 to 34 along the Corridor. This is not unusual in Mohave County which has only 14 percent of its population within this age group. This statistic is indicative of young people leaving the county after high school for college and other pursuits in larger metropolitan areas. By contrast, the 55 to 69 year old cohort comprises 20 percent of the population.

For the Northwest Corridor, this missing young adult demographic is even more pronounced with only eight percent of the population in the 20 to 34 age group (see Population Tree chart). This is made up mostly in the larger percentage of persons aged 55 to 69 that comprise 28 percent of the population. Along the Southeast Corridor, the young adult population comprises nine percent of the population.



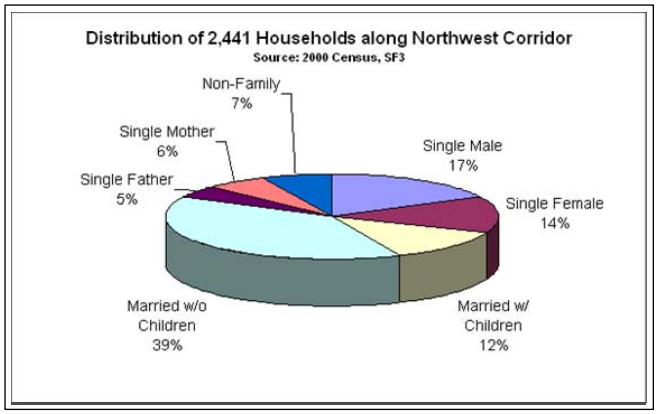
However, fewer seniors aged 55 to 69 are present as compared to the Northwest Corridor.

Only 12 percent of those persons living in the four Census Block Groups along the Northwest Corridor were born in Arizona. Most, some 41 percent, have come from another western state, typically California. Midwesterners make up 24 percent of the population. For birth places of those living along the Southeast Corridor, 28 percent call Arizona their home state with 35 percent being born in another western state and 20 percent hailing from the Midwest.

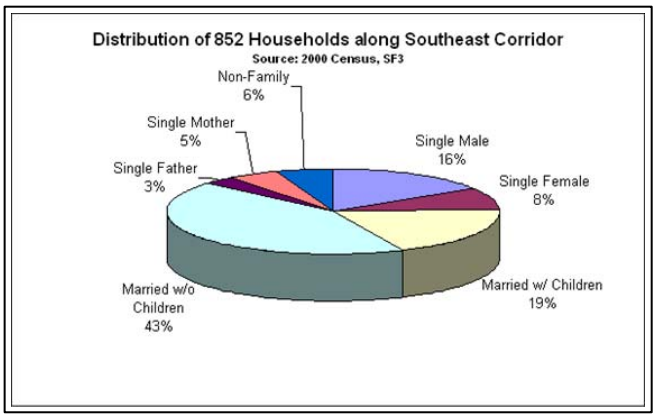
This highly transient population is also reflected in place of residency five years prior to the Census. Over one fourth of the Northern Corridor's population lived in another state in 1995 greater than the number who moved from all parts of the country or other places in Arizona combined. Less than 50 percent of the population lived in the same house as they did in 1995. In comparison, mobility along the Southeast Corridor is somewhat less with over 50 percent of all persons living in the same house as five years previous and only 13 percent having lived in another western state in 1995. Nearly one fourth of residents did, however, relocate from another part of Mohave County to live in this environment as compared to about one eighth who relocated to the Northwest Corridor.

Households

The distribution of households shows that the traditional married couple headed household, with or without children, is still the majority along the Northwest Corridor making up 51 percent of the 2,441 households in the four Census Block Groups (see chart). Single parent households comprise 11 percent of all households and fairly evenly divided between male and female headed households. There where slightly more single male headed households than single female headed households.



With 852 households, the Southeast Corridor contains just over one third the number found along the Northwest Corridor. Married couples with children comprise a substantial plurality at 43 percent of all households with another 19 percent of households headed by married couples without children (see chart). Single parent households make up eight percent of the households with single mothers being more prevalent than single fathers. Single male headed households out number single female headed households by a margin of two to one at 16 percent and eight percent of all households, respectively.



The highest percentage of seniors reside in the communities of Dolan Springs and White Hills where over half of all households are headed by persons aged 65 or more. Seniors represent at least 40 percent of the households in the Chloride/Grasshopper Junction and eastern Golden Valley. By contrast, senior-headed households in the Cedar Hills/Round Valley area account for less than 25 percent.

Housing

In 2000, the County's median home value was $95,300, with median monthly rent at $560. Rental housing is considered affordable if it does not consume more than 30% of gross annual household income. Most households can afford rental units in Mohave County. In the Northwest Corridor, median household income for the four Census Block Groups in 2000, including lands outside of the planning area, ranged from $17,358 in Dolan Springs/White Hills to $31,875 in northern Golden Valley. A cluster of homes priced between $50,000 and $90,000 provided an opportunity for the average household to purchase the median priced home of $65,000. These homes were mostly owner-occupied single-family detached dwellings many of which were manufactured homes dating from the late 1970s.

Median incomes in 2000 for Cedar Hills/Round Valley Area and Wikieup/Cane Springs were $25,455 and $35,833, respectively. Unlike the Northwest Corridor, where a normal distribution curve is found, most homes are valued above $100,000 with median value of $135,000, making these homes less affordable to area households.

Employment and Poverty

The civilian labor force participation rate of those 16 years of age and older varied from a low of 34 percent in the Dolan Springs/White Hills Area to a high of 56 percent in the Cedar Hills/Round Valley Area. As a comparable, labor force participation in the City of Kingman stood at 57 percent with the County being somewhat lower at 52.8 percent. This variation may be explained by a larger percentage of senior citizens in the outlying communities and the level of disability among those 16 to 64 years of age which was several percentage points higher for the Northwest Corridor (19.4 percent) and the Southeast Corridor (22.9 percent) when compared to Kingman at 18.75 percent.

Over one-eighth of the Northwest Corridor's 1,685 person workforce is engaged in the arts, entertainment and recreation industry. Other industries of note included education, hospitality management, retail trade and health and social services. Construction and manufacturing jobs combined make up over 15 percent of jobs in the area. Employment in mining, although only constituting 3.68 percent of the jobs along Southeast Corridor, was significant with the arts, entertainment and recreation industry employing some 2.5 percent of the labor force. Retail trade workers amounted to 15.54 percent of the 859 person labor force. Other significant industries included hospitality management, construction, agricultural and forestry and fishing, and civil service.

Generally, the unemployment rate is greater along the Northwest Corridor with a high of 18 percent in eastern Golden Valley. Greater Wikieup and Cane Springs had an unemployment rate

of three percent, the lowest of the six Census Block Groups. On the other hand, poverty levels are lower for those areas nearest to Kingman with eastern Golden Valley reporting 20 percent of persons in poverty and northern Golden Valley having some 16 percent of its population living in poverty. Only Cedar Hills/Round Valley, at 10 percent, had a lower poverty rate than the City of Kingman and Mohave County. Chloride/Grasshopper Junction reported the highest level of poverty at 31 percent with Dolan Springs/White Hills and Wikieup/Cane Springs reported poverty levels and 26 percent and 24 percent, respectively.

Section II

Natural Resources

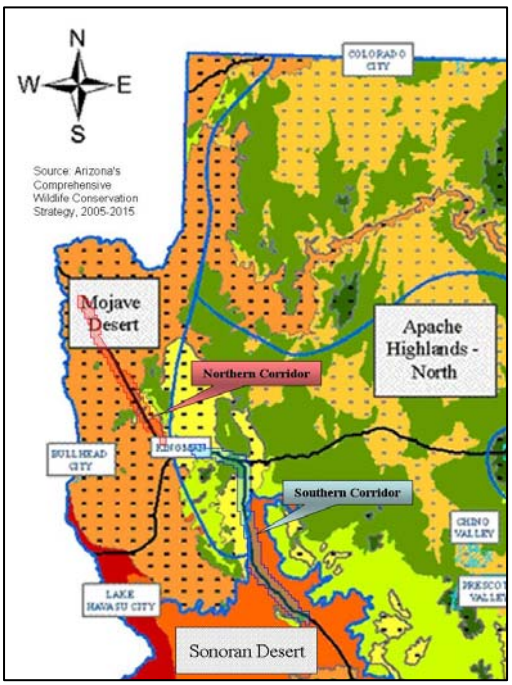
Natural Resources Element

Introduction

The Natural Resources Element addresses issues relating to the three biotic communities that constitute the physical environment for the 427-square-mile planning area running some 130 linear miles along US Highway 93 within Mohave County and includes sections on native plants, air quality, noise, and scenic resources. Water resources will be addressed in a separate Element. Each section includes an overview of existing conditions, trends, goals and policies to guide the community's approach to maintain or improve their environment and a list of implementation techniques assigning tasks to various groups and/or government agencies.

Biotic Communities

The planning area traverses the Mojave Desert, the northern Apache Highlands and the Sonoran Desert as defined by the Arizona Game and Fish Department recently published Comprehensive Wildlife Conservation Strategy (see Exhibit). Each community contains various habitat types and will be discussed after a brief introduction to each biotic community. A list of species of greatest concern found at four wash crossings along the highway corridor and a list of habitat stressors is also provided in Tables 1 and 2.



Mohave Desert Biotic Community

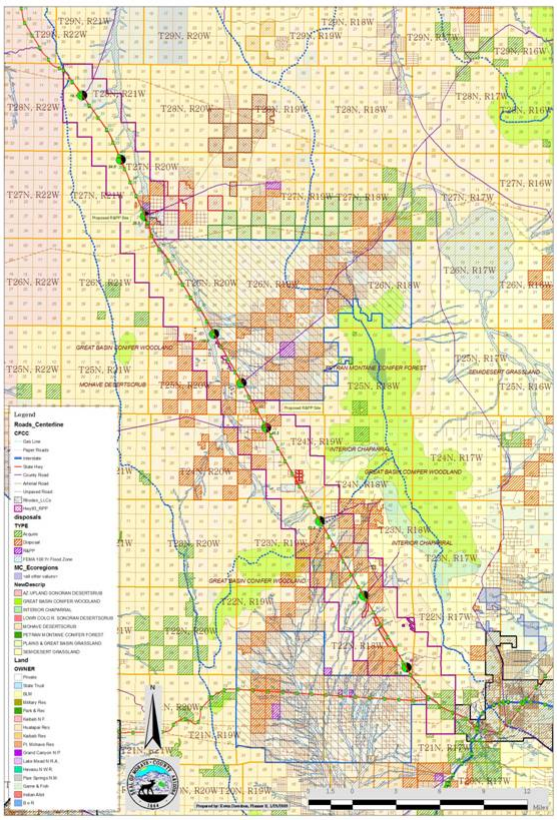
The Mohave Desert Ecoregion is a transitional region situated between the higher and cooler Great Basin Desert to the north and the warmer Sonoran Desert to the south (Lowe 1985). Elevation ranges from about 3,000 to 4,000 feet. This ecoregion features Basin and Range topography, with the broad Detrital and Sacramento Valleys separated by the Black and Cerbat Mountain ranges that trend from north to south. Precipitation ranges from about 5 to 11 inches per year, with slightly more winter than summer precipitation (CWCS).

Mining and livestock grazing were historically the primary land uses in the area and continues to a lesser extent today. Livestock grazing is common in the higher precipitation areas, which are typically in the foothills, higher basins and the mountain ranges with less activity at lower elevations where grazing is generally confined to ephemeral vegetation that is made possible by good winter rains. The rich gold, silver, and copper ore deposits that brought industry to Mohave County in the latter half of the 19th century have mostly been depleted; however, with the recent demand for copper and molybdenum, the Mineral Park Mine, located just east of the planning area, is beginning operations. Numerous abandoned mines and mining claims are scattered throughout all of the mountain ranges.

Following the initial settlement of Mohave County, which has been mostly rural in nature, and the various levels of natural resource development and extraction associated with this low-intensity settlement pattern, the next type of development is expected to be residential growth in the form of new urban housing tracts and town centers for migrating baby-boomers, some looking to live in the exurbia of Las Vegas, and the coming of international trade along US Highway 93, both made possible by the construction of the Hoover Dam Bypass. Accordingly, this development will further the exploitation of natural resources that this plan seeks to minimize.

Mohave Desert Scrub

The majority habitat is Mohave Desert Scrub which predominates the northern corridor portion of the area plan and is a transitional habitat between the Great Basin Desert Scrub and the Sonoran Desert Scrub habitats which are found along the eastern and southern extent of the planning area, respectively (see exhibit).



The creosote bush is the dominant species on the sandy flats with white bursage and other grasses and forbs intermixed. Catclaw acacia and smoketree are found in the hills and along washes. The region is rich in ephemeral plants. Cacti are also common within this zone with blackbrush and Joshua trees emerging in the northern part. Plants associated with these areas include galleta grass, bush muhley, white burrobush, ephedra, and banana yucca (CWCS).

The sandy flats are mostly composed of the Latene-Nickel-Pinaleno (Thermic Semiarid 9) soil association. These soils are well drained, deep, gravelly, limy, moderately coarse to moderately fine-textured, nearly level to very steep soils on dissected alluvial fan surfaces with soil temperatures between 59° to 72° F (see exhibit). Factors limiting the potential of these areas for urban development are the excessive slope and high gravel and lime content in the lower horizons. These limitations have been partially overcome or compensated for by proper engineering design and construction techniques (Hendricks).

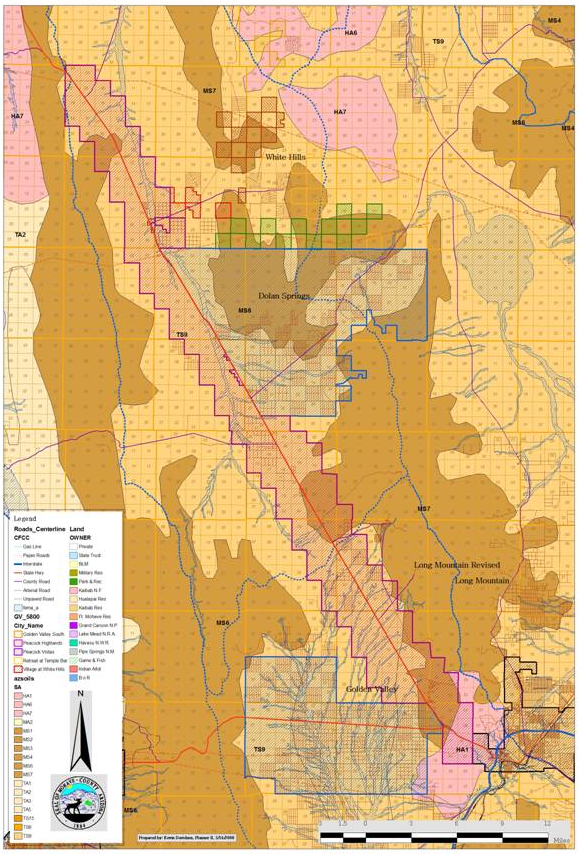
Drought is a major stressor to wildlife and wildlife habitat in this area. Rainfall is often unpredictable and some areas may go without measurable precipitation for long periods of time.

Year-round grazing by livestock and feral animals such as burros and horses has led to a loss of native grasses with subsequent increase in shrub density (CWCS). These plant communities are in disclimax state. The native bunch grasses, not generally tolerant of grazing, sustained high mortality when grazed heavily in spring. Wildfires, once common in these grasslands, are far less frequent today as grazing has left less residual grass to carry fires and land management agencies maintain fire suppression policies (Hendricks). Native plant communities do not appear to be recovering within these areas. The condition of this habitat type will continue to show a decreasing trend due to population growth in the region and associated human impacts.

Semidesert Grassland

A small portion of the planning area between Mineral Park Road and Chloride Road, generally east of Highway 93 is populated by perennial bunch grasses interspersed with low shrubs and bare ground due to lower precipitation (10 inches per year) than other grasslands. Overgrazing and fire suppression have compromised the condition of these grasslands by reducing bunch grasses and contributing to their replacement with annual grasses, forbs, scrubby trees, and shrubs similar to the disclimax plant communities noted in Desert Scrub above. In climax communities, three-awn and tobosa together with grama species are the dominant grasses. Galleta, bush muhley, fluffgrass, vine mesquite, and hairy tridens may also be present. Other common species in this zone include acacias, prickly pear cactus, cholla, and yucca. This habitat type has seen major downward trends due to drought, continued year-long grazing, nonnative plant encroachment, losses to urbanization and rural development, and associated human impacts. Native grass communities have been reduced or eliminated over most of the valley and nonnative grasses and weeds have become dominant (CWCS).

Soil Types along the Highway 93 Area Plan's Northern Boundary

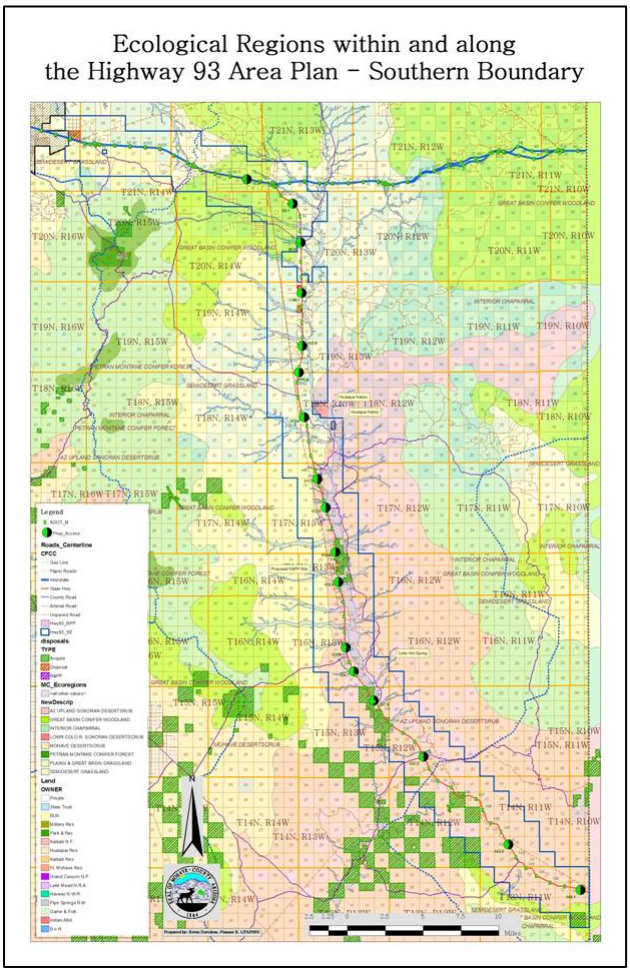


The grasslands are underlain in part by the Cabezon-Thunderbird-Springerville (Mesic Semiarid 7) soil association. These soils are shallow to deep, gravelly, cobbly and stony, fine-textured, nearly level to very steep soils on basaltic plains, mesas and hills with soil temperatures between 47° to 59° F. This association consists of well-drained soils on plains, mesas, hills and very steep escarpments. The principal factors limiting the potential of these soils for development of homesites and recreation sites are high shrink-swell, clay textures, slow to very slow permeability and excessive rock fragments on the surface (Hendricks).

The planning area south of So-Hi also contains the Torrifluvents (Hyperthermic Arid 1) soil associations which are deep, stratified, coarse to fine-textured, nearly level to gently sloping soils on floodplains and lower alluvial fans. Soil temperatures are between 45° to 90° F. This association consists of well-drained to somewhat excessively drained soils formed in sandy to clayey recent mixed alluvium on the floodplains. All of the soils in this association are subject to seasonal, brief flooding unless protected. Runoff is slow and the hazard of erosion is usually slight except along entrenched streams where soils are subject to bank cutting, piping and gullying. Flooding potential is the major limitation of these soils. The permeability of the soil is too limited for septic tank disposal fields. The excessive permeability of most of the soils in this association prohibits their use for water retention structures (Hendricks).

Apache Highlands North Biotic Community

The Apache Highlands North Ecoregion is largely comprised of grasslands, chaparral, and pinyon/juniper woodlands (Marshall and others 2004), but also contains significant mixed stands of Madrean evergreen oak woodlands in the foothills. Elevation ranges from about 3,000 to 6,000 feet within the planning area. Precipitation ranges from 10 to 18 inches in this ecoregion, with approximately equal portions falling in winter and summer (CWCS). This ecoregion begins just east of the community of So-Hi and continues eastward along the Highway 93 Corridor to Round Valley and then south to Wikieup where it gives way to the Sonoran Desert (see exhibit). The dissected nature of the terrain causes differences in elevation, slope and aspect that often result in a striking variety of habitat type and associated wildlife. Great Basin Coniferous Woodland, Semidesert Grassland, and associated riparian and aquatic habitats may be found in close proximity. Due to the highly dissected nature of its topography, the more rugged areas contain relatively low rural populations (CWCS).



Although the ecoregion is relatively well-watered and much of that runoff flows through the streams and washes, the western third of the ecoregion, comprising the planning area, is less well-watered. The upper portion of the Big Sandy River is the significant surface water. Many of the smaller tributaries of the Big Sandy have perennial or intermittent flow, providing aquatic habitat, support for riparian

communities and water for wildlife consumption. Additionally, private landowners and livestock operations have constructed numerous water impoundments that are of value to wildlife (CWCS).

Mining, livestock grazing, and timber harvesting have been the dominant human economic activities. These activities have been a source of significant impacts on the biotic environment. Agriculture is limited to flood plain areas of the Big Sandy. Some mining structures provide habitat for bats and other wildlife with special habitat requirements. Today the ecoregion is facing pressure from an increasing human population comprised of retirees who seek the mild climate of the area and those who can afford the time and expense to recreate in the outdoors (CWCS).

Drought is a large source of negative impact on the habitats and wildlife. In winter 2005-06 Arizona found itself in an extensive period of severe drought, with little germination of winter annual vegetation and perennial vegetation dramatically reduced in vigor. Much of the existing vegetation had been severely over-utilized, in places due to wildlife use, but more extensively as a result of livestock grazing. Visual observations indicate severe loss of rangeland biomass, many springs and cattle tanks without water, and high levels of impact to vegetation and soils due to livestock that remain on rangelands (CWCS).

Semi-Desert Grassland

This habitat type has probably diverged most significantly from its native condition. The landscape, which extends from the City of Kingman's eastern border to Blake Ranch and then again from Round Valley to Wikieup, was historically dominated by perennial bunch grasses such as three-awn, tobosa and grama species interspersed with low shrubs and bare ground. Because of lower precipitation than other grasslands, and human activities such as intensive livestock grazing, fire suppression, and growing human settlements, the current condition of this habitat type is that it has been degraded throughout, followed by invasion of Great Basin Conifer and/or Upland Sonoran Desert Scrub communities similar to the Desert Grass land described in the Mohave Desert Ecoregion (CWCS).

Current drought, and expectation that it may continue for a significant period into the future, creates a mixed prognosis for this habitat. Increases in fire on this landscape offer an opportunity for the perennial grass community to reestablish a favorable equilibrium with the invading shrubs communities. However, without normal or near normal precipitation, grasses are unlikely to thrive. In addition, non-native grasses and forbs are mostly annual species which react quickly to favorable conditions, sequester nutrients, and out-compete the native perennial grasses, at least in the short-term (CWS).

Soils include the Latene-Nickel-Pinaleno (Thermic Semiarid 9) soil association described above, which occurs along the Big Sandy River floodplain and in the DW Ranch Road vicinity of the planning area, and the Lithic Torriorthents-Rock Outcrop-Lithic Haplargids (Thermic Arid 3) soil association. The latter are shallow, gravelly and cobbly, moderately sloping to very steep soils with rock outcrop on hills and mountains. Soil temperatures are between 62° to 72° F. This association consists of well-drained, shallow soils and rock outcrop on hills and low

mountains. The major soils of the association are severely limited for use as building sites due to excessive slopes and shallowness to bedrock with areas of high shrink-swell potential (Hendricks).

Great Basin Conifer Woodland

This habitat type, characterized by alligator and one-seed juniper, exists throughout middle elevations of the ecoregion. This landscape is the dominant vegetation east of Blake Ranch to Round Valley and then south to the Windmill Ranch. The condition of Great Basin Coniferous Woodland is that it is increasing in extent within this ecoregion at the expense of Semidesert Grassland and riparian habitats. This reflects the combined impacts of altered fire regimes and intensive domestic livestock use over the past 100 years. Over the last 10 years, portions of this habitat type have been treated by various means to reduce overstory vegetation and to restore grassland. The resulting vegetative communities vary in composition, stability and productivity depending on restoration techniques employed and subsequent management practices. Presence of undesirable invasive plants has resulted in much of the treated acreage failing to be properly restored to the intended grasslands (CWCS).

Sonoran Desert Biotic Community

The ecoregion is dominated by Desert Scrub communities (Marshall and others 2000, Phillips and Comus 2000). Elevation ranges from about 2,500 to 3,500 feet in the planning area. The ecoregion features Basin-and-Range topography, with broad Big Sandy Valley separated by the Hualapai Mountains and Aquarius Mountains. Annual precipitation in the ecoregion ranges from about 3 to 17 inches, with slightly more annual rainfall within higher elevation inclusions of other vegetation types (CWCS).

Biodiversity of the Sonoran Desert is among the highest of any desert in the world (Phillips and Comus 2000) and can be manifested here in surprising ways. The most striking feature of this ecoregion is the cactus-dominated vegetation communities, with giant saguaros and chollas being the most conspicuous. In terms of breeding bird diversity and productivity, the Sonoran Desert's riparian habitats are among the richest in all of North America (Nabhan and Holdsworth, 1999).

The majority of land uses have historically been agriculture, urban and rural settlement, livestock grazing, and mining. Agriculture became established where water was available. In most of the Big Sandy Valley, the primary river system, large tracts of desert remain, and plant and animal communities are relatively intact (CWCS).

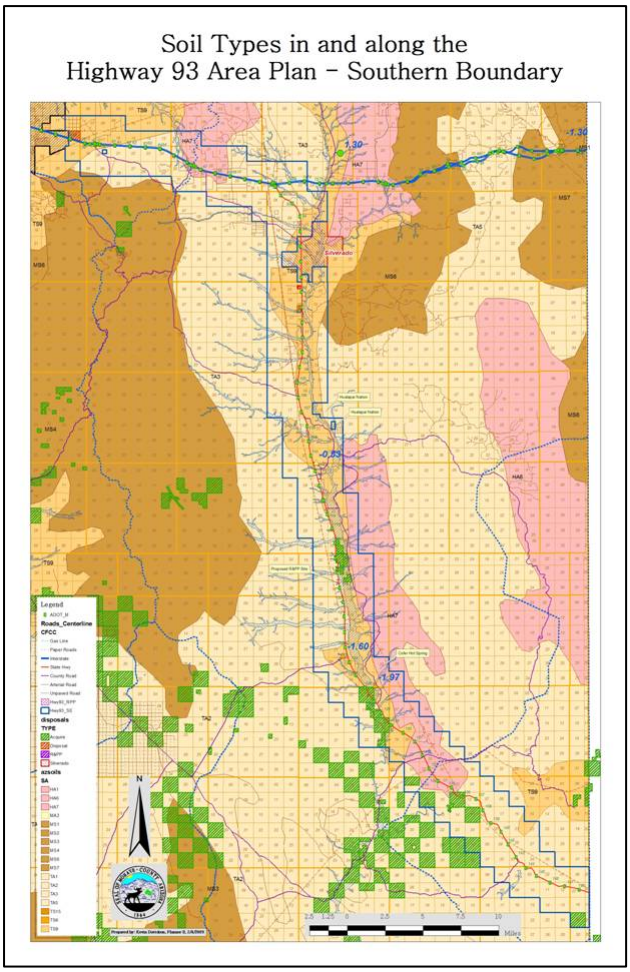
Upland Sonoran Desert Scrub

This habitat occurs at the higher elevations of the Sonoran Desert Ecoregion, where slightly cooler temperatures and increased precipitation result in more verdant and diverse vegetation. The Big Sandy Valley is the furthest northern extension the Sonoran Desert Ecoregion in Arizona. Strips of riparian habitat exist along this main drainage and others with perennial or near-perennial flows. These riparian deciduous woodlands and marshlands were formerly much more extensive and their decline represents a significant loss to wildlife. Trees, typically in the

paloverde-mixed cacti (Brown 1982) community and ironwoods are less confined to drainages giving this habitat a greater overall arboreal diversity. Ironwood is of particular importance because it functions as a habitat-modifying keystone species, influencing the health of associated species (CWCS).

Wildfire in this vegetative community is increasingly common, but was not so formerly. Many native plants are not adapted to fire and where it occurs, type conversion to a community more similar to the Lower Colorado River Sonoran Desert Scrub, augmented with nonnative grasses and forbs, is often the result. Threats are more diverse and immediate private lands, including current and future urban and rural development, agricultural development, overgrazing, and increasing recreational pressure. Ecosystem integrity and connectivity should be a high priority (CWCS).

The Anthony-Vinton-Agua Soil Association (Thermic Arid 2) soil association is a deep, medium to coarse-textured, nearly level to gently sloping soil on floodplains and low alluvial fans. Soil temperatures are between 59° to 72° F. This association consists of well-drained soils on the floodplains of intermountain valleys and is found on both sides of Highway 93 generally south of Wikieup. These soils are subject to brief flooding during wet seasons and can be a severe limitation for homesites and many other community uses. If protected from flooding, these soils are suitable for use as homesites and sanitary facilities. These soils are somewhat droughty for growing lawns and landscape plants (Hendricks).



The second soil type, found typically east of Highway 93 between the Cane Springs Ranch and Signal Road and in the Blake Ranch area, is the Laveen-Carrizo-Antho Association (Hyperthermic Arid 7). These are deep, medium-textured, limy and gravelly, moderately coarse and coarse-textured, nearly level to moderately sloping soils on floodplains and dissected alluvial surfaces. Soil Temperatures between 72° to 80° F. This association consists of well-drained and excessively drained soils on dissected old alluvial fans and sandy floodplains. The Laveen and Antho soils are good for homesites and other community uses, if protected from flooding but tend to be somewhat dusty. Carrizo soils have very rapid permeability and are subject to flooding and excessive seepage prohibits their use for sanitary facilities. They are good potential sources of sand and gravel (Hendricks).

Great Basin Conifer Woodland

There is one small inclusion of this habitat type in the ecoregion in the Poachie Range north of Alamo Lake which touches the southern end of the planning area south of Nothing. The area is within BLM jurisdiction and relatively sequestered due to terrain and limited access. This is the southern extremity of Great Basin Conifer Woodland and may be vulnerable to any increase of aridity through drought or warming. Larger patches of this habitat type are found in neighboring Apache Highlands North and in the Mohave Desert ecoregions noted above (CWCS).

Wetlands/Springs/Seeps

Wetlands, springs, and seeps are rare in the Sonoran Desert but are critical to a number of rare species. They are of critical importance to many marsh species. Most springs and seeps are located in mountains or other areas of rugged terrain and remain largely intact. These areas are administered primarily by the BLM which has afforded protection in the past and should continue to do so. Some springs and seeps in the Sonoran Desert have been degraded or lost completely due to development or diversion for use by livestock or crops or groundwater pumping, particularly those in flatter topographies. An increase in aridity, should it occur, would obviously have severe impacts to many springs and seeps in the Sonoran Desert (CWCS).

Streams/Rivers

The Big Sandy River is the stream in the ecoregion. The natural functions of this system have been seriously altered and degraded by human activities in most areas with the lowering of ground water levels, by diversion, mostly from ground water pumping, and by invasion of nonnative plants. Extended drought will result in continued loss of in stream flows and further degradation of riparian and aquatic habitats (CWCS).

Arizona Native Plant Law

The Arizona Department of Agriculture is responsible for enforcing the State's native plant law (ARS §3-903). The protected plant groups include any native plant growing wild on any property, public or private; manmade landscapes are exempt. Native plants include all cacti, ocotillo, yucca, Ironwood, Palo Verde and Mesquite and 16 other federally listed threatened or endangered species. Under Arizona State law it may be illegal to destroy these plants without following the necessary notice procedures.

Table of Stressors

As part of Arizona's Comprehensive Wildlife Conservation Strategy, several dozen habitat stressors were listed in ten broad categories ranging from systemic changes in the ecology and the effects of climate change including drought to the conversion and use of the land caused by human settlement patterns and transportation networks resulting in various types of pollution

Ecological Region		**Mohave Desert**		**Apache Highlands North**		**Sonoran Desert**		**Riparian**	
Category	***Stressor***	Mohave Desert Scrub	Semi-Desert Grassland	Great Basin Conifer Woodland	Semi-Desert Grassland	Upland Sonoran Desertscrub	Great Basin Conifer Woodland	Seeps and Springs	Rivers and Streams
Changes in Ecological Processes	*Altered river flow regimes*							X	X
	Habitat degradation/shrub invasions	X	X		X	X	X	X	X
	Habitat fragmentation/barriers	X	X	X	X	X	X		X
	Insect Infestation	X		X					
	Loss of keystone species			X					
	Game animal & sport fish management								X
	Soil erosion	X	X		X	X	X	X	X
	Streambank alteration/channelization								X
	Unnatural fire regimes	X	X	X	X			X	X
Climate Change	*Drought*	X	X	X	X	X	X	X	X
	Shift to warmer climate		X	X	X	X	X	X	X

Source: Arizona's Comprehensive Wildlife Conservation Startegy, 2005-2015

Habitat degradation and fragmentation are the two most significant stressors in seven of the eight habitat types under Changes in Ecological Processes category. This mainly caused by the increased presence in the human activities which bisect the landscape with an interconnected network of barriers that may restrict wildlife movement and migration, increase mortality, alter fire regimes (see Public Safety Element), degrade available habitat or resources, and alter community composition. Gori and Enquist (2003) documented a substantial decline in the area of grasslands throughout the Apache Highlands. Approximately 37% of historical grasslands have undergone a cover-type conversion to shrub lands including juniper, mesquite, and catclaw acacia, and an additional 32% will likely be converted to shrub land in the near future due to current land management practices. Conservation of grasslands is needed to maintain many grassland species, particularly wide-ranging species such as pronghorn. Habitat degradation and shrub invasions may cause species to specific to that habitat to be extirpated or even to go extinct (CWCS).

Soil erosion is also of concern. Hydrological changes will cause shifts in vegetative cover necessary for maintaining intact ecosystems. Erosion due to wind and water action will increase salutation, decrease water quality, and lead to loss of riparian habitat diversity and complexity. Grazing has also increased soil erosion by altering plant communities resulting in decreased biomass and cover increasing the impacts from precipitation. Rapid runoff from watersheds stripped of plant biomass increases stream velocities, leading to erosive down-cutting and lateral destabilization. These down-cut channels leave banks above the wetted zone, eliminating their suitability for riparian habitat. Closely related to erosion is streambank alteration/channelization to reduce the risk from flooding, with some plans being implemented on a landscape scale. The

results of these changes include loss of riparian habitat, drying of natural springs and seeps, modification of springheads, and depletion of groundwater supplies. Both wildlife and plant species experience severe habitat degradation and loss and may be unable to reproduce or persist. These altered ecosystems may promote nonnative species invasions or encroachment by non-riparian species (CWCS).

Drought and shift to a warmer climate will also impact most of all of the planning area. While the effects of drought will be discussed with the Water Resource Element, a shift to a warmer climate will only exacerbate adapting to a drier climate. The Southwest has been subject to a slight warming trend over the last 100 years that is expected to continue into the current century. According to climate prediction models, temperatures are expected to rise 4-5 °F by 2030 and 7-12 °F by 2090 (Sprigg and others 2000). Effects may include increased surface temperatures, changes in the amount, seasonality, and distribution of precipitation, more frequent climatic extremes, and a greater variability in climate patterns. Such changes may affect vegetation at the individual, population, or community level and precipitate changes in ecosystem function and structure (Weltzin and McPherson 1995). They will likely affect competitive interactions between plant and animal species currently coexisting under equilibrium conditions (Ehleringer and others 1991).

Ecological Region		**Mohave Desert**		**Apache Highlands North**		**Sonoran Desert**		**Riparian**	
Category	***Stressor***	Mohave Desert Scrub	Semi-Desert Grassland	Great Basin Conifer Woodland	Semi-Desert Grassland	Upland Sonoran Desertscrub	Great Basin Conifer Woodland	Seeps and Springs	Rivers and Streams
Consumptive use of biological resources	*Grazing by ungulates*	X	X	X	X	X	X	X	X
	Harvesting/collecting animals					X	X		
	Harvesting/collecting plants					X	X		
Habitat conversion	*Agricultural conversion*								X
	Dams/reservoirs/impoundments								X
	Livestock management	X	X	X	X	X	X	X	X
	Recreational sites/facilities								X
	Rural development	X	X	X	X				X
	Urban growth	X	X		X	X	X		X
Invasive species	*Bait-bucket dumping/illegal stocking*								X
	Disease/pathogens/parasites					X	X	X	X
	Feral animals	X							X
	Invasive plants	X							
	Nuisance animals		X	X	X			X	X
	Nuisance plants								
	Nuisance plants		X	X	X	X	X	X	X

Source: Arizona's Comprehensive Wildlife Conservation Startegy, 2005-2015

Plants respond differently to changes in atmospheric gases, temperature and soil moisture, in part based photosynthetic pathways (Bazzaz and Carlson 1984, Patterson and Flint 1990, Johnson and others 1993). For example, increases in winter precipitation favor tree establishment and growth at the expense of grasses. Increases in temperature and summer precipitation favor grasslands expanding into woodlands (Bolin and others 1986). In coming decades, such changes are expected to produce major shifts in vegetation distributions at unprecedented rates (IPCC 1998). Recent research has shown that considerable vegetation changes have occurred in the past and can be expected in Arizona’s future (Betancourt 1990, Brown and others 1997, Allen and

Breshears 1998, Sprigg and others 2000). Often, these changes were a result of widespread mortality due to secondary effects such as insect infestations and fire.

The primary stressor for consumptive use of biological resources in the planning area is the grazing of ungulates or cows and other hoofed animals. Unrestricted grazing by domestic livestock as well as wildlife in grasslands and along riparian areas has resulted in the reduction of long-term plant and animal productivity and alteration of plant communities. The change towards more weedy, unpalatable plant species decreases the availability of forage for animals as well. The preference of livestock and other grazers to feed on riparian plants along with the cooler nature of the riparian zone and the presence of drinking water also leads to direct impacts to riparian zones. The ecological impacts of grazing are magnified in riparian systems, where livestock tend to congregate (Fleischner 1994). Livestock management practices are also a significant stressor for the category of habitat conversion. The area plan will not address farming activities in detail because commercial farms or ranches with five or more contiguous acres are exempt from local planning and zoning land use regulations.[1] Ranchers in the Cane Springs are have been credited with good stewardship often land by rotating pasture land, maintaining water supplies away from riparian areas and working with local agencies.

Urban and rural development is occurring at a rapid rate within the planning area and will eventually affect of the of the habitat types. Please see the later discussion on wildlife fracture zones and the Land Use Element for a full discussion.

Nuisance plants and animals are the primary stressor within the non-native and invasive species category. Many ecologists have acknowledged the problems caused by invasion of nonnative species into communities or ecosystems and the associated negative effects on global patterns of biodiversity (Stohlgren and others 1999). Once established, invasive species have the ability to displace native plant and animal species (including threatened and endangered species), disrupt nutrient and fire cycles, and alter the character of the community by enhancing additional invasions (Cox 1999, DeLoach and others 2000, Zavaleta and others 2001, Osborn and others 2002). As of 1998, nonnative species have been implicated in the decline of 42% of species federally listed under the Endangered Species Act (Center for Wildlife Law 1999). Invasive nonnative species in Arizona have a variety of impacts on native biodiversity, and can affect native species through competition, predation, introduction of disease and parasites, hybridization, and others (Tellman 2002)

Among the most serious nuisance plants in southern Arizona are African bufflegrass (Pennisetum ciliare), red brome (Bromus rubens) and Saharan mustard (Brassica tournefortii), All of these plants, and several others, tend to grow in high densities and to carry wildfires in desert habitats, resulting in wholesale changes in the vegetative communities (McAuliffe 1995, Esque and Schwalbe 2002). The Arizona-Sonora Desert Museum refers to Saharan mustard as "the worst invasive plant in the Sonoran Desert," primarily because of its competitive effects on other plants or its ability to carry fire. For animals, near urban areas, at landfills, in recreational areas, etc, starlings, cowbirds, and ravens may displace native bird species (Kristan and Boarman

[1] See ARS 11-380, Restriction on regulation and ARS 42-12152. Criteria for classification of property used for agricultural purposes

2002). Nonnative bees are also replacing native pollinators and potentially impacting vegetative communities (Schaffer and others 1983).

Although only listed an issue for the Mohave Desert Scrub habitat feral animals that include escaped or abandoned domesticated pets, farm stock, and equines are severely impacting wildlife and wildlife habitats from hunting and grazing. Horses, burros, goats, domestic sheep, and hogs may overgraze or trample native plant species, thus increasing erosion, compacting soil through frequent trail usage, and polluting aquatic systems through waste accumulation (CWCS).

Ecological Region		**Mohave Desert Scrub**		**Apache Highlands North**		**Sonoran Desert**		**Riparian**	
Category	***Stressor***	Mohave Desert Scrub	Semi-Desert Grassland	Great Basin Conifer Woodland	Semi-Desert Grassland	Upland Sonoran Desertscrub	Great Basin Conifer Woodland	Seeps and Springs	Rivers and Streams
Abiotic resource use	*Groundwater depletion & spring use*	X	X	X	X	X	X	X	X
	Mining	X							
	Water diversion/water catchments							X	X
Border issues	*Creation of roads & trails by illegals*					X	X		X
Non-consumptive resource use	*Motorized recreation off-trail*	X	X	X	X	X	X	X	X
	Non-motorized recreation off-trail		X	X	X				
	Unauthorized roads & trails							X	
	Watercraft operation								X
Pollution	*Waste water and runoff contaminants*		X	X	X				X
	Illegal dumping/littering					X	X		
	Light pollution					X	X		
	Noise pollution					X	X		X
	Pesticides/herbicides								X
	Sediment/ash flows								X
Transportation and infrastructure	*Air traffic corridors/overflights*					X	X		
	Power lines/wind-harnessing turbines	X	X	X	X				
	Right-of-way fencing along roadways					X	X		
	Roads for motorized vehicles	X	X	X	X	X	X		X
	Telephone lines/cellular phone towers	X	X	X	X				
	Unauthorized roads & trails	X	X	X	X	X	X	X	X

Source: Arizona's Comprehensive Wildlife Conservation Startegy, 2005-2015

Abiotic resources use, namely groundwater depletion, will be discussed in the Water Resource Element. Mining, an activity exempt from most state and local laws, being regulated by the 1872 Mining Act, has significant impact in both the upper Sacramento Valley and the lower Big Sandy Valley.

Off-trail use, especially by motorized vehicles, affects all of the habitat areas. The state's growing population, mild winter climate, and many open spaces lend themselves to hiking, camping, mountain biking, hunting, fishing, sightseeing, wildlife-watching, off-highway vehicle use, and other recreational and wildlife-oriented pursuits. Off-road vehicle travel can cause damage to soils and vegetation (Holechek and others 1998) and impact wildlife by destroying and fragmenting habitat, causing direct mortality of wildlife, or altered behavior through stress and disturbance (Busack and Bury 1974, Brattstrom and Bondello 1983, Brooks and Lair 2005). Impacts to individual species has been documented (Swarthout and Steidl 2003), but the overall impact of these activities is not fully understood, nor is there a full understanding of how much

recreational use can be tolerated before there is an adverse effect on wildlife or wildlife habitat. However, recreational activities are increasing and their potential effects on habitats and species should be considered in conservation planning (Conner and others 1990, McClaran and others 1992).The increasing population and dwindling amount of open land have increased the amount of recreational pressure on the areas that remain undeveloped (CWCS).

Illegal dumping or "wild cat" dumping in the desert has been an issue for Mohave County for several decades. This occurs due to several factors including a lack of access to trash collection services, the cost of such services when available, the great distance many rural residents must travel to county landfills, negligence by those who are paid to haul trash to a landfill but do not do so and carelessness by residents and transient populations. The introduction of non-biodegradable and other harmful materials through illegal dumping and littering may negatively impact species of greatest concern and their habitat. Wildlife may alter their foraging behavior or experience mortality as the result of ingesting the disposed materials.

The impact from light pollution varies from species to species, but has been shown to alter behavior of mammals, birds, reptiles, amphibians, fish, and insects (Longcore and Rich 2004, Rich and Longcore 2005). Within cities and urban areas, street lamps and construction zones provide continuous ambient light which may attract insects and thus those species that prey on them. Light from vehicle headlights may temporarily blind wildlife foraging along roadsides and thus increase the chances for wildlife/vehicle collisions. Bird kills at lighted towers have been documented for at least 50 years. Lighting of towers in both urban and rural settings increases the density of birds at the hazard area causing impacts with guy wires (CWCS). Artificial night lighting can impair the ability of nocturnal animals to navigate (Beier 2006) and may negatively affect reptile populations (Perry and Fisher 2006). Light pollution also reduces the nighttime aesthetic of the desert and mountains for residents, tourists, astronomers and others looking to experience the undeveloped landscape.

Noise pollution from vehicle traffic along roadways, all terrain vehicles and off-road driving, construction work, shooting ranges, recreation areas, farming and mining pursuits, city and urban activities, aircraft over flights and motorized watercraft is present at various levels throughout the planning area. Noise disturbances may lead to altered behavioral patterns in wildlife, affecting their overall fitness (Weisenberger and others 1996) by presenting a barrier to movement (Minton 1968, Liddle 1997). Noise pollution, akin to light pollution, also degrades the natural sounds and silences of undeveloped places and hampers those seeking the solace of a rural environment.

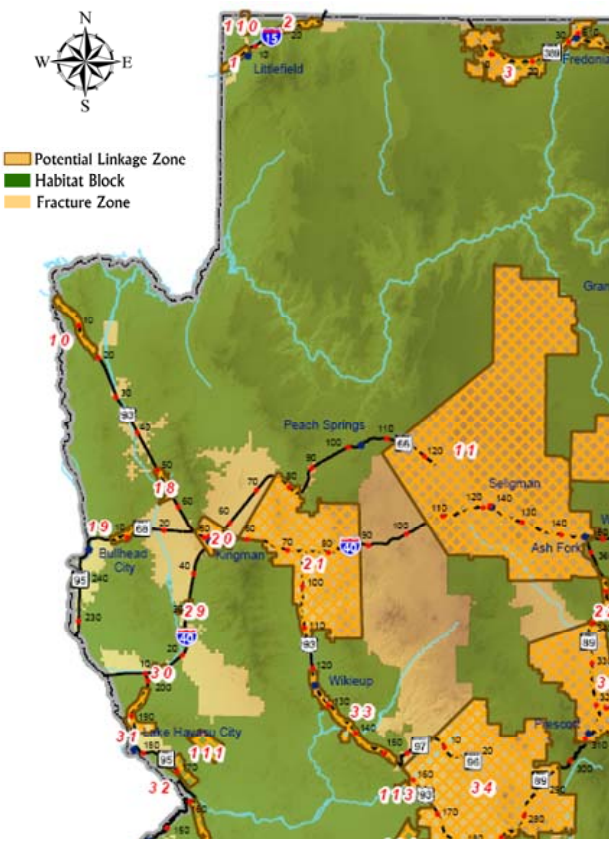
In light of the recent policy decisions at the local, state and federal level to curb carbon emissions and reduce dependency on fossil fuels, renewable energy technology will become more prevalent in the rural landscape where large tracts of land are available at low ground lease rates. The most obvious of these technologies are wind turbine fields occupying several miles for any one project. Wind turbines do impact avian and bat populations, although new wind turbines with slower blade rotations tend to mitigate the direct loss of birds and bats due to collisions. Wind technology also requires significant site preparation for both construction and access for maintenance. Other Transportation and Infrastructure stressors will be discussed in the Transportation Element.

The Issue of Wildlife Linkages and Fracture Zones

The phenomenal growth of Arizona's human population, economy, and infrastructure present challenges to maintaining natural ecosystems and wildlife populations that constitute an important part of Arizona's wealth. In the planning area, roads, urban and rural growth, energy corridors and occasional illegal immigration activities and smuggling both destroy habitat and create barriers that isolate wildlife populations and disrupt ecological functions such as gene flow, predator-prey interactions, and migration. It is critical that linkages between habitats be conserved and restored so wildlife and natural ecosystems continue to benefit Arizona's residents and visitors. The most telling evidence of habitat fragmentation is wildlife road kill that can also result in human deaths and injuries, property damage, and liability (Arizona Wildlife Linkages Assessment, Exec Sum).

To address linkages, the Arizona Wildlife Linkages Workgroup (AWLW), a collaborative effort between public and private sector organizations, formed to address habitat fragmentation. A statewide assessment was conducted to identify large blocks of protected habitat, the potential wildlife movement corridors between as well as through them, and the factors threatening to disrupt these linkage zones. The potential linkage zones represent areas that are important to Arizona's wildlife and natural ecosystems. Linkages should be incorporated into regional planning frameworks (AWLA, Exec Sum). The area plan process provides an opportunity for government agencies and citizens to work together to create a comprehensive, landscape-scale plan that can achieve these conservation goals while accommodating the growth of the County's population, its expanding economy, and associated infrastructure.

Wildlife Linkage Map for Mohave County



Source: Arizona's Wildlife Linkages Working Group, 2006

Linkages within the Planning Area

The planning area passes through five linkages as shown on the referenced map. The Mount Tipton – Mount Perkins linkage (10) along the northern side of the Corridor north of milepost 20 and the Hualapai Mountain – Bagdad linkage (33) from mile post 120 to the County line have been identified by the Arizona Wildlife Linkage Assessment as having the highest priority when ranked by the Biological Resource Value and Threat and Opportunity Value. Linkage No. 18 provides connection between the Black and Cerbat Mountains with intermittent fracture zones of urban and rural development along the highway from White

Hills to So-Hi. However, the habitat blocks on either side of the highway are large and relatively undisturbed. Linkages 20 and 21 connect the Hualapai and Cerbat Mountains and the I-40/US 93 intersection at Round Valley to Kingman, respectively. These two linkages have significant fractures from Kingman eastward to Round Valley and then south to Silverado. This area, beginning east of DW Ranch Road, also offers a large potential linkage zone where wildlife crossing between habitat blocks can be re-established and kept intact.

Prioritization of Links

The Mount Tipton – Mount Perkins linkage (10) and Hualapai Mountain – Bagdad linkage (33) received Biological Resource Value scores of 77 and 78, respectively, of a total possible score of 120 points. Eight criteria were used to assess biological importance. Three of the criteria relate to the habitat blocks and include 1) size of the blocks, with larger block scoring higher, 2) quality of existing habitat of the smaller habitat blocks, and 3) presence of linkage dependent species. Larger blocks are important because they preserve habitat for mountain lions and bobcats. In addition to being among the most area-sensitive species in an ecoregion, these high-level carnivores can be considered important regulators of ecosystem function (Terborgh et al. 1999). The quality of the smaller habitat blocks was ranked as "unimpacted," "readily restorable," "impacted" and "severely impacted" based on the ratio of native vegetation to invasive plants, level of habitat fragmentation caused by roadways and urban/rural development activities including agriculture, diversity of species and habitat block area to perimeter ratios. Higher numbers of linkage dependent species, especially those with threatened or endangered status or with migration patterns increased the score (AWLA).

The remaining five criteria assessing the biological value focused directly on the potential linkage zone itself and include 1) importance as a seasonal migration corridor, 2) contains significant riparian areas, 3) conservation ownership such as State Land Trust or BLM, 4) number and status of species living within the potential linkage, and 5) the degree to which the potential linkage zone is essential to the utility of the overall network of linkages. In other words, will one or more linkages become non-functional if the linkage being evaluated is lost (AWLA).

The Mount Tipton – Mount Perkins linkage (10) and Hualapai Mountain – Bagdad linkage (33) received a Threat and Opportunity Value score of 98 and 92, respectively, of a total possible score of 140 points. Highways and urbanization represent the greatest threats to maintaining linkages. However, opportunity is created if there is an active effort to conserve the linkage through land acquisition, easements, zoning, or other means such as drafting specific goals and polices during area plan development. Other opportunities include planned projects that include mitigation measures to promote connectivity such as those roadway projects which are part capital improvement programs at the state and local level as well as the current conservation climate within the linkage zone such as landowners who are known to be receptive to conserving the land.

Table of Species

Several species of concern, as noted by the Arizona Wildlife Linkage Assessment, occur within these habitats as shown in the referenced tables. Those species marked (X) within the tables have also been observed by local biologists as using the several bridge crossings along Highway 93 to traverse between their habitats lying on either side of the roadway. These observation points include the Detrital Wash at mile post 35.8, the Number Two Tributary of the Thirteen Mile Wash west of So-Hi at mile post 64.6, the Cane Springs Wash south of Windmill Ranch at mile post 108.6 and Tompkins Canyon north of Wikieup at mile post 120.3 (see Appendix A for complete list of species found at these locations).

Class	Species Name: those indicated as (X) have noted within bridge and culvert structures along Highway 93	Mt Tipton - Mt Perkins	Black Mtns – Cerbat Mtns	Hualapai Mtns – Cerbat Mtns	I-40 and US 93 – Kingman	Hualapai Mtns - Bagdad
		No. 10	No. 18	No. 20	No. 21	No. 33
Bird	American Peregrine Falcon Falco peregrinus anatum	(X)	(X)	(X)	(X)	(X)
Bird	Common Black-hawk Buteogallus anthracinus					(X)
Bird	Gambel's Quail Callipepla gambelii				(X)	(X)
Bird	Golden Eagle			(X)		
Bird	Southwestern Willow Flycatcher Empidonax traillii extimus					(X)
Bird	Swainson's Hawk Buteo swainsoni		X	X	X	X
Bird	Western Burrowing Owl Athene cunicularia hypugaea		(X)	(X)	X	X
Bird	Yuma Clapper Rail Rallus longirostris yumanensis					X
Bird	Zone-tailed Hawk Buteo albonotatus					X
Mammal	Allen's Big-eared Bat Idionycteris phyllotis		X	X		
Mammal	Bighorn Sheep Ovis canadensis	(X)				
Mammal	Bobcat Lynx rufus	X	X	X		X
Mammal	California Leaf-nosed Bat Macrotus californicus					(X)
Mammal	Cave Myotis Myotis velifer					X
Mammal	Elk Cervus elaphus				(X)	
Mammal	Fringed Myotis Myotis thysanodes				X	
Mammal	Greater Western Mastiff Bat Eumops perotis californicus	(X)	(X)	(X)	(X)	(X)
Mammal	Javelina Tayassu tajacu				(X)	(X)
Mammal	Kit Fox Vulpes	(X)	(X)	(X)	(X)	(X)
Mammal	Long-legged Myotis Myotis volans				X	
Mammal	Mountain Lion Felis concolor	(X)	(X)	(X)	(X)	(X)
Mammal	Mule Deer Odocoileus hemionus	X	X	X	X	X
Mammal	Pale Townsend's Big-eared Bat Corynorhinus townsendii pallescens	X	X	X	X	X
Mammal	Pocketed Free-tailed Bat Nyctinomops femorosaccus				X	X
Mammal	Pronghorn Antilocapra americana				(X)	
Mammal	Ringtail Bassariscus astutus					X

Source: Arizona Wildlife Linkage Assessment, Section VII, 2006

Various mammals, birds, amphibians, reptiles and even fish may be found at these crossings within the southern part of the planning area (Link Nos. 21 and 33) having a higher number of different animal crossing. The Desert Rosy Boa (snake), the American Peregrine Falcon, the Greater Western Mastiff Bat, as well as Kit Foxes and Mountain Lions can be expected to be found in all habitats and making use of these crossings as part of their wide ranging habitats. Mule deer are also listed in all habitats but have not been directly observed crossing Highway 93 at these four locations, possibly due to the underpasses not offering a welcoming appearance. The Southwestern Willow Flycatcher also can be found in the Wikieup area and further south along the Big Sandy River.

Class	Species Name: those indicated as (X) have been noted within bridge and culvert structures along Highway 93	Mt Tipton - Mt Perkins	Black Mtns – Cerbat Mtns	Hualapai Mtns – Cerbat Mtns	I-40 and US 93 – Kingman	Hualapai Mtns - Bagdad
		No. 10	No. 18	No. 20	No. 21	No. 33
Fish	Desert Sucker Catostomus clarki				(X)	(X)
Fish	Longfin Dace Agosia chrysogaster					(X)
Fish	Razorback Sucker Xyrauchen Texanus	X				
Fish	Roundtail Chub Gila robusta				X	X
Fish	Sonora Sucker Catostomus insignis				X	
Fish	Speckled Dace R					(X)
Amphibian	Chiracahua Leopard Frog				X	
Amphibian	Lowland Leopard Frog Rana yavapaiensis				(X)	(X)
Amphibian	Relict Leopard Frog Rana onca	(X)				
Amphibian	Arizona Toad Bufo microscaphus				(X)	(X)
Amphibian	Riparian Obligates					X
Reptile	Arizona Chuckwalla Sauromalus ater	X	X	X	X	X
Reptile	Banded Gila Monster Heloderma suspectum cinctum	X	X	X	X	X
Reptile	Desert Rosy Boa Charina trivirgata gracia	(X)	(X)	(X)	(X)	(X)
Reptile	Mohave Desert Tortoise Gopherus agassizii	X		X	X	X
Reptile	Speckled Rattlesnake Crotalus mitchellii	X	X	X		X

Source: Arizona Wildlife Linkage Assessment, Section VII, 2006

Need for Mitigation

Loss of connectivity is by no means inevitable, and the outcome of human population growth does not have to result in a proliferation of barriers. Although road-widening projects generally increase vehicle traffic, these need not to result in more wildlife/vehicle collisions, or a decrease in animal movements. Road-widening projects present the greatest opportunity to provide crossing structures to accommodate wildlife movement. Because most of Arizona's roads were not originally designed to accommodate wildlife movement, current road improvement projects can dramatically restore permeability. Although the issue is much broader than a "highway problem," in many areas, design of new highways or modification of old highways will be an essential part of conserving connectivity. Investing in wildlife connectivity is not only advantageous to wild populations, but also provides direct benefits to humans. Integrating wildlife crossing structures with roadside fencing have been found to minimize the ability of larger ungulates, such as elk, to gain access to highways. Taking advantage of opportunities to conserve and restore connectivity in Arizona will require collaboration among city and county planners, state and federal agencies, non-governmental conservation organizations, academic researchers, wildland user groups, developers, and others to negotiate strategies for regional protection and conflict resolution of this collective concern (AWLA, Intro).

Corridor Crossing Design

No single crossing structure will allow all species to cross a road. For example rodents prefer to use pipes and small culverts, while bighorn sheep prefer vegetated overpasses or open terrain below high bridges. A concrete box culvert may be readily accepted by a mountain lion or bear, but not by a deer or bighorn sheep. Small mammals, such as deer mice and voles, prefer small culverts to wildlife overpasses (McDonald & St Clair 2004). Some mammals avoid crossing 2-lane roads with less than 100 vehicles per day (McGregor et al. 2008); thus crossing structures are needed to provide connectivity even on lightly-used small roads. Because most small

mammals, amphibians, reptiles, and insects need vegetative cover for security, bridged under crossings should extend to uplands beyond the scour zone of the stream, and should be high enough to allow enough light for vegetation to grow underneath (Beier et.al.).

Suggested design criteria for the approaches to crossing are as follows:

1. Suitable habitat for species should occur on both sides of the crossing structure,
2. Fencing should never block entrances to crossing structures, and instead should direct animals towards crossing structures,
3. Manage human activity near each crossing structure,
4. Retain natural water flows and maintain groundwater levels within the natural tolerance ranges of native plant species,
5. Maintain or improve native riparian vegetation and eradicate non-native invasive plants and animals, and
6. Where possible, protect or restore a continuous strip of native vegetation at least 200 meters wide along each side of the channel.

Buffer strips can protect and improve water quality, provide habitat and connectivity for many species, improve quality of life for human neighbors, and increase nearby property values (Fisher and Fischenich 2000, Parkyn 2004, Lee et al. 2004). Recommended buffer widths to sustain riparian plant and animal communities vary from 30 meters to 500 meters (Wenger 1999, Fisher and Fischenich 2000, Wenger and Fowler 2000, Environmental Law Institute 2003). At a minimum, buffers should capture the stream channel and the terrestrial landscape affected by flooding and elevated water tables (Naiman et al. 1993). Wider buffers are needed to protect edge sensitive bird species from nest predation and parasitism. Delineating a buffer that extends 200 meters beyond the annual high water mark on each side of the channel is recommended (Beier et.al.).

Where buffers of an eight of mile wide are not feasible due to multiple small, private land holdings along washes and other highway crossings, the Guidelines and Performance Benchmarks, published by the American Society of Landscape Architects as part of the Sustainable Sites Initiative offer some guidance as shown in the referenced table below.

Class	Total buffer width	Additional functions gained at specified buffer width
A	< 50 feet	Minimal protection of streams and wetlands
B	50-99 feet	Protection from human disturbance, protection of aquatic habitat
C	100-199 feet	Protection of water quality
D	200-300 feet	Protection of wildlife habitat
E	> 300 feet	Protection of wildlife migration corridors and habitat for threatened, endangered, and sensitive species

Suggested design criteria for road crossings will be further discussed in the Transportation Element.

Mitigation Measures for Urban Barriers

The primary tool for local jurisdictions is to integrate the linkage design concepts into local land use plans. Specifically, use zoning ordinances and other local laws such as subdivision regulations to retain open space and natural habitat and discourage urbanization of natural areas in the designated linkage areas. For example, where development is permitted within the linkage design, encourage small building footprints on larger parcels, such un-subdivided lands containing parcels greater than 36 acres, with a minimal road network (Beier et.al.).

Where human residences or other low-density urban development occurs within the linkage design or immediately adjacent to it, encourage landowners to be proud stewards of the linkage. Specifically, encourage residents to landscape with natural vegetation, minimize water runoff into streams, limit the use of pesticides and herbicides, manage fire risk with minimal alteration of natural vegetation, install wildlife-friendly fencing and direct outdoor lighting toward houses and walkways and away from the linkage area. These requirements may also be part of the Conditions, Covenants and Restrictions recorded with developments (Beier et.al.).

Encourage conservation easements or acquisition of conservation land from willing landowners in the linkage design. Encourage innovative cooperative agreements with landowners and combine habitat conservation with compatible public goals such as recreation and protection of water quality (Beier et.al.).

<u>Goals and Policies for Natural Landscape Conservation</u>

Goal 1 Designate wildlife corridors going underneath Highway 93 as more commercial development comes into the area.

Policy 1.1 Housing shall not be built in the flood hazard zone (7/15/2008).

Policy 1.2 Encourage the BLM and Arizona State Trust to designate lands for conservation and possible acquisition as permanent open-space (7/15/2008).

Policy 1.3 Provide buffers wider than wash for wildlife corridor and trail use as determined by the appropriate regulatory agency (10/21/2008).

Policy 1.4 Existing wildlife corridors, flood plains and riparian areas shall be incorporated into public open space and trail systems for all new developments. Structures for human habitation shall be located on the portions of property outside of delineated floodplains (10/21/2008).

Goal 2 Encourage the maintenance of and designate open space areas and landscape buffers.

Policy 2.1 Clear only that vegetation which is required to build a home or business (7/15/2008).

Policy 2.3 Leave all native habitats along the boundary and within new housing tracts *to the fullest extent possible* (7/15/2008).

Policy 2.3 Lots and parcels should not be graded/grubbed until construction is ready to proceed (7/15/2008).

Policy 2.4 Conservation design practices will be required when new developments are proposed in areas designated for preservation (7/15/2008).

Goal 3 Preserve Native Vegetation (5/15/2008 & 6/19/2008**)**

Policy 3.1 Maintain native vegetation, except to the extent necessary to accommodate site access, parking areas, fire breaks, and structural improvements during the development of new housing tracts and businesses requiring rezone actions and to require re-vegetation of disturbed areas using native or drought tolerant species (6/19/2008).

Policy 3.1 Flood plains and riparian areas shall be incorporated into public open space and greenway systems to create a continuous corridor for all new developments. Structures for human habitation shall be located on the portions of property outside of delineated floodplains (6/19/2008).

Goal 4 Learn to co-exist with and have good stewardship of native vegetation, significant landscape features, rock formations and wildlife with an emphasis along the base of mountains, foothills, slopes, and washes (7/17/2008)**.**

Policy 4.1 Protect washes and unique, rare, and significant geological features identified as wildlife corridors by incorporating them as buffers between developments (7/17/2008).

Policy 4.2 Maintain native vegetation, except to the extent necessary to accommodate site access, parking areas, fire breaks, and structural improvements during the development of new housing tracts and businesses requiring rezone actions and require re-vegetation of disturbed areas using native or drought tolerant species (7/17/2008).

Policy 4.3 Provide conservation easements on newly created lots and parcels where native habitat, unique plants and significant landscape features have been identified for preservation (7/17/2008).

Policy 4.4 Conservation design practices, such as greenway dedication and conservation subdivisions, will be required of new developments proposed in areas designated for preservation and shall be tailored to minimize the alteration of natural landforms and native vegetation and to enhance distinctive natural features. Green-belting shall also be used to buffer adjoining development (7/17/2008).

Policy 4.5 Flood plains and riparian areas shall be incorporated into public open space and greenway systems to create a continuous corridor in all new developments. Structures for human habitation shall be located on the portions of property outside of delineated flood hazard zone (7/17/2008).

Policy 4.6 Encourage the BLM and Arizona State Trust to designate lands for conservation and possible acquisition as permanent open-space (7/17/2008).

Goal 5 Establish a nursery for vegetation disrupted during land clearing to be used for replanting (11/20/2008)

Policy 5.1 Commercial and industrial developers shall replant native plants on-site or make plants available to a nursery for re-vegetation (11/20/2008).

Policy 5.2 Encourage individual property owners to replant native vegetation on-site (11/20/2008).

Goals and Policies for Air Quality

Goal 6 Maintain Air quality (5/15/2008 & 6/19/2008)

Policy 6.1 Mohave County shall encourage the use of renewable energy with minimal water usage (6/19/2008).

Policy 6.2 Re-vegetation of disturbed areas with drought tolerant plant material shall be encouraged (6/19/2008).

Policy 6.3 Limit the clearing of vegetation on individual parcels to maintain native vegetation and improve air quality, except to the extent necessary to accommodate site access, parking areas, fire breaks, and structural improvements during the development of new housing tracts and businesses requiring rezone actions (10/16/2008).

Policy 6.4 There shall be no clearing of the site until development plans have been approved by Mohave County (4/23/2009).[2]

[2] Limited to "development plans" that require review and approval under the Zoning Ordinance, or Land Division Regulations, or the International Building Code (IBC) and successors.

Policy 6.5 In multiple-phase projects, site clearing will be permitted when development plans for each phase have been approved by Mohave County (4/23/2009).[2]

Goals and Policies for Visual Resources

Goal 7 Maintain the desert views.

Policy 7.1 Preserve native plants such as Joshua trees, yuccas, & Arizona birds of paradise, along hillsides and mountains (7/15/2008).

Policy 7.2. Structures, if required to be placed on hillsides, ridge lines or mountain peaks, shall be finished with a neutral color scheme which blends with the natural desert color (7/15/2008).

Policy 7.3. Structures should use landscaping to minimize or soften their visual impact (7/15/2008).

Policy 7.4. Encourage development practices which integrate building foot prints and facades with the site's natural terrain and color palette (7/15/2008).

Goal 8 Maintain Scenic Vistas (5/15/2008 & 6/19/2008)

Policy 8.1 Limit new development on hillsides by placing development on the site's lower elevations and on more gentle slopes (6/19/2008).

Policy 8.2 Encourage development practices which integrate building footprints and facades with the site's natural terrain and color palette which would not be offensive to the existing area and would be in harmony with the Northern Arizona history and cultural heritage (6/19/2008).

Policy 8.3 Encourage land owners, the State and BLM to use conservation land trusts to acquire developments rights to preserve hillsides from development (6/19/2008).

Goal 9 Limit exterior lighting.

Policy 9.1 Street lights and building exterior lighting shall be focused downward and inward (7/15/2008).

Policy 9.2 To minimize adverse impacts on astronomical observations, lighting installations for commercial and other non-residential uses as well as public facilities shall be low-pressure sodium whenever possible with high-pressure sodium lights used only when necessary – no mercury vapor lights (7/15/2008).

Policy 9.3 Install solid walls instead of chain-link fences with view-obscuring slats around truck stop parking lots (7/15/2008).

Goal 10 Preserve Dark Skies (5/15/2008 & 6/19/2008)

Policy 10.1 The use of "dark skies" approved exterior lights, operating with motion detectors from dusk to dawn, in lieu of street lights in new developments shall be encouraged (6/19/2008).

Goals and Policies for Noise and Quiet Enjoyment

Goal 11 To minimize noise levels in a manner that is reasonable to both the local residents and the proposed development(s). And, to provide a noise sensitive environment that allows local residents the opportunity to enjoy a peaceful environment that is receptive to new development. And, to ensure all proposed development provides or supports a noise-sensitive environment that is appropriate to the surrounding area (8/21/2008).

Policy 11.1 The County shall support new developments designed to reduce noise emissions (8/21/2008).

Policy 11.2 The County shall support new developments that emit a reasonable noise emission (8/21/2008).

Policy 11.3 The County shall support new development that is appropriate to the surrounding area and whose noise emission is fifty-five (55) decibels or less (8/21/2008).

Policy 11.4 The County shall support proposed noise buffers that are both adequate and pleasing to the eye (8/21/2008).

Goals and Policies for Cultural Preservation

Goal 12 Protect the historical, cultural, and archeological resources of the area (7/17/2008).

Policy 12.1 Mohave County shall require a cultural assessment survey of all new developments to identify cultural, historical, and archeological resources (8/21/2008).

Policy 12.2 Mohave County shall publish an educational pamphlet to be made available to the public to identify and protect historical, culture and archeological resources (8/21/2008).

Implementation Measures for Natural Resources

N1. Underpasses along US Highway 93 have been identified in the Transportation Element. Areas along washes or stream beds within the 100 flood plain shall be protected from encroachment by development. For crossing along the Big Sandy and its major tributaries, the Wild and Scenic Rivers Act (16 U.S.C. §§1271-1287 (1968) and 36 CFR 251, 297 and 43 CFR 8350 shall be used to protect these areas for the enjoyment of future generations.

N2. Maintaining native plant material will be done under the guidance of each new development's private Covenants, Conditions and Restrictions (C.C.& Rs.). Mohave County does not possess a landscape ordinance or hillside development ordinance at this time. Until such time as the County sees fit to adopt these ordinances, the Area Plan will be used to guide development that requires rezone action. Cluster development practices will also be used to preserve native habitat and landscape.

N3. Mohave County does not have an aesthetic design review section in its Zoning Ordinance. However, the County does condition zoning use permit or rezone approvals for public utility assets, such as water tanks, with a neutral color scheme to blend in with the natural setting. This condition should be placed in all applicable rezoning and zoning use permit resolutions granted by Mohave County. Color schemes may also be regulated by private C.C.& R.s for new developments.

N4. Grading permits are typically required by the Building Division when grading exceeds 100 cubic yards. Grading plans will be reviewed according to these guidelines. Grading permits (specify cu. yd. amount) will be accompanied with a dust mitigation plan based upon the International Building Code guidelines. The Arizona Ambient Air Quality Guidelines will be referenced by staff during development approval process (see also A.R.S. 49-401-593, A.A.C. Title 18, Chapter 2). Clearing and grubbing a site may require notification to the State to comply with the Arizona Native Plant Law A.R.S. §§ 3-901-934. Each new development's private C.C.& R.s should also address the clearing and grubbing of a site.

N5. Scenic routes can be adopted by Mohave County after research has been done. Neighborhood groups, using the help of the Development Services Department, will petition the Board of Supervisors for additional roadway and scenic vistas. Signs designating scenic roadways and vistas will be processed through the Department of Public Works or the developer, depending upon the status of the roadway. These signs will be funded by the private sector. The impact of new buildings on scenic vistas and hillsides can be addressed through the Zoning Ordinance and Land Division Regulations when new housing developments and master planned communities are reviewed and approved by the County.

N6. Promote landscaping and highway development to accommodate the traveling public according to the Highway Beautification Act, 23 U.S.C. 131, 136, 319 (1965), 23 CFR 750-752.

N7. The night sky is also a resource making country lifestyle attractive. Increasing urbanization in the planning area is slowly degrading the darkness of the night sky. Even though the darkness of the night sky is also impacted by adjacent city development, the ambient glow of

outside lighting placed in the public and private domain within the planning area should be mitigated.

N8. Mohave County currently uses Ordinance 87-1 to preserve "dark sky." This ordinance is designed to protect astronomical observatories rather than residents. Non-single-family residential development will require a site plan review by County staff. Lighting will be evaluated prior to approval. Regulations of lighting for individual residents can be accomplished with private C.C.& R.s. An improvement district, if formed, will design and regulate the operation of any street lighting district. See also Arizona Light Pollution Law, A.R.S. §§ 49-1101-1106.

N9. Most noise emissions from a 36-acre-plus residential parcel will be muffled to meet the 60-65 dBA criteria measured at the property line. Smaller parcels may require screening to some extent. These noise criteria would also tend to encourage home builders to place their homes in the center of the property. Developers of non-residential sites will have their properties rezoned and subsequent site plans reviewed by County staff prior to construction. The appropriate buffers will be required at that time. Screening will be constructed by new development.

N10. Developers of 36-acre plus properties are encouraged to provide building setback dimensions within their C.C.& R.s beyond the County's minimum as prescribed in the Zoning Ordinance. Conservation easements will be asked for by the Development Services Department when rezoning action occur on environmentally sensitive lands with natural vegetative screening. Prohibit excavating or stealing objects from historic or prehistoric ruins under the American Antiquities Act, 16 U.S.C. 431 et. seq. as amended (1906) and Arizona Antiquity Act, Arizona Revised Statutes 41-841 et seq.

N11, Prevent disturbance of nesting sites and possession of birds protected by the Migratory Bird Act, 16 U.S.C. §§ 703-711. Coordinate with Arizona Game and Fish Conservation and Management, Arizona Revised Statutes (A.R.S.) §§ 17-101-605.

N12. Require consideration of cultural resources determined eligible for listing on the National Register of Historic Places prior to project implementation per the National Historic Preservation Act, 16 U.S.C. 470 et. seq. as amended (1966),36 CFR 60, 36 CFR 63, 36 CFR Part 800 and Arizona Historic Preservation Act, Arizona Revised Statutes 41-861, et seq.

Water Resources

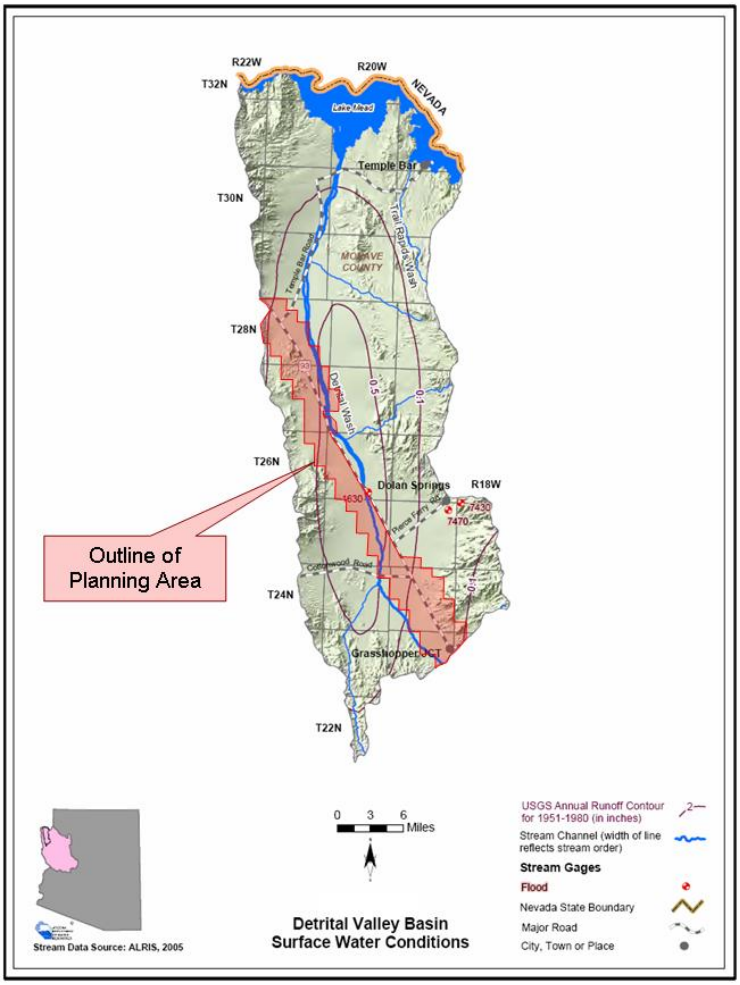
Water Resources Element

The 130-mile-long planning area spans the Detrital, Sacramento, Hualapai, Big Sandy and Bill Willams watersheds. The geography, water quality, estimated size of the aquifers, and cultural demand will be reviewed for each basin. In addition, a summary of the five basins will be presented as well as a list of common stressors. Goals, policies and implementation measures to maintain water resources complete the element. All five basins are outside of an Active Management Area (AMA) as defined by the Groundwater Management Act of 1980.[1]

Detrital Basin

Geography

At 892 square miles, the Detrital Valley Basin is the smallest of the five basins in the planning area. However, approximately one-eighth of the basin (109 sq. mi.) is within the boundary of the area plan. The basin is characterized by a wide valley with the Detrital Wash at its center running south to north into Lake Mead, the northern boundary. The Cerbat and Black Mountains bracket the valley to the east and west, respectively. Sacramento Valley forms the southern boundary of the basin.

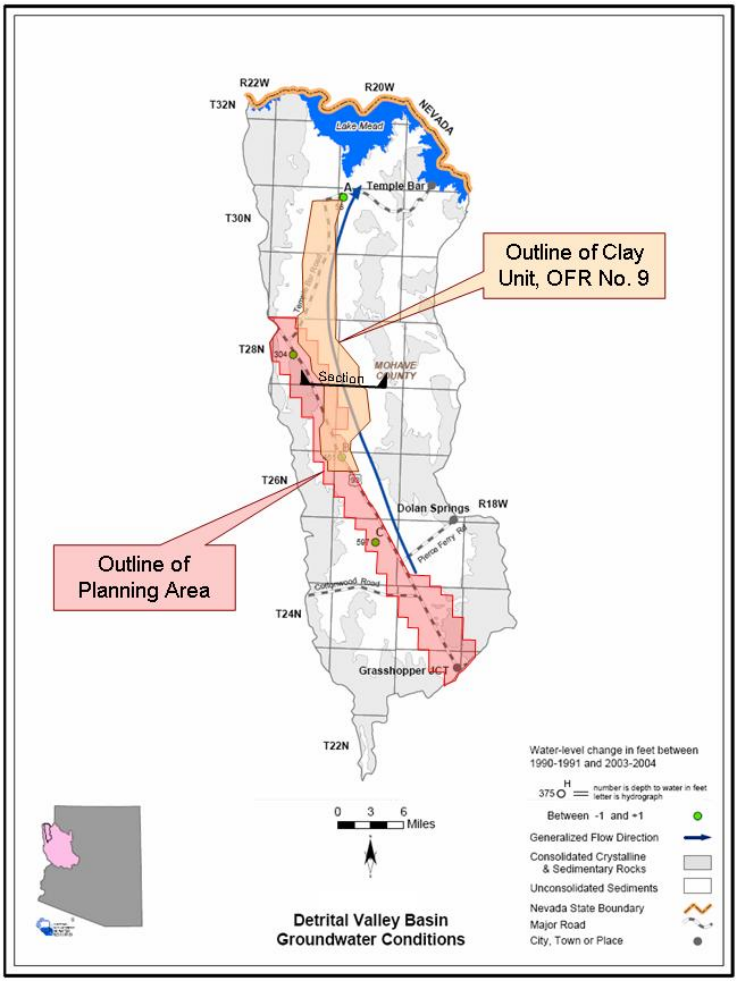


Precipitation data shows rainfall as high as 12 inches in the southern portion of the basin in the Cerbat Mountains near Grasshopper Junction and as low as four inches in the northern portion of the basin. In general, precipitation increases as altitude increases in this basin. This basin is one of three basins in the planning area with a range of eight inches between areas of highest and lowest average annual precipitation, the lowest in the planning area (Water Atlas).

[1] See Title 45, Chapter 2, Arizona Revised Statutes for limitations on development activity within Active Management Areas as compared to few restrictions outside of AMAs.

Surface Water Conditions

There are no perennial or intermittent streams in this basin nor is there stream flow data for the basin. Average annual runoff is 0.5 inches per year in the center of the basin around Dolan Springs and decreases to 0.1 inch on the edges of the basin.

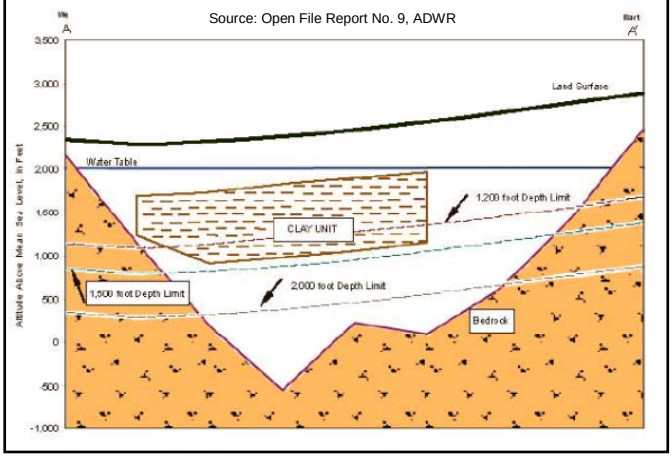


Groundwater Conditions

Groundwater occurs mostly in the basin-fill material and in alluvial deposits along mountain washes with the direction of sub-surface flow generally from the south to the north. Intermediate and younger basin fill are above the water table in most areas so the older basin fill aquifer is the primary water supply. In the northern part of the basin, the basin fill includes weathered (clastic) sediments, limestone, and basalt flows of the Muddy Creek and Chemehueve Formations (USGS, 2006). Depth to bedrock may exceed 6,000 feet at the deepest point in the Valley near Dolan Springs. A recently discovered clay unit in the central portions of the basin area may extend from 600 to 1,400 feet below land surface and acts as an impediment to groundwater flow, reducing the amount of recoverable groundwater due to its low specific yield. The clay unit is approximately 16 miles long and 3 to 4 miles wide (OFR No. 9). The estimate of natural recharge for this basin is 1,000 acre-feet per year (Water Atlas).

Generalized cross-section through the Detrital Valley Ground-water Basin

Source: Open File Report No. 9, ADWR



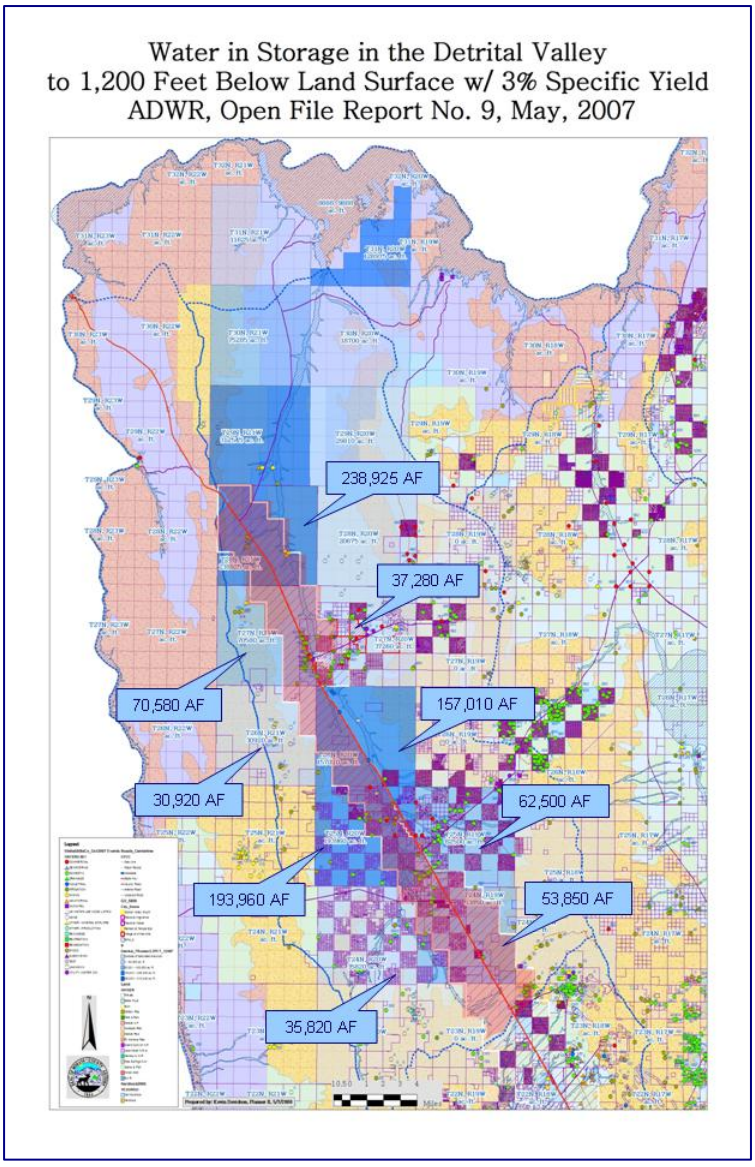
There are four storage estimates for this basin, ranging from one million acre-feet to seven million acre-feet. The most recent estimate, from a 2006 preliminary ADWR study, indicates the basin has between 1.38 and 3.68 million acre-feet in storage to a depth of 1,200 feet. The predevelopment

storage estimate is one million acre-feet to a depth of 1,200 feet (Water Atlas).

Well yields in this basin range from less than 100 gallons-per-minute (gpm) to 500 gpm. One source of well yield information, based on six reported wells, indicates that the median well yield in this basin is 31.5 gpm. Well yields are similar throughout the basin with the highest well yield, between 100 gpm and 500 gpm, occurring near Temple Bar. The deepest recorded water level in the basin is 597 feet west of Dolan Springs and the shallowest is 68 feet west of Temple Bar. The Department annually measures four index wells in this basin (see Appendix B and Water Atlas).

Open File Report

The Detrital Valley is expected to undergo rapid residential development in the near future. Updated information about the region's water resources and a more refined estimate of groundwater availability for the Assured and Adequate Water Supply Program administered by Arizona Department of Water Resources is required. The program determines whether an aquifer has sufficient groundwater in storage to a depth of 1,200 feet below land surface after 100 years of use. In association with the U.S. Geologic Survey, ADWR has the estimated groundwater in storage for areas within the alluvial portion of the Detrital Valley, via a detailed gravity survey of the basin and a basin-wide water-level sweep beginning in 2005. The results of the USGS study are expected to supplant these estimates.



The geologic model developed by ADWR shows a more shallow depth to bedrock in the southern third of the basin as compared to previous models. Conversely, the central and northern third of the basin have shown to have a greater depth to bedrock than previous reports.

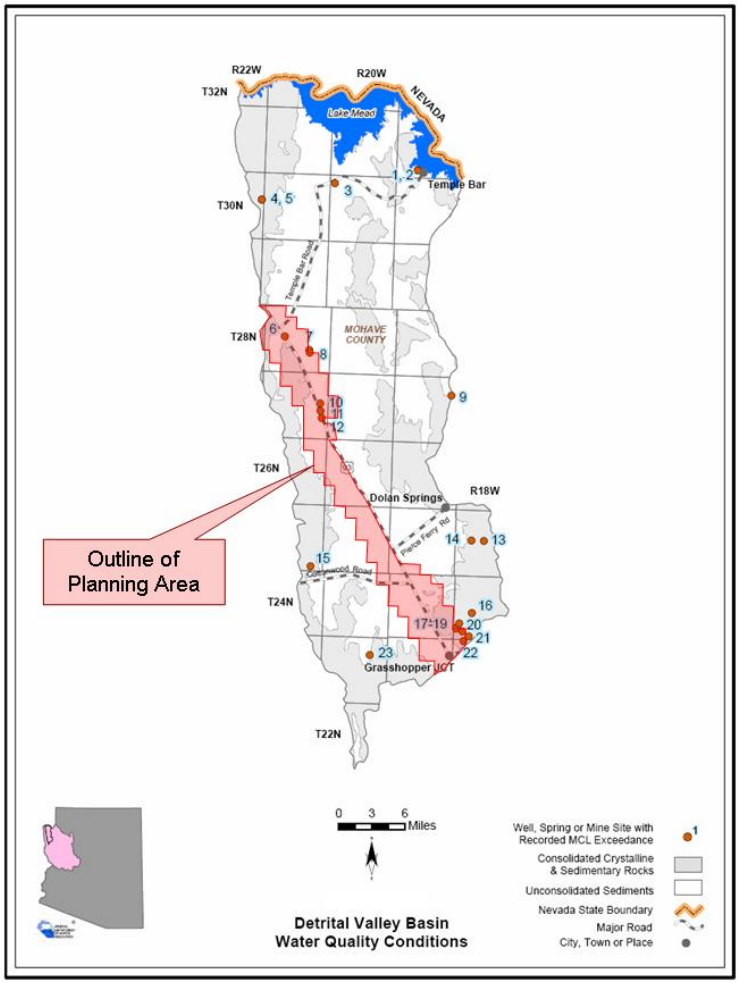
Estimating the amount of groundwater in storage is complicated by the presence of the clay unit that reduces the amount of

recoverable groundwater because it is generally reported as non-water bearing in well logs. The specific yield values are slightly lower than estimated regional specific yield values used by other investigators. The lower specific yield values were used to present a conservative estimate of the volume of groundwater in storage.

Caution should be exercised when utilizing the estimates for proving physical availability for water supply calculations. Not all of the estimated groundwater may be available for withdrawal from wells due to the location of future production wells, localized variations in the saturated thickness of the regional aquifer, and other localized hydrogeologic conditions.

Water Quality

Drinking water standard exceedences of the Safe Drinking Water Act were shown in 23 wells in the basin, of which 13 wells exceeded the arsenic standard. Arsenic exceedences are scattered throughout the basin. Wells 6, 7, 10, 11, 12, and 20 within the area plan boundary exceeded the arsenic standard (See Figure).



Other drinking water standards exceeded in the planning area include radio-nuclides (Well No. 19), nitrate/nitrite (Well Nos. 7, 8 and 19), and total dissolved solids (Well No. 22). Total dissolved solids generally impair the aesthetic quality of the water (Water Atlas).

Cultural Demands

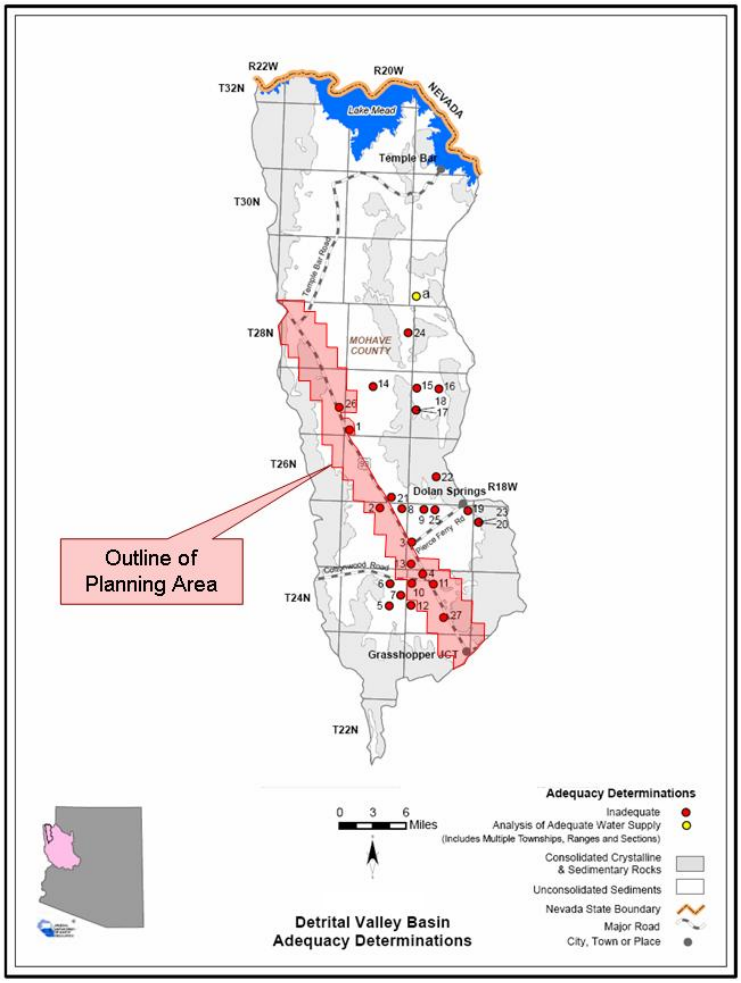
Population in this basin is small but has almost doubled since 1980, increasing from 757 in 1980 to 1,347 in 2000. Projections suggest a similar rate of growth through 2050. Groundwater pumping is minimal in this basin. Current pumping is comparable to historic pumping with an annual average of less than 300 acre-feet per year from 2001-2003. Most municipal and industrial demand is around Dolan Springs at this time. There are, however, a number of proposed residential developments in this basin east of Highway 93 and north of Pierce Ferry Road. Municipal groundwater demand has remained consistently less than 300 acre-feet per year since 1991. There are no recorded industrial or agricultural water

demands in this basin. There is, however, a small mine or quarry north of Grasshopper Junction (Water Atlas).

As of 2003 there were 142 registered wells with a pumping capacity of less than or equal to 35 gallons-per-minute and 12 wells with a pumping capacity of more than 35 gallons-per-minute in the Detrital Valley. A review of ADWR's Wells "55" data set for November, 2007 show 95 registered wells within the area plan boundary of which 58 were exempt. Exempt wells have a pumping capacity of less than 35 gallons-per-minute and typically include private, domestic wells and small production wells for commercial and stock pond uses.

Water Adequacy Reports and Analysis of Adequate Water Supply

A total of 31 water adequacy determinations have been made in this basin through December, 2008 (see Appendix B). Thirty one determinations of inadequacy have been made; these determinations are found in the southern and central portions of the basin. The most common reason for an inadequacy determination was because the existing water supply is unreliable or physically unavailable. Other reasons for an inadequacy determination included insufficient data, insufficient infrastructure, failure to demonstrate a legal right to use the water and water quality. No lots received an adequate water supply designation in this basin (Water Atlas).

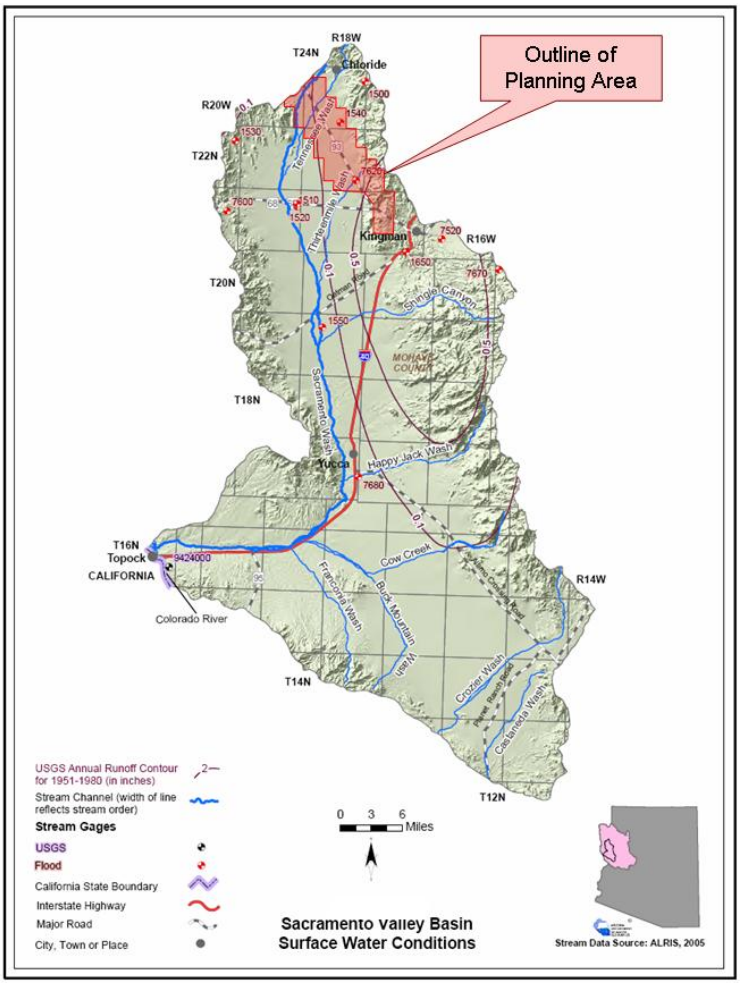


Two analyses of adequate water supply for two master planned communities have been issued for this basin. The first analysis was for 25,000 lots and is located across a broad disconnected area. (Section 4, Water Atlas). The second analysis for water adequacy for 25,953 homes is for a master planned community along White Hills Road, east of Highway 93 which adjoins the area plan boundary. Together, ADWR estimates these two projects would require 25,000 acre-feet of water (ADWR File No.23-401674).

Sacramento Basin

Geography

The Sacramento Valley Basin is the third largest basin in the planning area at 1,587 square miles; however, only 59 square miles of the basin is within the area plan boundary. The base of the Cerbat Mountains marks the easterly side of the basin. The Sacramento Wash running north to south to Yucca and then running east to west to the Colorado River, is the primary drainage feature of the basin.



Precipitation data shows rainfall generally falls at a higher rate east of Highway 93 at 10 to 12 inches per year than west of Highway 93 where rainfall is from 8 to 10 inches per year. Altitude is a factor in precipitation with the highest precipitation in the Hualapai Mountain range and the lowest near the Colorado River. The range of annual precipitation within the basin is 12 inches, which is typical of other basins in the planning area (Water Atlas).

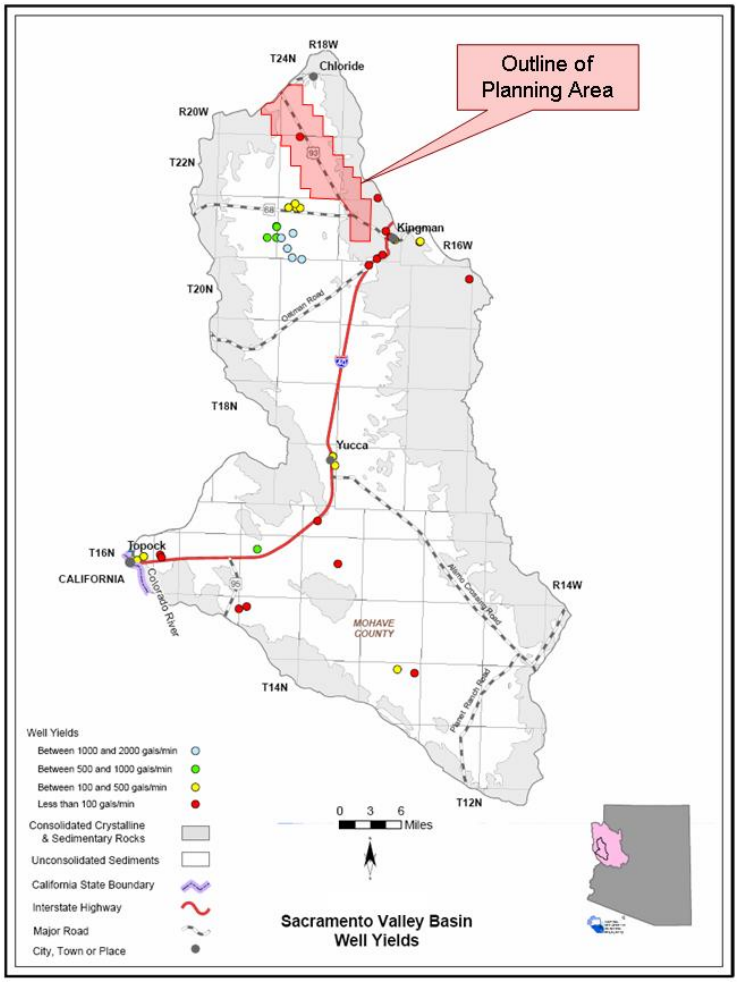
Surface Water Conditions

Average annual runoff is 0.5 inches per year in the northeastern portion of the basin and decreases to 0.1 in the vicinity of Sacramento Wash. There are 15 major springs with a measured discharge of 10 gallons-per-minute (gpm) or greater at any time, but none over 100 gpm. Listed discharge rates may not be indicative of current conditions. All measurements were taken during or prior to 1965 and a number of measurements were taken in 1943. All springs are located in the northern half of the basin. The Grapevine Spring is located on the very southeastern edge of the planning area and is noted as having a flow of 35 gpm. There are 42 minor springs identified in this basin (Water Atlas).

Groundwater Conditions

Older alluvium is the principal aquifer in the Sacramento Valley Basin. Aquifer recharge is from infiltration of runoff in washes and along mountain fronts. The direction of subsurface flow is

from the north to the south in the northern portion of the basin and away from the base of the mountains. There are fractured and faulted volcanic rocks in the vicinity of Kingman that separate this basin from the Hualapai Valley Basin to the east. Little water is pumped from wells located in these volcanics. The fractured granite aquifer beneath the community of Chloride is insufficient to meet its needs and water must be hauled from Kingman. There are two estimates of natural recharge for this basin ranging from 1,000 acre-feet per year to 4,000 acre-feet per year. Most of the recharge in this basin comes from infiltration along the mountain fronts (Section 4.0, Water Atlas).



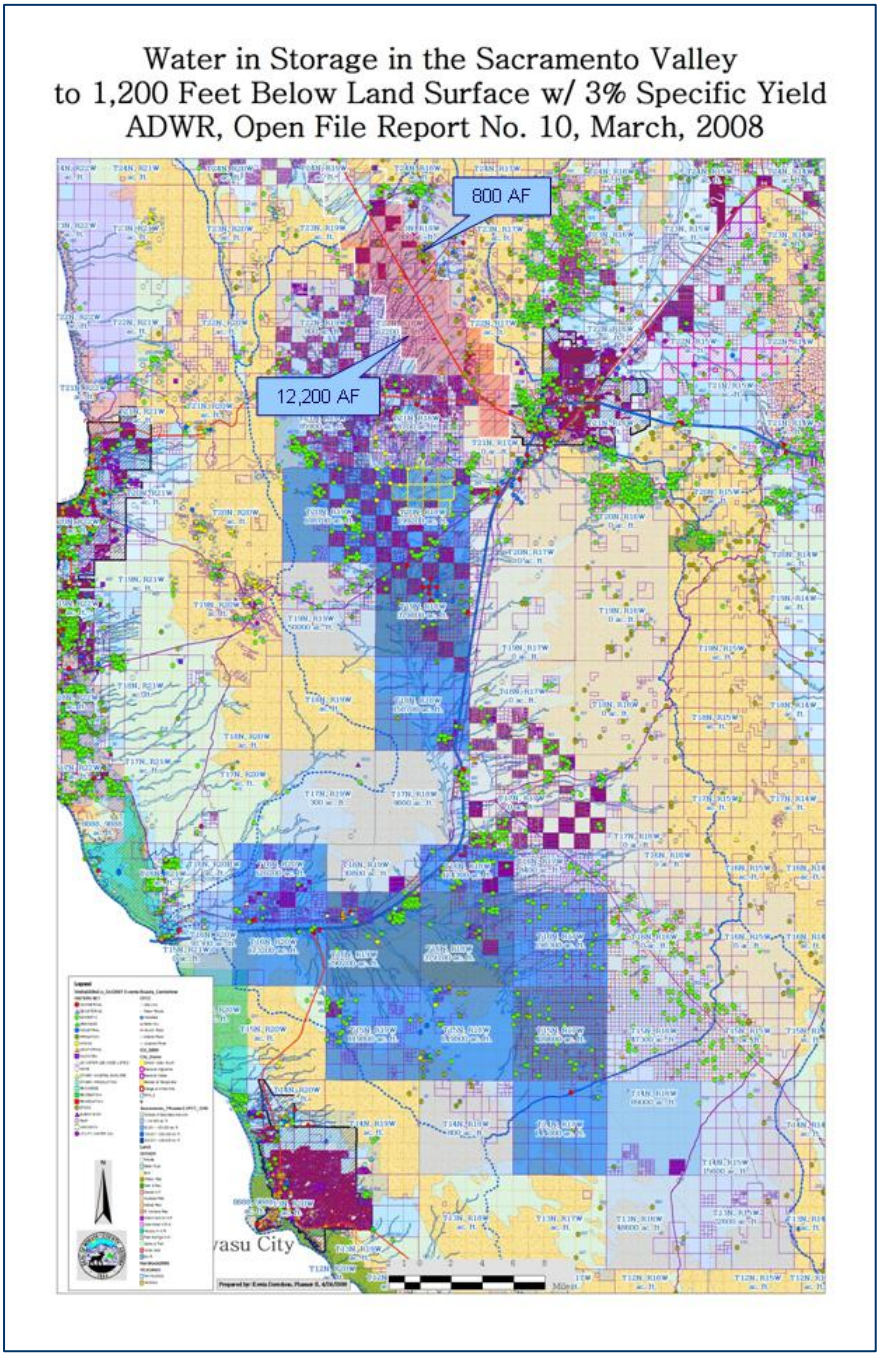
There are four storage estimates for this basin, ranging from 6.5 million acre-feet (to 1,500 feet) to 14 million acre-feet (to 1,200 feet). The most recent estimate, from a 1994 ADWR study indicated that the basin has between 7 and 8.3 million acre-feet in storage to a depth of 1,200 feet. The predevelopment estimate of storage for this basin is 11 million acre-feet to a depth of 1,200 feet (Water Atlas).

Well yields in this basin range from less than 100 gallons-per-minute (gpm) to 2,000 gpm. Based on 36 reported wells, from one source of information, the median well yield in this basin is 100 gpm. The deepest recorded water level in the basin is 1,062 feet near Highway 68 and the shallowest is 38 feet east of Topock. The Department annually measures 11 index wells in this basin (see Appendix B and Water Atlas).

Open File Report

To update and improve the groundwater data available for the Sacramento Valley, ADWR conducted a basin-wide water-level sweep and a detailed gravity survey of the basin in 2006. This open-file report is intended to present a preliminary estimate of groundwater in storage in the Sacramento Valley Groundwater Basin, and is part of the broader USGS study to estimate the amount of groundwater in storage for areas within the alluvial portion of the basin. As with the study of the Detrital Valley, this analysis was undertaken to meet ADWR's immediate need for a more refined estimate of groundwater availability for the Assured and Adequate Water Supply Program (AWS) with the results of the USGS study expected to supplant these estimates.

The depth-to-bedrock model developed is significantly different from historical models and shows bedrock to be much shallower in the area of the northeast corner of Township 21 North, Range 19 West, to the center of Township 21 North, Range 18 West, or the center of Golden Valley. The area plan boundary, however, is along the base of the Cerbat Mountains where depth-to-bedrock is less than in the central part of the valley's basin fill alluvium. The specific yield values are slightly lower than the estimated regional specific yield values used by other investigators, as noted in the Detrital Valley study mentioned above. The lower specific yield values present a conservative estimate of the volume of groundwater in storage (OFR No. 10).



Caution should be exercised when utilizing the estimates for proving physical availability for water supply calculations. Not all of the estimated groundwater may be available for withdrawal from wells due to the location of future production wells, localized variations in the saturated thickness of the regional aquifer, and other localized hydrogeologic conditions (OPR No. 10).

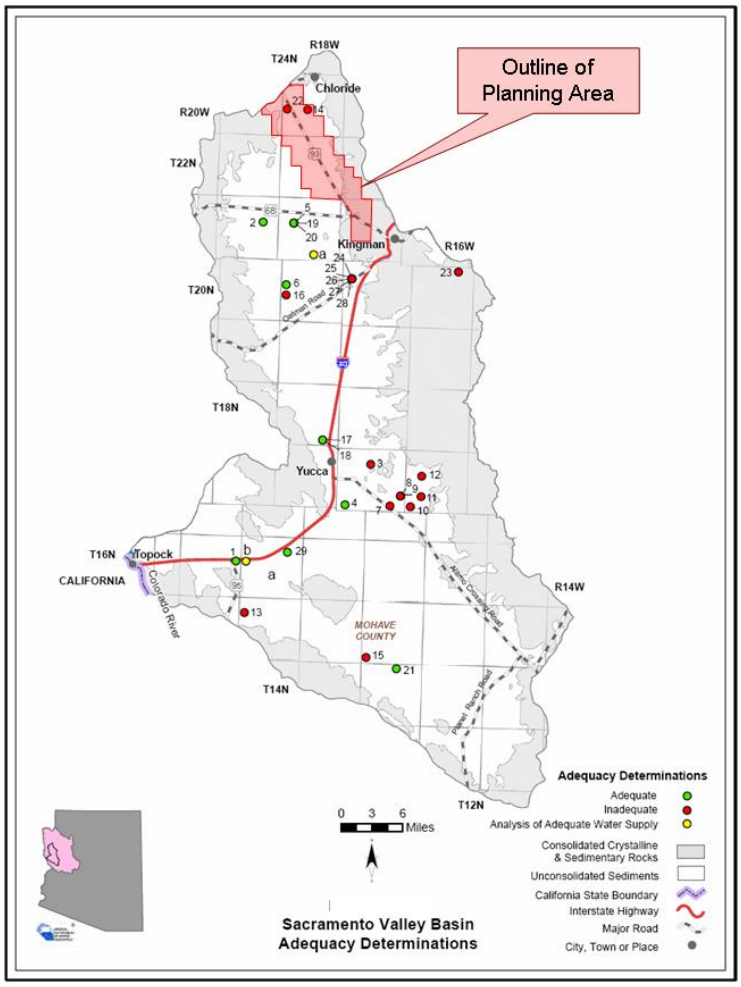
In summary, the updated water-in-storage volume for the Sacramento Valley Groundwater Basin is similar to previous estimates.

Water Quality

Drinking water standard exceedences in wells, springs and mine sites have been reported for 62 sites in the basin. The drinking water standards for arsenic, fluoride and radio-nuclides were the most frequently exceeded standards at sites in this basin, with concentrations of radio-nuclides in Chloride exceeding the Safe Drinking Water Act maximum contaminant levels (City of Kingman, 2003). Arsenic and radio-nuclide exceedences are found throughout the basin and fluoride exceedences are found in the central and southern portions of the basin. Other drinking water standards exceeded in this basin include beryllium, cadmium, copper, chromium, lead, nitrate/nitrite and total dissolved solids. Only one well within the boundary of the Area Plan north of So-Hi exceeded drinking water standards for nitrate/nitrite. Otherwise, groundwater quality is generally good in the basin except along the base of the mountains where waters of high mineral content are common (Water Atlas, Section 4.0).

Cultural Demands

Population in this basin has more than doubled since 1980, increasing from 7,245 in 1980 to 16,276 in 2000. Projections suggest a similar rate of growth through 2050. Groundwater use in this basin decreased from 1971-1990. Between 1991-2003 groundwater demand has increased, with an average of 3,700 acre-feet pumped per year from 2001-2003. Most municipal and industrial demand in this basin is in the vicinity of Kingman and around Highway 68 west of Kingman in the Golden Valley unincorporated area. Municipal groundwater demand has, however, increased from an average of 1,500 acre-feet per year in 1991 to an average of 2,000 acre-feet per year in 2003. Groundwater use declines in the 1970's and 1980's can be attributed to the declining use of water by the Mineral Park Mine located south of Chloride. Industrial groundwater use has increased in recent years from an average of less than 300 acre-feet per year in 1991 to an average of 1,700 acre-feet per year in 2003 (Water Atlas).



As of 2003 there were 905 registered wells with a pumping capacity of less than or equal to 35 gallons-per-minute and 61 wells with a pumping capacity of more than 35 gallons-per-minute in the Sacramento Basin. A review of 2007 data shows 47 registered wells within the area plan boundary of which 44 were exempt; 15 of the exempt wells were used for exploration or monitoring use.

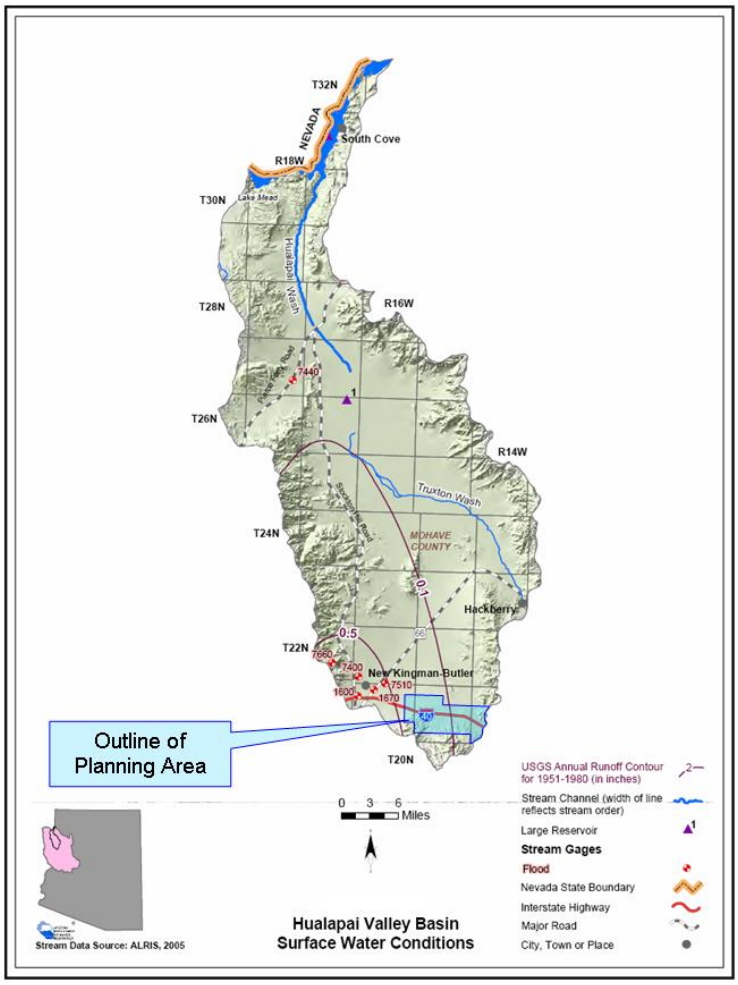
Water Adequacy Reports and Analysis of Adequate Water Supply

A total of 32 water adequacy determinations have been made in this basin through December 2008 (see Appendix B). Twenty determinations of inadequacy have been made. The most common reason for an inadequacy determination was based on the applicant's decision not to submit necessary information and/or available hydrologic data was insufficient to make a determination. Other reasons for an inadequacy determination were insufficient supply, insufficient infrastructure and water quality. Of the 4,083 lots in 27 subdivisions, 1,012 lots or 25% were adequate. Two analyses of adequate water supply have been issued for this basin with development for 32,000 lots, scaled back to 17,544 lots in 2008, and the other for 33,500 lots (Water Atlas). Neither of these master planned communities are within or adjacent to the area plan boundary.

Hualapai Basin

Geography

The Hualapai Valley Basin is the second smallest basin in the central part of the planning area at 1,212 square miles. Only 30 square miles of the drainage basin is within the area plan boundary. The basin is characterized by the wide north-south trending Hualapai Valley running through the center of the basin with the Hualapai, Cerbat, Peacock and Music Mountains along the margins.



Average annual precipitation is as high as 14 inches at the southern-most tip of the basin in the Hualapai Mountains located just south of the area plan boundary. Average annual precipitation in the planning area along I-40 is between 10 to 12 inches. In general, precipitation increases as the elevation increases in this basin (Water Atlas).

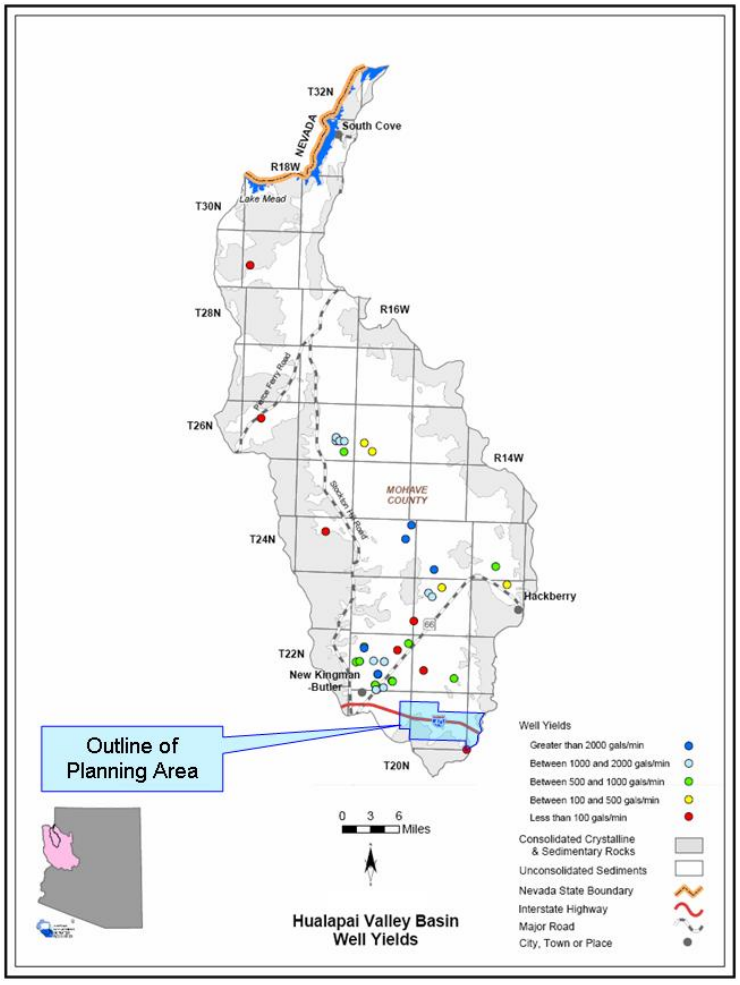
Surface Water Conditions

Stream flow was not measured in this basin. Average annual runoff is 0.5 inches per year in the southwest corner of the basin around New Kingman-Butler and decreases to 0.1 inches in the northern and eastern portions of the basin. There are three major springs with a measured discharge of 10 gallons-per-minute (gpm) or greater at any time. Listed discharge rates may not be indicative of current conditions. Two of the major springs in this basin were measured before 1997. Major springs are found on the edges of the basin. All major springs discharge less than 50 gpm. There are 19 minor springs identified in this basin. However, there are no measured springs within the area plan boundary (Water Atlas).

Groundwater Conditions

The Hualapai Valley Basin has relatively deep, basin fill sediments categorized into three units. The younger alluvium unit includes recent streambed deposits in the Hualapai Valley and in mountain canyons. This unit yields small volumes of water to stock and domestic wells. The intermediate alluvium, which is composed of coarse-grained sands, silts and clays, is a dependable aquifer only along the valley margins where the unit intersects the water table. The

older alluvium is the primary water supply and includes clastic sediments, limestone and basalt flows of the Muddy Creek and Chemehueve Formations within the basin fill (USGS, 2006). Sub-surface flow direction is from the south to the north in most of the basin and east to west near New Kingman-Butler. Recharge to the aquifer comes primarily from streambed infiltration. There are two estimates of natural recharge for this basin ranging from 2,000 acre-feet per year to 3,000 acre-feet per year (Water Atlas).



There are four storage estimates for this basin, ranging from three million acre-feet to 5.3 million acre-feet to a depth of 1,200 acre-feet. The most recent estimate, from a 1994 ADWR study, indicates the basin has between five and 5.3 million acre-feet in storage to a depth of 1,200 feet. The USGS (1971) estimates the basin has between 10.5 and 21 million acre-feet of water in storage to a depth of 1,500 feet. The predevelopment storage estimate is five million acre-feet to a depth of 1,200 feet (Water Atlas).

Well yields vary from less than 100 gallons-per-minute (gpm) to greater than 2,000 gpm. One source of well yield information, based on 33 reported wells, indicates that the median well yield in this basin is 900 gpm. The deepest recorded water level in the basin is 924 feet east of New Kingman-Butler and the shallowest is 257 feet east of Stockton Hill Road in the center of the basin. Hydrographs show a decline in water level in the Kingman area of approximately 18 inches per year due to groundwater pumping.[2] The Department annually measures seven index wells in this basin (see Appendix B and Water Atlas)

Water Quality

Drinking water standard exceedences in wells and springs have been reported for 31 sites in the basin. The drinking water standards for fluoride and radio-nuclides were the most frequently exceeded standards at sites in this basin. Most fluoride exceedences are in the northern portion of the basin. Radio-nuclide exceedences are scattered throughout the basin. Other drinking water standards exceeded in the basin include antimony, chromium, lead and nitrate/nitrite. Groundwater is highly mineralized in some areas near the base of mountains. Chromium has

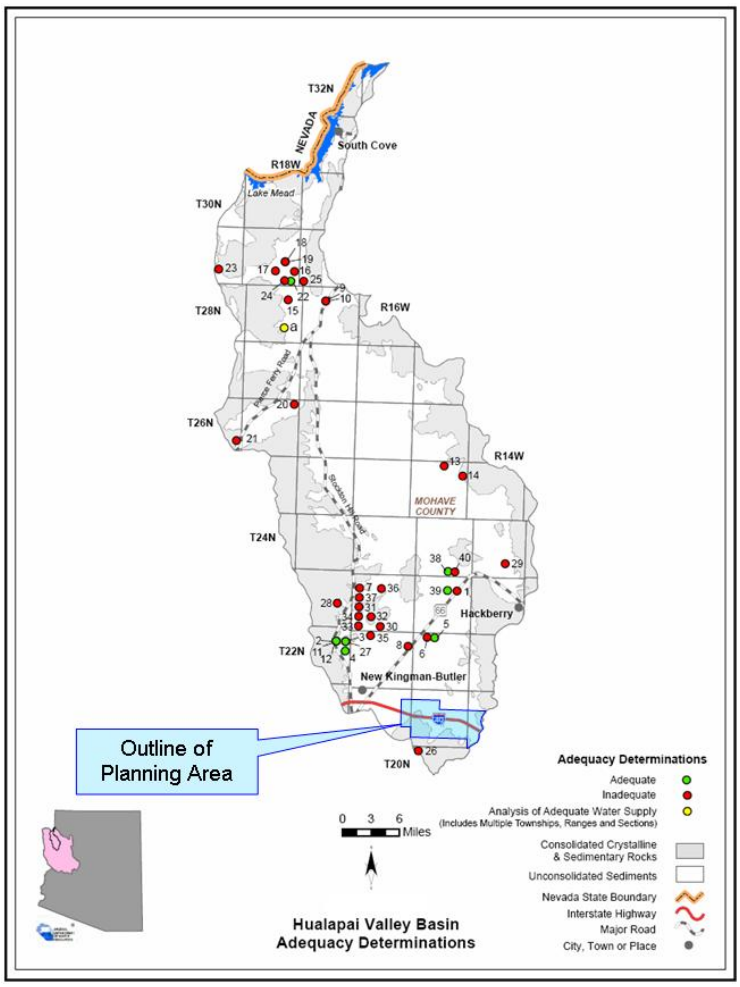
[2] See well in T22N, R16W, Section 28, located east of Castle Rock Road and north of Thompson Avenue.

been detected in some wells in the basin. Only one well within the area plan boundary has exceeded standards for radio-nuclides. (Water Atlas, Section 4.0).

Cultural Demands

Population in this basin has almost tripled since 1980, increasing from 11,361 in 1980 to 31,543 in 2000. Projections suggest the population will more than double by 2050. Groundwater use has increased in this basin since 1971, with an average of 3,850 acre-feet pumped per year from 1971-1975 to an average of 8,450 acre-feet pumped per year from 2001-2003. Most of the municipal and industrial demand is in the vicinity of New Kingman-Butler. Municipal groundwater demand has grown from 5,500 acre-feet per year on average in 1991 to 8,300 acre-feet per year on average in 2003. The City of Kingman, in the Sacramento Valley Basin, obtains most of its water from well fields in this basin, with recent reports showing the City of Kingman's use of over 10,000 acre-feet in 2007. Industrial groundwater demand is minimal in this basin at less than 300 acre-feet per year from 1991-2003 (Water Atlas).

In 2003, 725 registered wells in the basin had a pumping capacity of less than or equal to 35 gpm and 41 wells had a pumping capacity of more than 35 gpm. In 2007, there were 58 registered wells within the area plan boundary of which 51 were exempt.



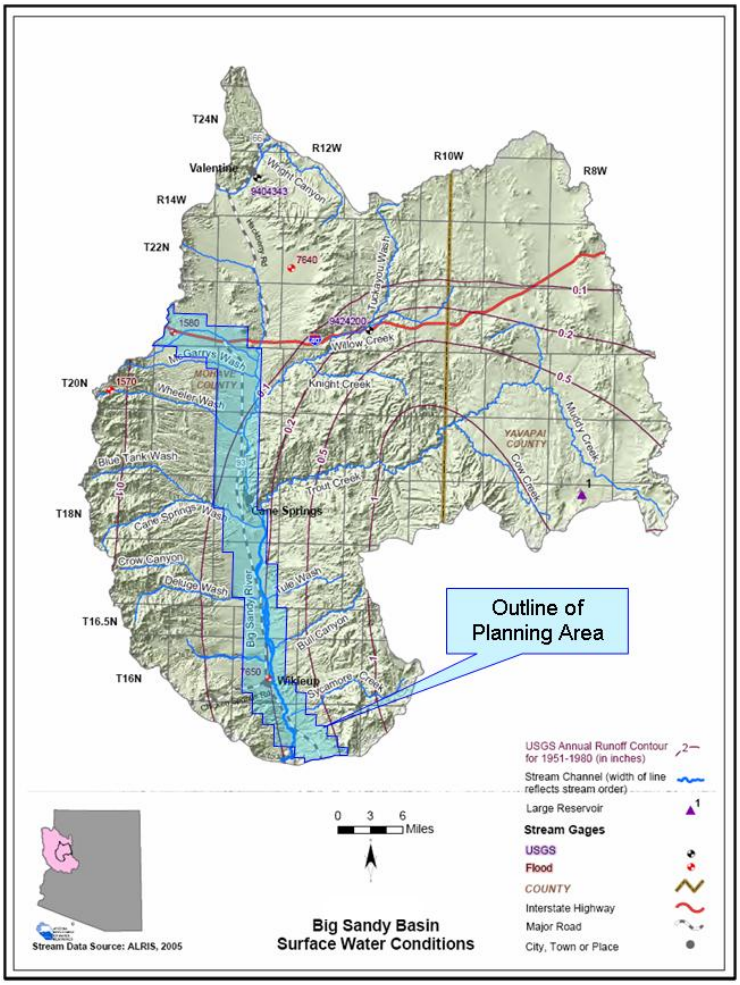
Water Adequacy Reports and Analysis of Adequate Water Supply

Fifty water adequacy determinations have been made in this basin through December, 2006 (see Appendix B). Forty two determinations of inadequacy have been made. The most common reason for an inadequacy determination was based on the applicant's decision not to submit necessary information and/or available hydrologic data were insufficient to make a determination. Other reasons for an inadequacy determination included insufficient supply and insufficient infrastructure. Of the 17,632 lots in 39 subdivisions for which lot information is available, 10,969 lots, or 62% were determined to be adequate. Six analyses of adequate water supply for six master planned communities have been issued for 259,966 lots and located across the basin (Water Atlas).

Big Sandy Basin

Geography

The Big Sandy Basin, situated in the central and southern part of the planning area, is the second largest basin at 1,988 square miles and has the largest land area within the area plan boundary at 178 square miles. The basin is characterized by a large valley, and by mid-elevation mountain ranges and plateaus. Surrounding the Big Sandy Valley are the Aquarius Mountains to the east of the Big Sandy River, the Cottonwood Mountains to the north and the Hualapai Mountains along the western, which also contains the highest point in the basin, Hualapai Peak at 8,417 feet. Riparian vegetation is found along streams such as the Big Sandy River that runs north to south through Cane Springs and Wikieup. The lowest point in the basin, about 1,650 feet, is south of Wikieup along the Big Sandy River. Trout Creek, a major tributary to the Big Sandy River, flows east to west in the middle of the basin, draining the Aquarius Mountains.



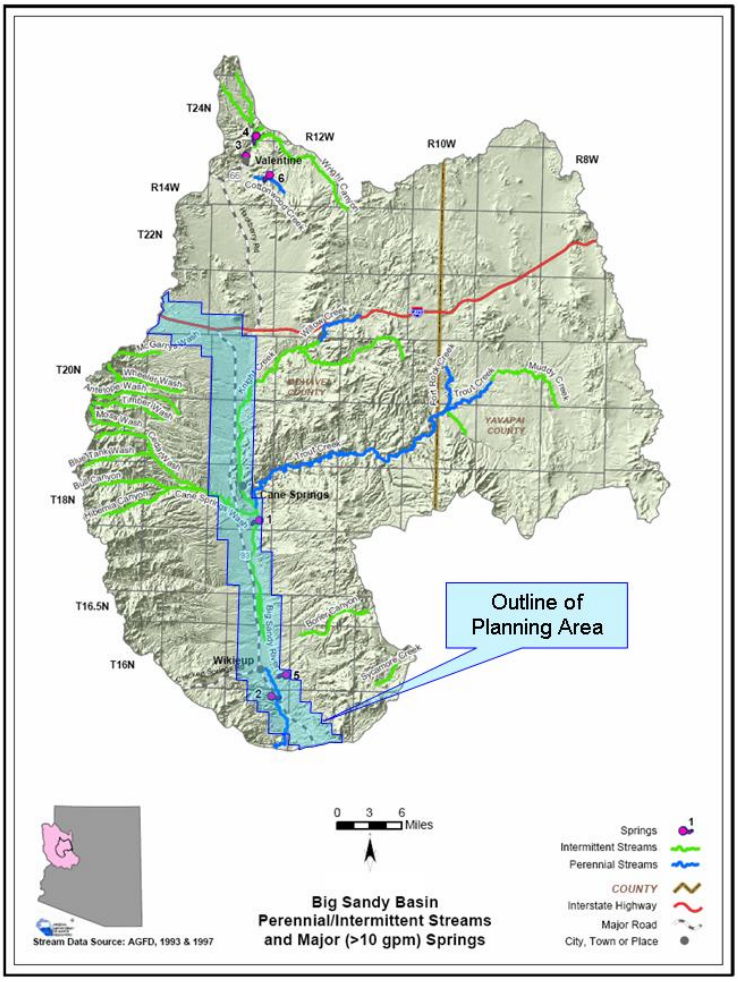
Precipitation data shows rainfall as high as 22 inches at the southeastern-most tip of the basin (T18N, R7W in Yavapai County) in the Juniper Mountains and as low as eight inches in the areas south of Wikieup. Rainfall within the area plan boundary is typically 10 to 12 inches per year. In general, precipitation increases as altitude increases in this basin. This basin has one of the highest average annual precipitation rates in the planning area and the highest average low precipitation rate in the planning area.

Surface Water Conditions

The Cottonwood Creek Station is located just east of the area plan boundary and lends some insight to the frequency and volume of surface hydrology. The average seasonal flow is highest in the summer (July-September) when 44% occurs at the Cottonwood Wash station. The average seasonal flow is lowest in the spring (April-June) and the fall (October-December). Maximum annual flow was 8,326 acre-feet in 1976. Minimum annual flow was 601 acre-feet in 1975. The

gauging station was discontinued in 1978 Average annual runoff is one inch per year in the south-central portion of the basin near Cow Creek and decreases to 0.1 inches to the north and west.

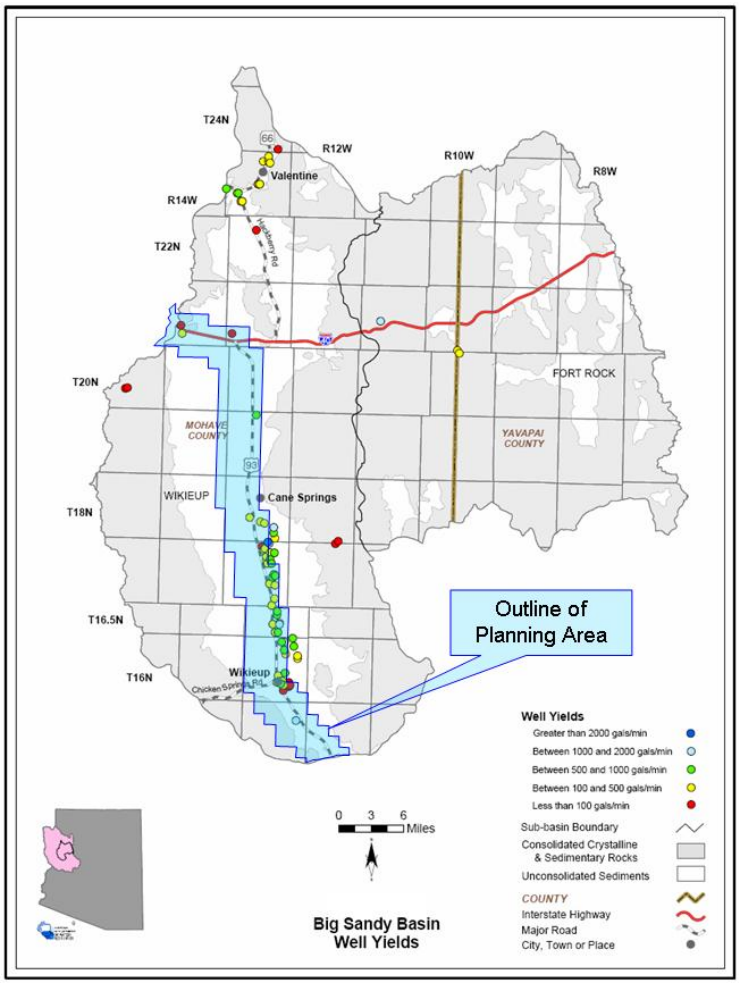
There are three perennial streams located in the center of the basin, Cottonwood Creek, Big Sandy River and Trout Creek. Numerous intermittent streams are located throughout the basin with a large concentration of intermittent streams along the western basin boundary. Reaches of the Big Sandy River and Trout Creek in this basin are both perennial and intermittent. There are six major springs with a measured discharge of 10 gallons-per-minute (gpm) or greater at any time. Listed discharge rates may not be indicative of current conditions. All of the measurements were taken during or prior to 1982. Major springs are found in the vicinity of perennial and intermittent streams. The greatest discharge rate was measured at the beginning of an intermittent reach of the Big Sandy River south of Cane Springs (No. 1) at 1,600 gallons-per-minute (gpm). The Cofer Hot Spring (No. 5), east of Wikieup, discharges 200 gpm. All but one of the major springs discharges at least 200 gpm. There are 11 minor springs identified in the basin. The total number of springs identified by the USGS varies from 165 to 179, depending on the database reference. Some springs and seeps in the Sonoran Desert, of which this part of the planning area is a part, have been degraded or lost completely due to development or diversion for use by livestock or crops or groundwater pumping (CWCS).



Groundwater Conditions

With the exception of its northeastern portion (Fort Rock sub-basin), most of the Big Sandy Basin was categorized as a "Southeast" basin by Anderson, Freethey and Tucci (1992). This area generally corresponds to the Wikieup sub-basin south of Interstate 40. Southeast basins are characterized by moderately thick pre-Basin and Range sediments and an overlying layer of lower basin fill to depths of over 1,000 feet. Aquifers generally consist of two or more water-bearing units separated by a fine-grained unit that forms a leaky confining layer over the lower basin fill. Primary water development in the Big Sandy Basin is along the central valley,

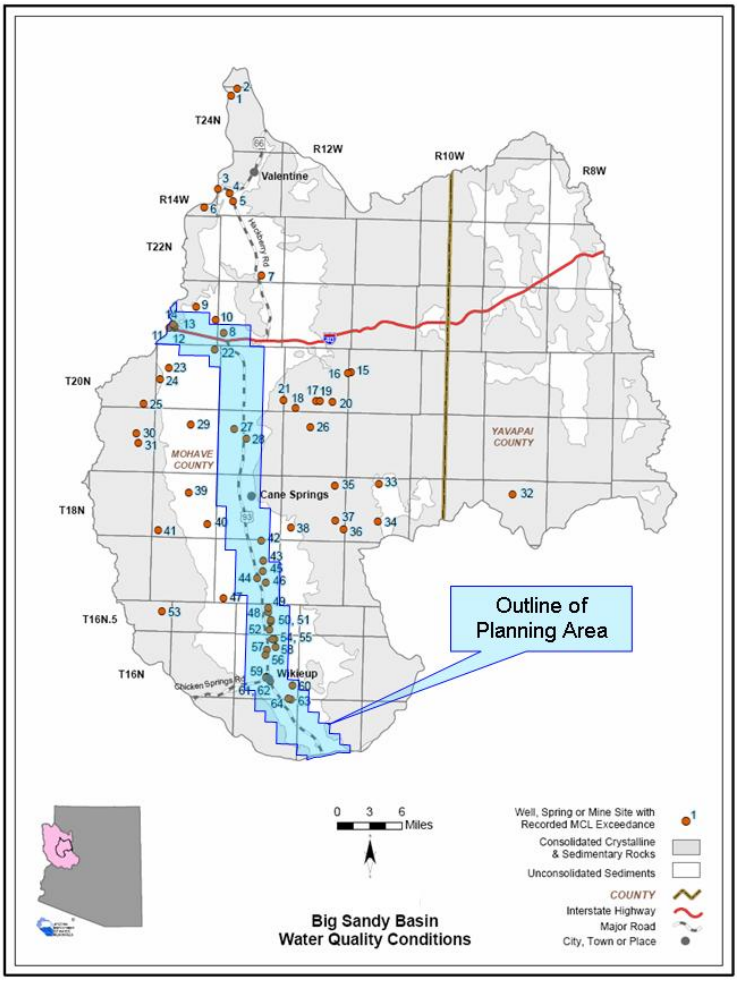
primarily in the upper basin fill that varies from loosely consolidated silty gravel to sandy silt. The floodplain alluvium in the central valley is 30-40 feet thick and is an unconsolidated deposit of gravel and sand. In the Wikieup area, wells greater than 40 feet in depth tap the upper basin fill, which is estimated to be 300 feet deep in that area. North of Wikieup, the upper basin fill is estimated to be 150 to 200 feet deep. In addition, sedimentary rock (R Aquifer) also serves as a water bearing unit. Sub-surface flow direction is generally from the north to the south. The estimate of natural recharge for this basin is 22,000 acre-feet per year (Water Atlas, Section 4.0).



There are three storage estimates for this basin, ranging from 9.5 million acre-feet to 21 million acre-feet. The most recent estimate, from a 1990 ADWR study, indicates the basin has 9.5 million acre-feet in storage to a depth of 1,200 feet. The predevelopment storage estimate is 10 million acre-feet to a depth of 1,200 acre-feet.

Well yields range from less than 100 gallons-per-minute (gpm) to greater than 2,000 gpm. One source of well yield information, based on 87 reported wells, indicates that the median well yield in this basin is 300 gpm but vary throughout the basin. The deepest recorded water level in the basin is 488 feet near the northeastern basin boundary and the shallowest is 15 feet south of Wikieup. The Department annually measures eight index wells in this basin. The hydrograph for an index well located in T13N, R16W, Section 36, south and east of Wikieup along the big Sandy River shows some four feet of decline from 1975 to 2005 (see Appendix B).

Water Quality



Drinking water standard exceedences in wells and springs have been reported for 64 sites in the basin. The drinking water standard for radio-nuclides, fluoride and lead were the most frequently exceeded standards at sites in the basin. The largest clusters of radio-nuclide exceedences is east of Highway 93 and south of Interstate 40 and include well nos. 27, 28 and 56 within the area plan boundary. The largest cluster of lead exceedences is around Highway 93 north of Wikieup within the area plan boundary and includes well nos. 45, 46, 48 through 52, 54, 55 and 58. Well no. 13 just east of mile post 67 along I-40 also exceeds the standard for lead. Fluoride exceedences are scattered throughout the basin, but well nos. 8, 11, 12, 13, 22, 44, 57, 60, 63 and 64 are included within the area plan boundary. Other drinking water standards exceeded in this basin include arsenic (well nos. 12, 13, 15, 22, 42, 43, 59 through 62 and 64), antimony (well no. 22), beryllium and cadmium. The last two exceedences were not found for wells listed within the area plan boundary.

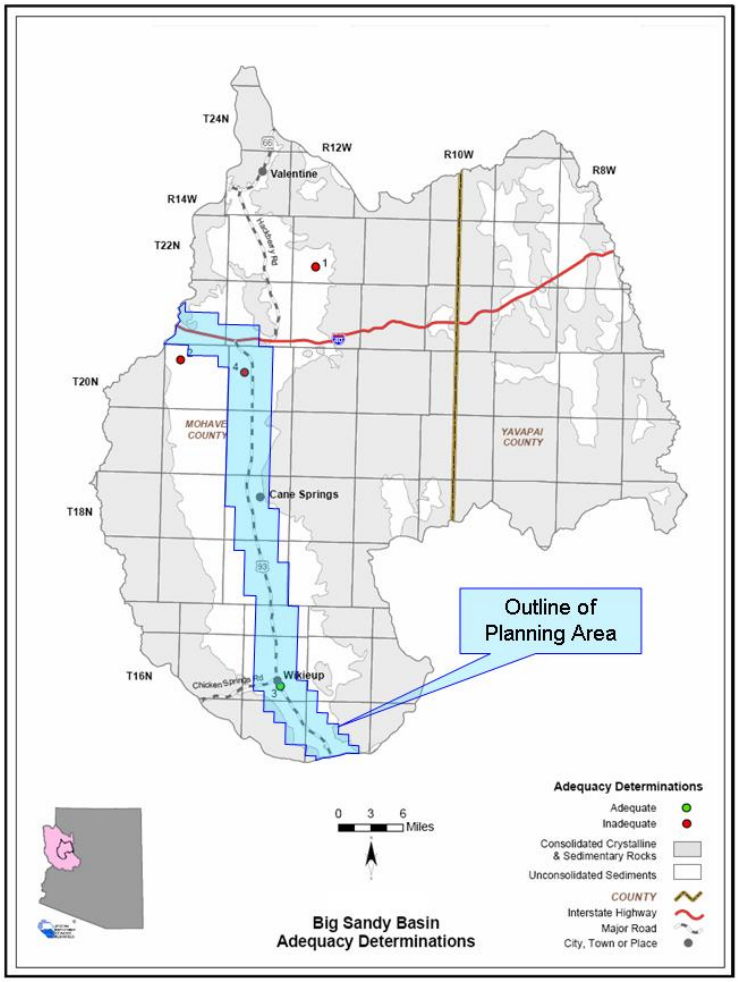
Cultural Demands

Population in this basin is minimal but has almost tripled since 1980, increasing from 434 in 1980 to 1,178 in 2000. Projections suggest a similar rate of growth through 2050. Groundwater use has increased in this basin since 1971, with an average of 2,500 acre-feet pumped per year from 1971-1975 and an average of 15,600 acre-feet pumped per year from 2001-2003. There are no reported surface water diversions in this basin. There is minimal agricultural use in this basin, with less than 300 acre-feet per year from 1991-2003. Agricultural demand centers are located south of Cane Springs and south of Wikieup along Highway 93. Municipal groundwater demand is also minimal in this basin, with less than 300 acre-feet per year on average from 1991 to 2003. Municipal demand centers are located in the vicinity of Wikieup and north of Wikieup along Highway 93. There is significant industrial groundwater demand in this basin. 15,600 acre-feet per year on average from 2001-2003 was pumped and transported, via pipeline to the Bagdad Mine in the Bill Williams Basin.

As of 2003, there were 1,145 registered wells in the basin with a pumping capacity of less than or equal to 35 gallons-per-minute and 137 wells with a pumping capacity of more than 35 gallons-per-minute. In 2007, 568 wells had been registered within the boundary of the area plan, of which 396 were exempt wells, including 16 exploration wells and eleven piezometer wells used to measure the compressibility of a material or fluid under pressure.

Water Adequacy Determinations

A total of four water adequacy determinations have been made in this basin through December, 2008 (see Appendix B). Three determinations of inadequacy have been made; all of these determinations are in the northern portion of the basin. All inadequacy determinations were based on the applicant's decision not to submit necessary information and/or available hydrologic data was insufficient to make a determination. 608 lots have received an inadequate determination; data on the number of lots with an adequate determination was not available to the Department.



Bill Williams Basin

Geography

Covering some 3,350 square miles, the Bill Williams Basin is the largest basin in the planning area. Approximately 51 square miles fall within the southerly part of the area plan boundary. The basin is characterized by hilly terrain in much of the basin and by several major river drainages. Riparian vegetation is found along streams including cottonwood/willow, mesquite and tamarisk along the Bill Williams, Big Sandy and Santa Maria Rivers and mesquite, cottonwood/willow and mixed broadleaf along sections of Burro Creek flowing through the center of the area plan boundary.

Rainfall is as high as 24 inches northeast of Skull Valley approaching Granite Mountain, elevation 7,626. This is the highest average annual precipitation of all five basins. Annual precipitation within the area plan boundary is generally 10 to 12 inches with 12 to 14 inches at higher elevations near the Yavapai County line.

Surface Water Conditions

Gauging stations are located on Burro Creek and Big Sandy River. The average seasonal flow for these stations is highest in the winter (January-March) when 80% of the annual average seasonal flow occurs. The average seasonal flow is lowest for Burro Creek in the spring when only three percent of the annual flow occur and for the Big Sandy River in the summer when only four percent of the annual flow can be expected.

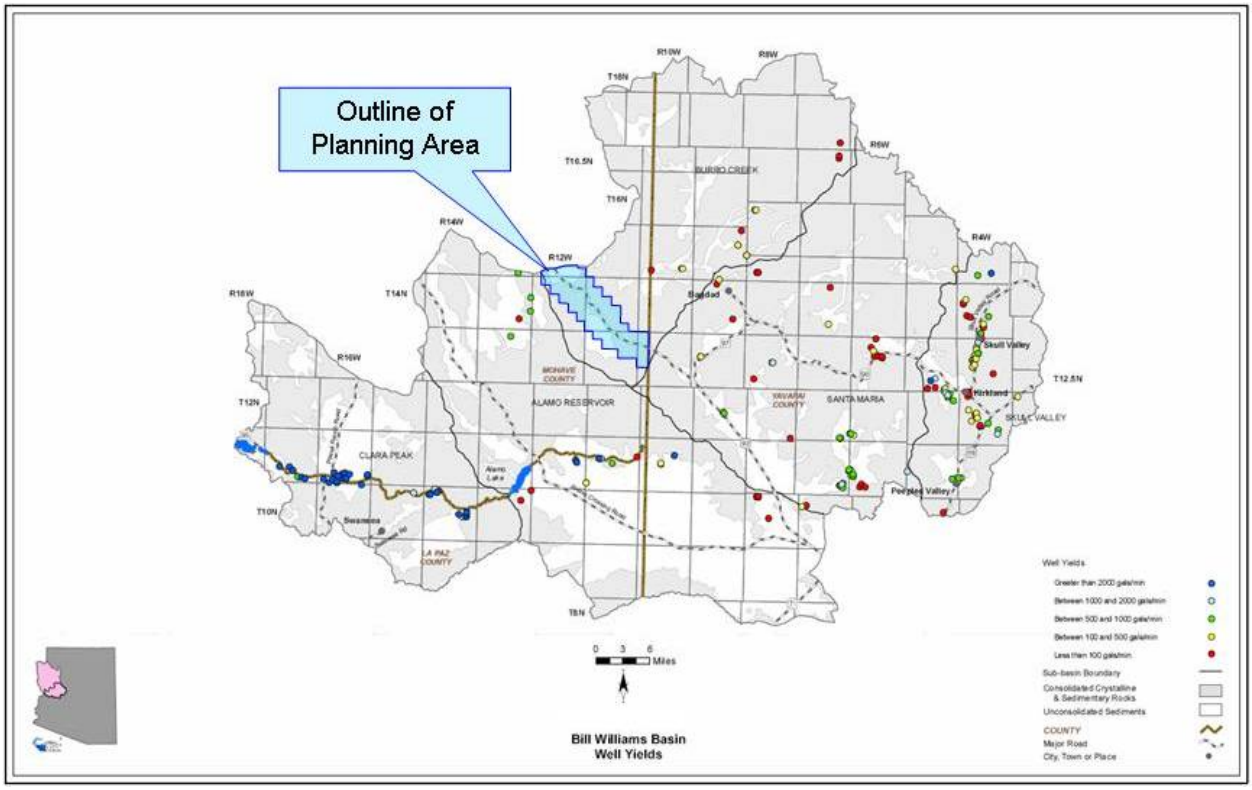
Average annual runoff is 0.5 inch per year is typical along Highway 93 with higher runoff northeast of the highway decreasing to 0.2 inches to the southwest.

There are numerous perennial streams located throughout the basin. Numerous intermittent streams are also located throughout the basin with the largest concentration of intermittent streams in the northeastern portion of the basin. Significant perennial reaches include sections of the Bill Williams River, Santa Maria River, Big Sandy River and Burro Creek. All of these waterways also have reaches that are intermittent. There are six major springs with a measured discharge of 10 gallons-per-minute (gpm) or greater at any time. Listed discharge rates may not be indicative of current conditions. For example, Kaiser Hot Spring (No. 3) 40 gpm discharge rate was last recorded in 1980 and marks the last year in which measurements were taken for all springs. Major springs are found in the eastern and north central areas of the basin. All but one of the major springs discharge 200 gpm or less. There are 13 minor springs identified in this basin. The total number of springs identified by the USGS varies from 249 to 303, depending on the database reference (Water Atlas). Natural functions of these hydrologic systems have been seriously altered in most areas by lowering of groundwater levels, by diversion and channelization, by dam building and resulting inundation and cessation of flood cycles, and by invasion of nonnative plants. Extended drought will result in continued loss of instream flows and further degradation of riparian and aquatic habitats (CWCS).

Groundwater Conditions

The area plan boundary is within the Burro Creek sub-basin, one of five in the groundwater basin, Groundwater in this area occurs primarily in younger alluvial deposits and in basin-fill with fractured volcanic rock providing additional water sources. The water-bearing ability of

these units varies within the basin. The younger alluvium consists of gravel, sand and silts along the Bill Williams River and its major tributaries. The main water-bearing unit is the basin fill.



Recharge is from stream flow and mountain front precipitation. The estimate of natural recharge for this basin is 32,000 acre-feet per year. The direction of sub-surface flow is generally from east to west (Water Atlas, Section 4.0).

There are three storage estimates for this basin, ranging from 10 million acre-feet to 23 million acre-feet. The most recent estimate, from a 1990 ADWR study, indicates the basin has 23 million acre-feet in storage to a depth of 1,200 feet. The predevelopment storage estimate is 10 million acre-feet to a depth of 1,200 feet (Water Atlas).

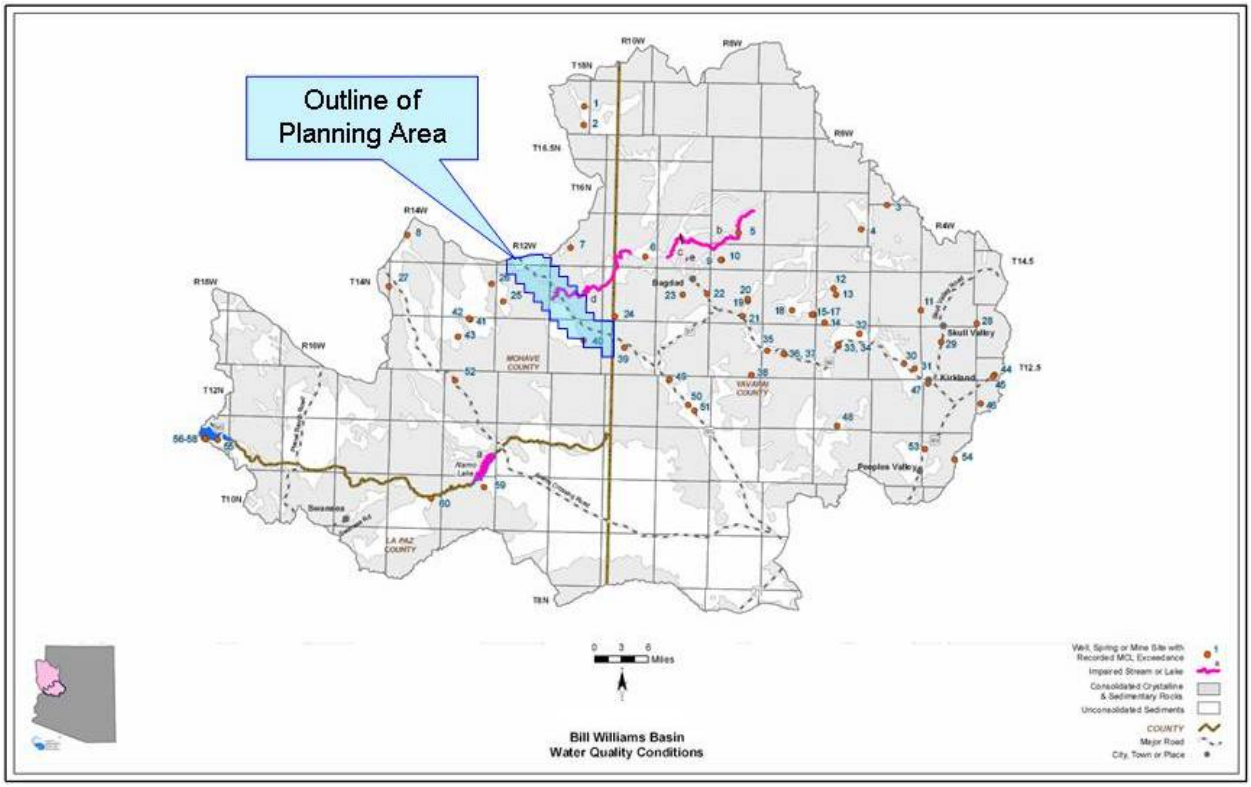
Well yields in this basin range from less than 100 gallons-per-minute (gpm) to greater than 2,000 gpm. One source of well yield information, based on 195 reported wells, indicates that the median well yield in this basin is 280 gpm. Well yields vary throughout the basin with the majority of the highest well yields, greater than 2,000 gpm, occurring in the western portion of the basin along the Bill Williams River. The deepest recorded water level in the sub-basin is over 2,500 feet. The Department annually measures 21 index wells in this basin (see Appendix B and Water Atlas).

Water Quality

Drinking water standard exceedences in wells and springs have been reported for 60 sites in the basin. The drinking water standards for fluoride and arsenic were the most frequently exceeded standards at sites in this basin. The largest cluster of fluoride exceedences is north of Highway 93. Arsenic exceedences are scattered throughout the basin. Other drinking water standards

exceeded in this basin include cadmium, copper, lead, nitrate/nitrite, total dissolved solids and radio-nuclides. Only one well (No. 40) within the area plan boundary exceeded arsenic standards. Water quality within this aquifer unit is generally good (Water Atlas).

Water quality standards were exceeded in two reaches of Boulder Creek, located upstream of the area plan boundary, and one reach of Burro Creek within the area plan boundary. The mercury drinking water standard was exceeded in these impaired streams. Arsenic, copper and zinc were exceeded in Boulder Creek. The longest impaired reach was 17 miles of Boulder Creek. Boulder Creek is part of the ADEQ water quality improvement effort called the Total Maximum Daily Load (TMDL) program. The final TMDL report has been completed for Boulder Creek and an implementation plan is underway. Burro Creek is not part of the TMDL program at this time (Water Atlas).



Cultural Demands

Population in this basin has decreased slightly since 1980, from 5,532 in 1980 to 4,691 in 2000. Projections suggest a small increase in growth through 2050. Groundwater use has decreased in this basin since 1971, with an average of 18,000 acre-feet per year from 1971-1975 and an average of 3,880 acre-feet pumped per year from 2001-2003. Municipal groundwater demand is minimal, between 500 and 600 acre-feet per year on average from 1991 to 2003 and occurs beyond the area plan boundary. Although there is one large mine, the Bagdad Mine, and a number of small mines or quarries in the basin, industrial demand is minimal because the Bagdad Mine receives water from the Big Sandy Basin, via pipeline. The primary water demand in this basin is agricultural but also occurs beyond the area plan boundary (Water Atlas).

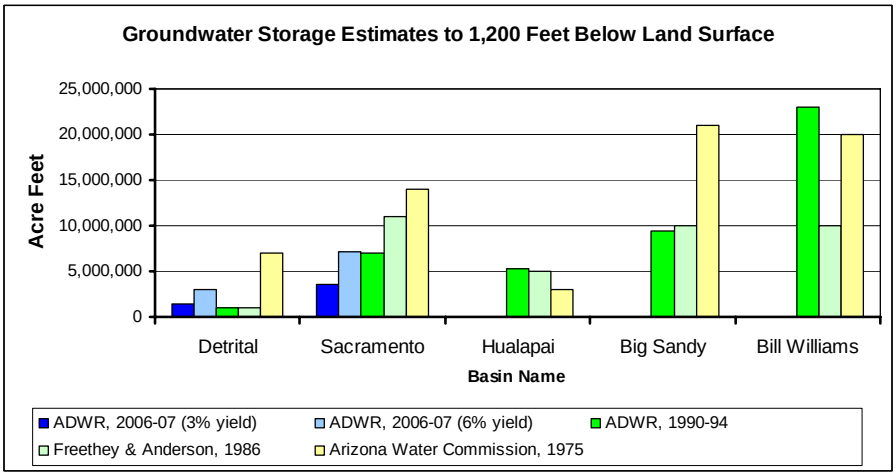
As of 2003, there were 1,565 registered wells with a pumping capacity of less than or equal to 35 gallons-per-minute and 243 wells with a pumping capacity of more than 35 gallons-per-minute in the basin. In 2007, the area plan boundary included 37 wells, 23 of which were exempt.

Water Adequacy Determinations

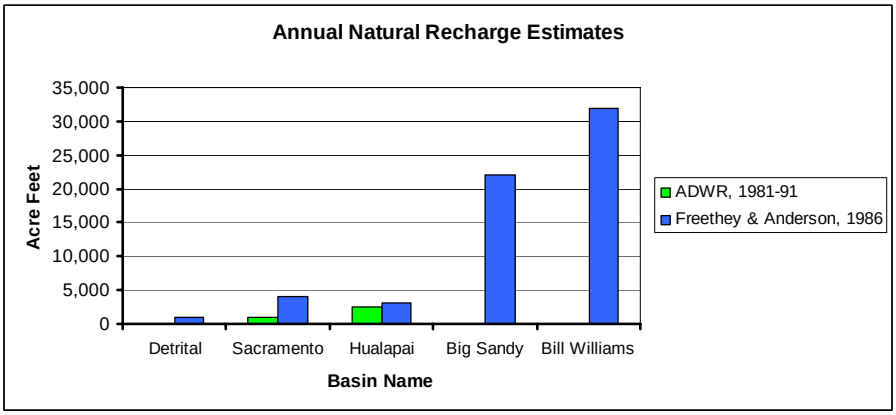
A total of eight water adequacy determinations have been made in this basin through December, 2008 (see Appendix B). All lots received an adequate determination. All lots receiving an adequacy determination are in Yavapai County (Water Atlas).

Summary of the Five Groundwater Basins

The following chart shows the estimated amount of water in storage for each groundwater basin. As noted in the above review of each basin, the estimated amount of water in storage varies by 100 percent or more depending on the hydrological analysis with assumption that newer investigations yield a more accurate picture of the groundwater conditions. Older studies, typically showing more groundwater available also may track pre-development conditions within the basin.



The following chart shows natural recharge for each basin. These values are related to the areal extent of the drainage basin and the amount of annual rainfall, with the Detrital Valley being the smallest and driest of the basins having the least amount of aquifer recharge and the Bill Williams being the largest and rainiest having the most recharge.



The flowing table shows the number of wells by type for each portion of the drainage basins within the area plan boundary. Private domestic wells, most of which are exempt (pump rate of 35 gpm or less), make up 57 percent of the wells. The Big Sandy basin possesses 71 percent of

all wells The Big Sandy also contains the largest number of industrial wells many of which are believed to be used to support mining activity. Those wells noted as "Other" are typically monitoring or exploration wells that do not produce a water supply.

Total Wells by Type & Exempt Status within Area Plan Boundary	Detrital Valley Basin		Sacramento Valley Basin		Hualapai Valley Basin		Big Sandy Basin		Bill Williams Basin		Total	
	Total	Exempt	Total	Exempt	Total	Exempt	Total	Exempt	Total	Exempt	Total	Exempt
Domestic	50	42	26	26	42	40	359	312	10	9	487	429
Commercial	11	1	0	0	2	1	12	4	7	0	32	6
Mining	2	1	3	0	0	0	14	8	0	0	19	9
Industrial	1	0	1	1	0	0	63	4	6	0	71	5
Stock	13	9	2	2	10	10	37	25	7	7	69	53
Irrigation	9	3	0	0	0	0	42	5	0	0	51	8
Other	18	4	15	15	5	5	83	80	7	7	128	111
Total	**104**	**60**	**47**	**44**	**59**	**56**	**610**	**438**	**37**	**23**	**857**	**621**

Source: Wells 55 Database, November, 2007

Private, domestic wells are shallower than the commercial, and mining wells located nearby (see table). Domestic wells penetrate the water table by an average of 120 feet as compared to other wells such as commercial and industrial wells which have some 425 feet and 230 feet of penetration, respectively, allowing for a more robust water supply in case of aquifer de-watering or drawdown from competing wells. Non-domestic wells also typically have a larger casing diameter (12 inches or more) than domestic wells (6 to 7 inches). As mentioned in the introduction, these five basins are outside of the Active Management Area. This precludes the regulation of water by the State of Arizona to great extent. It should be noted that mining activity, and the use of water for such industrial uses, is also exempt from much State oversight as well given the permissive language of the 1872 Mining Act.

Well Types by Depth within Area Plan Boundary	Detrital Valley Basin		Sacramento Valley Basin		Hualapai Valley Basin		Big Sandy Basin		Bill Williams Basin		Average	
	Well Depth	Water Depth	Well Depth	Water Depth	Well Depth	Water Depth	Well Depth	Water Depth	Well Depth	Water Depth	Well Depth	Water Depth
Domestic	650	557	283	150	695	506	359	246	132	63	424	304
Commercial	1,091	471	-	-	775	366	552	211	553	225	743	318
Mining	443	226	2,360	1,259	-	-	673	148	-	-	1,158	544
Industrial	-	-	305	70	-	-	147	44	580	229	344	114
Stock	620	276	114	43	192	77	316	212	220	100	292	141
Irrigation	664	573	0	0	0	0	189	66	-	-	427	128
Other	-	-	-	-	-	-	-	-	-	-	-	-
Average	**693**	**421**	**612**	**304**	**415**	**237**	**373**	**154**	**371**	**154**	**565**	**258**

Source: Wells 55 Database, November, 2007

Stressors

Water Use - Groundwater levels in Arizona have dropped considerably due to pumping for agricultural and urban needs. The surface water loss resulting from the water withdrawal and dewatering necessary to support anthropocentric water needs, exacerbated by drought conditions, will continue to influence habitats in Arizona. Lowered water tables affect all of Arizona's habitats, but can have considerable affects on small cienegas, springs, seeps and marshes and their associated species. Spring "improvement," that is, capturing spring output in collection structures and either exporting the water or making it available to human determined uses, has significantly affected a large proportion of the springs around Arizona. This limits the extent of the wetted zone around the spring, the associated riparian plant community, and the associated wildlife community (CWCS).

Wastewater runoff - Aquatic systems are inundated by contaminants in wastewater with sources including, but not limited by, water treatment plant releases, roadways, gas stations, storm drains, septic tanks, industrial runoff, and feedlots. Wildlife may be affected through ingestion, exposure and bioaccumulation. Contaminants decrease water quality and alter water chemistry, which may increase stress or mortality of species. They may also increase the susceptibility of species to disease, pathogens or parasites. Ultimately, accumulation of contaminants may lead to severe habitat loss or degradation and eventually changes in community composition (CWCS).

Sediments and Ash - The institution of fire suppression during the early 1900s and land use practices (for example grazing) have led to unnatural fire regimes and higher than normal fuel loads across Arizona. Altered river and stream flows carry and deposit sediment in ways that can harm species and alter the habitat. In the past, more frequent, low-intensity fires provided occasional sediment deposition required by some wildlife species. However, increased fire intensity and occurrence during different times of the year may produce more ash which may then inundate aquatic systems during periods of high runoff. Accumulation of sediment alters habitat and may reduce water quality.

Altered river flow regimes - River flow regimes may experience severe alterations from upstream dams, reservoirs, and impoundments. Altered flows change the physical parameters of rivers and streams such as temperature, salinity, nutrient loading, and sediment transport, which often then favor nonnative rather than native aquatic or riparian species. Reduced scouring frequency or intensity may allow increased sedimentation and accumulation of salts in the soils lateral to the channel, thus lowering water quality and riparian habitat viability. Riparian vegetation dependent on water and nutrient availability and on reduction in salinities through soil leaching will recede, allowing further encroachment by non-riparian species. Nutrient regimes will also change within downstream aquatic and riparian communities. Unnaturally large flow events may cause flood pulses that exceed historical peaks, severely scouring channels and floodplains, causing direct mortality of plant and animal community elements, and sometimes resetting the successional scheme over vast extents of river and stream channels (CWCS).

Projected Water Use and Budget

The projected population growth estimates and water use for the five basins through which the area plan traverses is presented in the following table. Population projections are based on Department of Economic Security (DES) projections taken from the Water Atlas through the year 2050 as referenced in Section 4 of the Water Atlas. Water usage has been estimated at approximately 0.2 acre-feet per capita per year. This amount of water usage equates to approximately 65,000 gallons per year and takes into account the individual's use of water in their culture which includes recreational, commercial and industrial processes such as maintaining landscape, car washing, and use of water at place of work.

Population Projections* & Water Use**

Year	*Detrital Valley Basin*		*Sacramento Vly Basin*		*Hualapai Valley Basin*		*Big Sandy Basin*		*Bill Williams Basin*	
	Population	Ac. Ft. Use	Population	Ac. Ft. Use	Population	Ac. Ft. Use	Population	Ac. Ft. Use	Population	Ac. Ft. Use
2000	1,374	275	16,276	3,255	31,543	6,309	1,178	15,236	4,691	3,938
2010	1,599	319	19,498	3,891	43,688	8,728	2,543	15,509	4,705	3,941
2020	1,831	367	22,774	4,578	52,993	10,640	3,235	15,651	4,714	3,943
2030	2,003	396	25,234	5,057	60,465	12,081	3,798	15,737	4,724	3,945
2040	2,114	426	26,796	5,342	65,725	13,083	4,288	15,835	4,733	3,947
2050	2,200	447	28,031	5,615	70,425	14,168	4,687	15,945	4,738	3,948
Cummulative Water Use		**19,050**		**237,607**		**558,317**		**798,581**		**201,122**

* Department of Economic Security
** 0.2 acre-foot per-capita

Projected water demands for individuals and agriculture (3,000 acre-feet per year) within the Bill Williams Basin until the year 2050 is estimated to be 201,122 acre-feet respectively, and should not deplete the water supply given the amount of natural recharge. However, new urban developments proposed in the Big Sandy Basin (see Land Use Element) and the increasing presence of industrial wells used for mining, estimated at 15,000 acre-feet per year, may cause significant impact on groundwater and on the productivity of adjoining wells, many of which are for private domestic use.

The Sacramento and Hualapai Valleys are projected to witness the majority of the population growth and water use with some 28,000 and 71,000 inhabitants by 2050, respectively. Estimated annual water use in the Hualapai Valley will be over 14,000 acre-feet per year and exceed natural recharge placing the aquifer under stress from depletion. The Sacramento Valley's annual water use is projected to be 5,600 acre-feet per year which may also exceed natural recharge. These two estimates may under represent the future population and water demand based upon recently approved master plans in the basin as noted above.

The Detrital Valley, assumed to be a future metropolitan extension of Las Vegas, has a relatively diminutive population projection of 2,200 persons by 2050. Estimates of total cumulative use (19,000 acre-feet) and some 450 acre-feet of annual use in 2050 do not agree with land use plans approved and recent analyses of adequate water supply performed by ADWR. To account for the above discrepancies, a second population projection and water use table is offered below.

These projections are based on historic growth trends from 1980 to 2000, with the historic rate based blended with the DES logarithmic growth curve which decreases over time. The

projections extend to 2100; however, growth projections beyond twenty years are typically speculative works of statisticians.

Population Projections* & Water Use**										
Year	*Detrital Valley Basin*		*Sacramento Vly Basin*		*Hualapai Valley Basin*		*Big Sandy Basin*		*Bill Williams Basin*	
	Population	Ac. Ft. Use	Population	Ac. Ft. Use	Population	Ac. Ft. Use	Population	Ac. Ft. Use	Population	Ac. Ft. Use
2000	1,374	275	16,276	3,255	31,543	6,309	1,178	15,236	4,691	3,938
2010	2,393	479	26,884	17,377	44,193	8,839	1,764	15,353	7,024	4,405
2020	17,695	3,539	48,291	21,658	67,973	13,595	2,495	15,499	9,131	4,826
2030	39,480	7,896	70,946	26,189	100,031	20,006	5,216	16,043	11,050	5,210
2040	62,158	12,432	90,204	30,041	138,843	27,769	8,052	16,610	12,532	5,506
2050	85,531	17,106	108,097	33,619	178,881	35,776	11,114	17,223	13,983	5,797
2060	112,116	22,423	127,007	25,401	218,480	43,696	14,464	17,893	15,526	6,105
2070	142,810	28,562	147,768	29,554	265,490	53,098	18,185	18,637	17,240	6,448
2080	178,253	35,651	170,642	34,128	322,614	64,523	22,316	19,463	19,144	6,829
2090	219,180	43,836	195,844	39,169	392,030	78,406	26,903	20,381	21,257	7,251
2100	266,439	53,288	223,609	44,722	476,382	95,276	31,997	21,399	23,604	7,721
Cummulative Water Use		**2,006,282**		**2,724,369**		**4,001,810**		**1,771,858**		**587,863**

* 1980-2000 historic trend blended with Department of Economic Security growth curve
** 0.2 acre-foot per-capita

Under this new projection the Big Sandy basin will see approximately a ten percent increase in water use by 2050 and over 17,000 acre-feet of annual water use. This acceleration accounts for the beginning of the development of Silverado master plan by the year 2020 with some 200 homes per year from that point forward. The population estimate is based on 2.5 persons per dwelling unit. This amount of water use will begin to reach the annual recharge rate 20,000 acre-feet per year for the entire basin adding additional stress to the system.

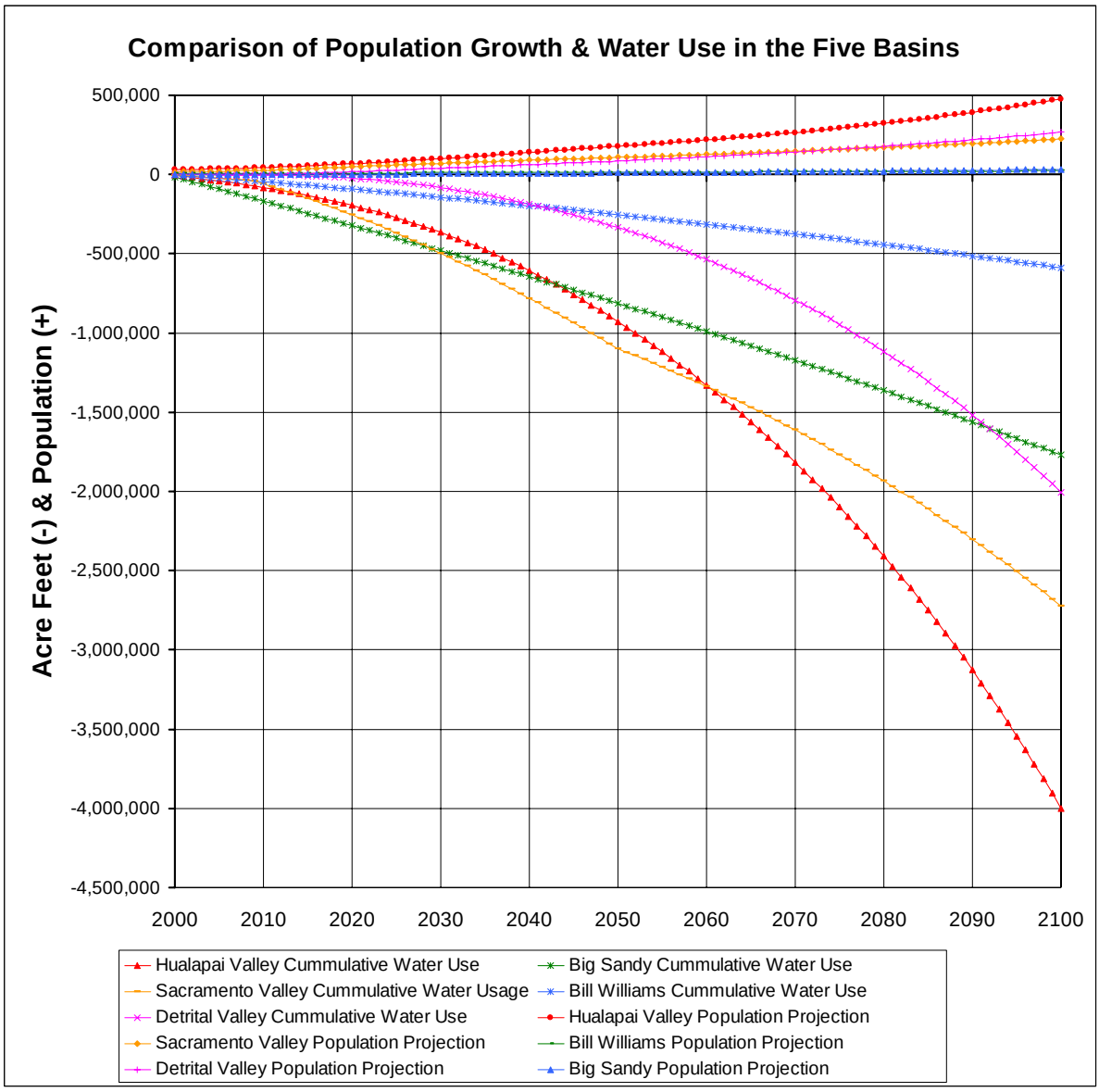
The Bill Williams basin is also projected to significantly grow more than earlier estimates; however, growth within the area plan may be limited to a few hundred people even by 2100 given the large amount of public lands.

The historic growth curve for the Hualapai Valley and the new 2005 DES population projection were nearly identical, so the latter has been used. Even so population growth in the Hualapai Valley is expected to severely deplete the aquifer by 2100. The basin has been in a state of ground-water mining as noted above and this trend is expected to accelerate.

The Sacramento Valley will also experience an increase in groundwater use with Mercator Mine expected to consume some 12,000 acre-feet year. This has been projected until the year 2050. The creation of a new master planned community is also expected to begin as soon as 2012 with some 300 homes added per year for the duration of the projection. This will also place the basin in a state of groundwater mining.

For the Detrital Valley, it is estimated approximately 500 homes will be constructed per year in the vicinity of White Hills Road and points east. Housing starts should begin in 2012 with opening of the new Hoover Dam Bypass bridge completed in late 2010. The Detrital Valley is projected to be in state of groundwater mining by 2020 and accelerate. By 2100, it is estimated some 2 million acre-feet of water will be consumed which is nearly equal to the latest estimate of water in storage for the basin.

The following chart shows the trend lines for population growth (upward trend) and water consumption (downward trend) for each basin. The trend lines are exponential in nature based upon the annual growth rate. Those trend lines with near straight-line projections indicate the presence of a steady draw such as agricultural or mining demand; the mining demand is projected to terminate in the Sacramento Valley by 2050.



As noted on the Open File Report Exhibits, approximately 900,000 acre-feet of water is in or near the Area Plan boundary within the Detrital Valley, most of which is located in the Dolan Springs and Temple Bar Road areas. By contrast, a mere 13,000 acre-feet is estimated to be available in that portion of the Sacramento Valley covered by the Highway 93 Area Plan boundary. The amount of water in storage has not been defined for those portions of the Hualapai, Big Sandy and Bill Williams basins through which the area plan passes. Given these unknowns and the anthropogenic demands, already entitled in many instances, goals and policies must be as water conservative as possible.

Goals & Policies for Water Conservation

Goal 13 Businesses should be required to use native vegetation and water conserving landscaping.

Policy 13.1 Limit use of grass in new development and encourage businesses to use recycled effluent or gray water to irrigate the landscaping (7/15/2008).

Policy 13.2 Limit parks and golf courses to those that use less turf and to use recycled effluent or gray water to irrigate the landscaping (7/15/2008).

Policy 13.3 Re-vegetation of disturbed areas with drought tolerant and/or native plant material shall be encouraged (7/15/2008).

Goal 14 Require or preserve native landscaping to be kept throughout the Corridor (8/21/2008, *9/18/2008*).

Policy 14.1 Maintain natural "desert pavement" and native plant material (9/18/2008).

Policy 14.2 Limit land divisions in flood plains (9/18/2008).

Policy 14.3 Preserve washes as open-space within planned residential developments (9/18/2008).

Policy 14.4 Limit development along mountain fronts and washes to prevent recharge areas from being covered and to protect these areas from point-source and non-point source pollution (9/18/2008).

Policy 14.5 Allow only low intensity agricultural-residential use or recreational activities adjacent to or within washes (9/18/2008).

Goal 15 Encourage and increase low-water use activities for conservation (8/21/2008, revised) **and encourage industries and businesses with limited water use** (8/21/2008, *9/18/2008*).

Policy 15.1 Limit the increase in residential density when new development is proposed on bedrock or outside the regional aquifer unless the development is served by a water company with an ADWR certified 100-year supply (9/18/2008).

Policy 15.2. Require new development to use mechanisms such as catch basins and flood control devices along washes and mountain fronts to increase aquifer recharge and reduce runoff and loss of surface water through evaporation (9/18/2008).

Policy 15.3. Encourage the use of effluent, gray water and rainwater harvesting in new housing and commercial developments (9/18/2008).

Policy 15.4. Encourage the use of environmentally sensitive water-softening devices (9/18/2008).

Policy 15.5. Minimize turf on new housing developments and supplement with native plant materials or xeriscaping (9/18/2008).

Policy 15.6. Attract new businesses that do not require water as a main part of their production process (10/16/2008).

Policy 15.7. Encourage rainwater harvesting and recycling of grey water for on-site irrigation of landscaping and other non-potable uses (10/16/2008).

Policy 15.8 Minimize turf on new housing developments and supplement with native plant material or xeriscaping (10/16/2008).

Policy 15.9 Require commercial and industrial uses to reuse grey water; the landscape irrigation budget will be based on net water usage (11/20/2008).

Policy 15.10 Provide proof of 100-year water adequacy prior to approval of large-scale residential developments (5/14/2009).

Policy 15.11 Provide proof of adequate water supply based on projected water consumption and known supplies prior to approval of large-scale commercial or industrial development in areas where monitoring of water wells has shown decline from year to year (5/14/2009).

Goal 16 Require public agencies and public facilities to utilize water conservation and water saving devices (8/21/2008).

Policy 16.1 Require rainwater harvesting and recycling of grey water for on-site irrigation of landscaping and other non-potable uses (10/16/2008, revised).

Policy 16.2 Minimize turf and supplement with native plant material or xeriscaping (10/16/2008, revised).

Implementation Measures for Water Resources

W.1 Hydrologic studies will be required for developments in Urban and Suburban Development Areas. These studies should be available with the initial proposal. In lieu of a formal hydrological analysis, County staff will prepare a water budget using the ADWR-supplied generic demand calculator. This will ensure that Arizona water supplies are not threatened and that development activity will not do substantial injury to the general economy or to the welfare of the state and its citizens, A.R.S. §§ 45-101.A.

W.2 Developments with housing densities with more than one unit per acre will be required to treat effluent to A+ Standard (per ADEQ Rule R18-11-303, Class A+ Reclaimed Water), provide a non-potable water system for landscaping and common greenspaces throughout the development.

W.3 When subdivision and parcel plats are recorded, note their geographic location in relation to the regional aquifer and not if they are outside the regional aquifer or on bedrock.

W.4 The Mohave County Development Services Department, in association with the Mohave County Flood Control Department, will review rezone and plat submittals to ensure that future residential and non-residential building sites will be designed to avoid flood hazards and preserve washes as open space.

W.5 The Development Services Department (Building Division) will review grading permits with consideration on preserving as much of the site's natural landscaping as possible.

W.6 The Development Services Department will continue to make available to the public Arizona's Native Plant Law brochure.

W.7 The Mohave County Development Services Department and local economic development authorities will encourage non-water-intensive businesses.

W.8 The Development Services Department (Building Division) will review and permit the use of grey water recycling for on-site irrigation.

W.9 The Development Services Department, in association with monitoring data supplied by ADWR and the USGS, will track well depths.

W.10 Arizona’s groundwater resources will be protected according to the Arizona Aquifer Protection Program, A.R.S. §§ 49-241-252., A.A.C. Title 18, Chapters 9 and 11 and the Arizona Drinking Water rules, A.R.S. §§ 49-351-360, A.A.C. Title 18, Chapter 4. In addition, Mohave County will continue to require new development to address amendments to the County’s adopted “208” Water Quality Plan (Section 208 of the Clean Water Act, EPA).

Public Safety

Public Safety Element

Introduction

Planning for public safety should take into consideration of existing conditions within the community ranging from crime rates to traffic hazards to natural occurrences such as fires and flood hazards. These hazards are generally anthropogenic in nature in that the human presence causes or exacerbates the hazards. The goals and polices presented should mitigate to a reasonable extent the imprint of society's impact upon the landscape.

Fire Protection

The need for fire protection in the desert may seem to be less of a need than in other environs; however, naturally occurring fires and those caused by human agency can lead to significant damage and loss of life as has been witnessed with the onset of drought and the increased habitation of lands in previously undisturbed habitats. Response to medical emergencies is also related to fire protection and should be considered as an integral part of public health, safety and welfare.

Mohave County Community Wildfire Protection Plan

The Mohave County Community Wildfire Protection Plan (MCCWPP) was developed in response to the Healthy Forests Restoration Act of 2003 (HFRA) for the at-risk communities and unincorporated areas located in and around public lands administered by the US Department of the Interior, Bureau of Land Management (BLM). The Healthy Forests Restoration Act established incentives for communities to develop comprehensive wildfire protection plans and this legislation gives direction to the BLM to address local community priorities in fuel reduction treatments, even on nonfederal lands. Mohave County adopted the Community Wildfire Protection Plan (CWPP) in September 2008. This allows local communities to acquire federal funding and other grant monies for fire preparedness and planning (MCCWPP).

A primary objective of a CWPP is to help local governments, fire departments, and residents identify at-risk public and private lands to better protect those lands from severe wildfire threat. Additional functions of the plan are to improve fire prevention and suppression activities, as well as to identify funding needs and opportunities to reduce the risk of wildland fire and enhance public and firefighter safety. The plan identifies natural values at risk, such as watersheds, as well as community values at risk. Strategies are provided to improve watershed, rangeland, and community health through fuels reduction projects. Economic development and stability that support local industry and economies through fuels reduction, as well as protection of the riparian and rangeland ecosystems, are encouraged (MCCWPP).

Assessment

The second part of the plan covers the methods used in community assessments and identification of the wildland-urban interface (WUI) and hazard area maps. Environmental elements used to identify the WUI include wildland vegetative fuel hazards, consideration of

local topography, historical fire occurrence, and ignition potential. These environmental factors are coupled with community-based characteristics and values, such as local fire resource preparedness, infrastructure, evacuation routes, and desired municipal watershed protection. An external element, the Fire Insurance Service Organization (ISO) rating, was also used in creating the WUI boundary. Hazard areas are divided into groups according to high, moderate, and low fuel hazard. Several components, including slope, aspect, vegetation type, vegetation density, ground fuel loads, and treated areas, were used to make fuel hazard determinations (MCCWPP).

Mitigation

Part three prioritizes the areas in need of wildland fuel mitigation and recommends the types and methods of treatment and management necessary to mitigate the potential for catastrophic wildland fire in the WUI. One hundred and one wildland fuel treatment areas within the WUI are identified. These treatment areas were analyzed and categorized according to potential risk for wildfire. Each area was also ranked and described along with a recommendation for its preferred treatment type and method. Preferred treatments were recommended for treatment management areas that were found to be high risk. These treatments are designed to meet the fuel reduction and modification objectives of the plan. Also described are recommendations for enhanced wildland fire protection capabilities, public education, information, and outreach; and support for local wood product, woody biomass, and wildland vegetative fuel management businesses and industries. Recommendations were also made to encourage activities that will promote watershed and rangeland health (MCCWPP).

Implementation

The first action recommendation in part four of the plan is to identify priority treatment areas for fuel reduction projects. Treatment areas were identified within the WUI to create defensible space through treatments within the home ignition zone, the use of strategically placed fuel breaks, and the modification of hazardous wildland fuels. The objective of a fuels reduction project is to create an acceptable vegetation condition class for community and infrastructure protection. Completion of these projects will result in safer evacuation routes, which provide for firefighter and public safety. Priority treatment management areas were designated in areas identified as high risk. The second action recommendation is to reduce structural ignitability. Reduction of structural ignitability is achieved through evaluation; maintenance; and, at times, upgrades to community response facilities, capabilities, and equipment. The third action recommendation is the promotion of community involvement; action items include community education, information, and outreach (MCCWPP).

Monitoring

The Mohave County Fire Officers Association, Mohave County Office of Emergency Management, and BLM will be mutually responsible for implementing and monitoring the MCCWPP.

Creation of the Wildland Urban Interface and Delineation Process

According to the Healthy Forests Restoration Act, an "At-risk" community is an area that is comprised of a wildland interface community or a group of homes and other structures with basic infrastructure and services within or adjacent to Federal land. At-risk communities also have conditions conducive to a large-scale wildland fire disturbance event and pose a significant threat to human life or property as a result of a wildland fire disturbance event (Sections 101.1.A.i–ii, 101.1.B, and 101.1.C of the Act). This characterization is also consistent with the Arizona State Forester's (2007b:1) definition of an intermix or interface community as follows

> The Intermix Community exists where structures are scattered throughout a wildland area. There is no clear line of demarcation; wildland fuels are continuous outside of and within the developed area. The developed density in the intermix community, ranges from structures very close together to one structure per forty acres. Local fire departments and/or districts normally provide life and property fire protection and may also have wildland fire protection responsibilities.
>
> The Interface Community exists where structures directly abut wildland fuels. There is a clear line of demarcation between wildland fuels and residential, business, and public structures. Wildland fuels do not generally continue into the developed area. The development density for an interface community is usually three or more structures per acre, with shared municipal services. Fire protection is generally provided by a local fire department with the responsibility to protect the structure from both an interior fire and an advancing wildland fire.

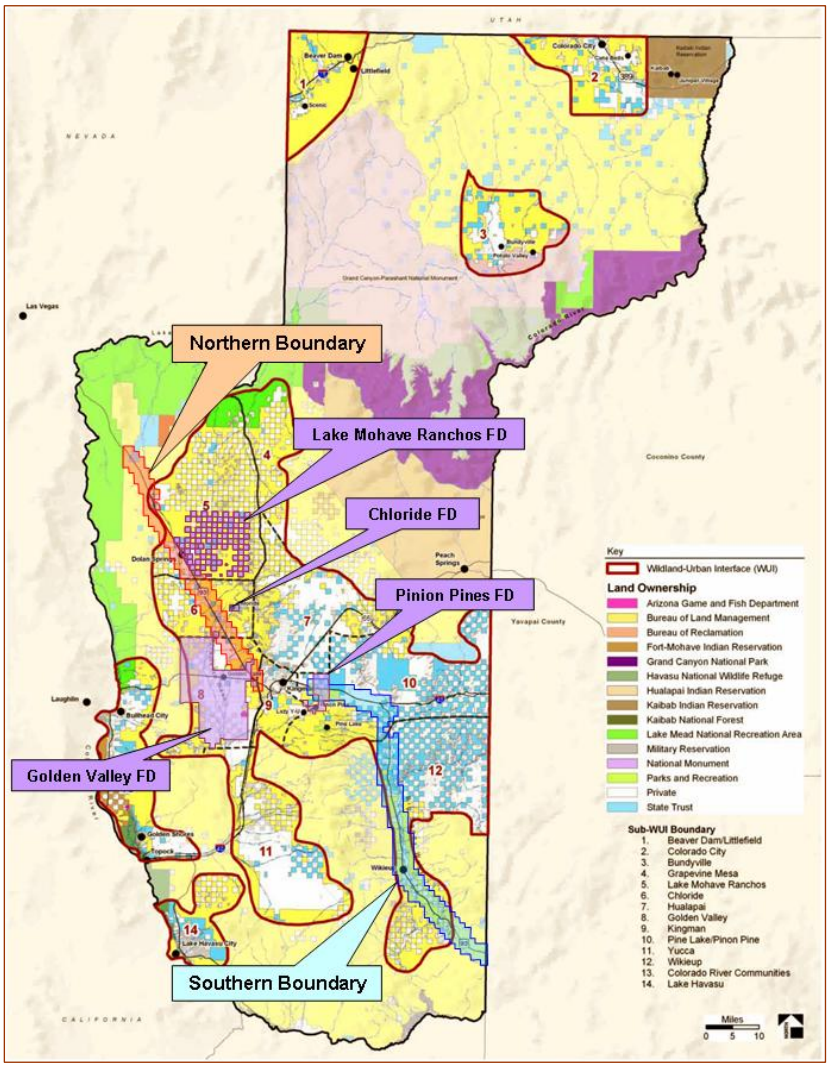
In addition to a community's listing status, the current condition of the wildland fuels within and adjacent to at-risk communities significantly contributes to the possibility of a catastrophic wildfire that has the potential to damage or destroy community values, such as houses, infrastructure, recreational sites, businesses, and wildlife habitats.

The WUI is commonly described as the zone where structures and other features of human development meet and intermingle with undeveloped wildland or vegetative fuels. Communities in the WUI face substantial risk to life, property, and infrastructure. The plan is for reducing wildland fire risk by placing a priority on working collaboratively with communities in the WUI to reduce their risk from large-scale wildfire. The process of delineating WUI boundaries for at-risk communities involved collaboration among local, state, and federal government representatives as well as interested individuals within the communities. The MCCWPP WUI is the minimum area needed to provide protection to each community and its surrounding community values. The identified WUI includes a total of 3,044,059 acres composed of a mix of private, county, state, and federal lands.

General elements used in creating the WUI for Mohave County at-risk communities include the following: 1) fuel hazards, consideration of local topography, vegetative fuels, and natural firebreaks, 2) historical fire occurrence, 3) community development characteristics, 4) local firefighting preparedness, 5) Infrastructure and evacuation routes, and 6) recreation and wildlife values.

Communities of Concern

The following map delineates the extent of the WUI boundary and Sub-WUI boundaries (1-14) in relation to the area plan boundary. Lake Mohave Ranchos (5), Chloride (6), Golden Valley (8) and Kingman (9) are along the Northwest corridor, beginning at approximately mile post 26, north of White Hills Road, and continuing to the City of Kingman's western boundary. Pinion Pines (10) and Wikieup (12) comprise the Southeast corridor. Those areas north of mile post 26 and south of mile post 142, between Signal Road and Nothing, are considered wild lands because little to no private land is present or contains significant development.



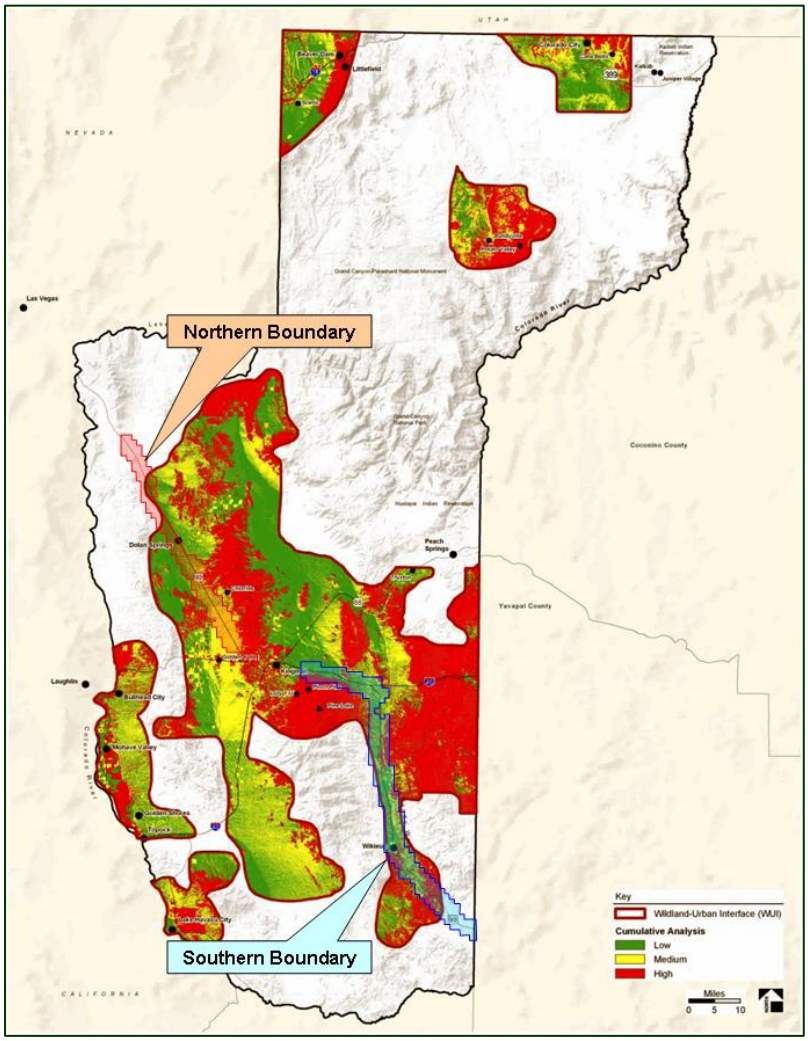
Twenty two communities in Mohave County were included in the Arizona-Identified Communities at Risk (Arizona State Forester 2007a) and given a WUI risk rating for catastrophic wildland fire. Of these, the six communities, identified above, have been designated by the Mohave County Community Wildfire Protection Plan as having various levels of fire risk and proximity to wildland urban interface. Fire districts that serve these communities, within or adjacent to the Northwest planning area, are Lake Mohave Ranchos (Dolan Springs), Chloride and Golden Valley, including So-Hi, Kingman, Pinion Pines and Wikieup are along the Southeast part of the planning area.

The Insurance Services Office (ISO) has conducted assessments and rated communities on the basis of available fire protection. The rating process grades each community's fire protection on a scale from 1 to 10 (1 is ideal and 10 is poor). Five factors make up the ISO fire rating: water supply (40%), type and availability of equipment, personnel, ongoing training, and the community's alarm and paging system account for the remaining 60 percent of the rating. Most of the land within the area plan boundary/WUI is not within a fire district. The ISO rating for these areas is

10. Other communities with fire districts have ISO ratings ranging from 3 to 9; these areas are included in the overall risk analysis as reducing potential of catastrophic wildland fire. The ISO ratings will vary within a fire district depending on housing densities and distance of structures isolated from (usually 3 to 5 miles) a fire station (MCCWPP).

The cumulative risk analysis synthesizes the risk associated with fuel hazards, wildfire ignition points, wildfire occurrence, and community values. For example, valued at-risk community resources include private and community structures, communication facilities, power lines, local recreation areas, cultural and historic areas, sensitive wildlife habitat, watersheds, natural resources, and air quality. In areas where community values occur within or adjacent to areas of high risk due to the fuel hazards of vegetation associations, a cumulative risk from catastrophic wildland fire was also created.

Riparian corridors, shrublands, and vegetative associations occurring in steep slopes with a south or southwest aspect are the greatest wildland fuel hazards. Shrubland areas constitute the next greatest wildland fire risk, in relation to high slopes and south or southwest aspects. In riparian vegetation associations where riparian deciduous tree species are located, total wildland fuels can exceed 20 tons per acre and produce flame lengths greater than 6 feet above the overstory. In addition, some shrublands with heavy invasions of nonnative grasses can produce wildfires of high intensity and high rates of spread that are capable of igniting adjacent overstory vegetation. Moderate wildland fuel risk is associated with the ecotone of the riparian and desert upland vegetation associations. Lower wildland fire risk occurs in desertscrub communities in which total fuel loading is low with no continuous arrangement of ground or aerial fuels.



Because of the combination of current drought conditions and a regional history of fires, there will be wildland fire ignitions within the WUI that must be suppressed. The fire history of the planning area, including recent large wildfires that have occurred within or close to the

WUI, has been included in this analysis to determine the most likely areas for wildland fire ignition by either natural or human ignition. The areas with the greatest potential for fire ignition, either from natural (lightning strike) or human (though unplanned) causes, are located along the eastern portion of the WUI, with other fires occurring in the xeririparian corridors within and adjacent to the WUI. The following map shows the cumulative risk to each community (MCCWPP).

Lake Mohave Ranchos

The Lake Mohave Ranchos response area includes the communities of Dolan Springs and other rural areas in the vicinity. Dolan Springs, about 30 miles from Kingman, is primarily a residential and retirement community and has a population of 1,867, with over 1,311 housing units, of which 802 are owner occupied (2000 Census). The only major transportation route in the area is Highway 93. Pierce Ferry Road provides connectivity between Highway 93 and Lake Mead as well as to Grand Canyon West and should be considered an evacuation route. Private and BLM lands are scattered across the WUI, with larger concentrations of private land ownership around Dolan Springs and Pierce Ferry Road.

The areas of highest risk for wildland fire occur within the higher elevations of the Cerbat Mountains and White Hills where Mogollon Chaparral, Great Basin Pinyon-Juniper Woodland, and the Sonoran Mid-elevation Desert Scrub vegetation associations are prevalent. These areas lie east of Highway 93 and generally outside of the area plan boundary. However, these vegetation types also occur on private lands around Dolan Springs and adjacent to Pierce Ferry Road placing them under high risk for wildland fire. Fire-start data indicates that the majority of the WUI has a low level (0–1 per 1,000 acres) of occurrences with some medium-level (2–3 per 1,000 acres) activity scattered throughout (MCCWPP).

Chloride

The Chloride response area includes the community of Chloride and other rural areas along Highway 93 between Kingman and Dolan Springs. Chloride is located at the base of the Cerbat Mountains, and the primary economic base for this area is tourism and recreational activities such as hiking, camping, mountain biking, and rock hounding. According to the 2000 Census data for the zip code (86431) that includes Chloride, the population is 352, with 283 housing units, of which 171 are owner occupied. BLM is the major landowner within the WUI, and privately owned lands are primarily located south of Chloride and west of Highway 93 in the Sacramento and Detrital Valleys. The Chloride Fire Department has recently combined with the Northern Arizona Consolidated Fire District for enhanced administration and fire response.

The areas of highest risk for wildland fire occur within the higher elevation of the Cerbat Mountains and Black Mountains where the Mogollon Chaparral, Great Basin Pinyon-Juniper Woodland, and the Sonoran Mid-elevation Desert Scrub vegetation associations are prevalent. These areas generally lie east of Highway 93. High-risk areas include lands adjacent to Highway 93, which has been identified as a primary evacuation route. Fire-start data for the last 28 years indicates that most of the WUI has a relatively low occurrence (0–1 per 1,000 acres) of fire

starts, with scattered medium-level (2–3 per 1,000 acres) activity in the southern WUI (MCCWPP).

Golden Valley

The Golden Valley response area includes the community of Golden Valley and other rural areas along Highway 68 and within the Sacramento Valley east of the Black Mountains and west of Kingman. In 2000, Golden Valley's population was 4,515, with 2,175 housing units, of which 1,552 are owner occupied. Highway 68 and Highway 93 are the primary transportation corridors in the vicinity and have been identified as evacuation routes for the area. Lands within the WUI are primarily owned by private entities, with BLM-owned lands occurring along the western and eastern edges of the WUI at the base of the Cerbat Mountains.

The areas of highest risk for wildland fire occur within the higher elevations of the Cerbat Mountains where the Mogollon Chaparral, Great Basin Pinyon-Juniper Woodland, and the Sonoran Mid-elevation Desert Scrub vegetation associations are prevalent, and within the developed areas adjacent to Highway 68 and Highway 93. Fire-start data indicates that the majority of the WUI has a relatively low occurrence (0–1 per 1,000 acres) of fire starts, with slightly higher or medium levels (2–3 per 1,000 acres) of activity scattered throughout the foothills of the mountain ranges (MCCWPP).

Kingman

The Kingman response area primarily serves the community of Kingman. The Kingman sub-WUI does include some residential development outside but adjacent to the municipal boundaries in which the Kingman Fire Department responds to both structural and wildland fire initial attack. Kingman is situated in the Hualapai Valley between the Cerbat and Hualapai Mountains and is a regional trade, service, and distribution center for northwestern Arizona. The population for the city was 20,069, with 8,604 housing units, of which 5,604 are owner occupied in 2000. Lands near Kingman are predominantly privately owned, with BLM owning most of the lands to the south near the Hualapai Mountains. Major transportation routes into Kingman include Interstate 40 and Highways 66, 68 and 93; these routes have also been identified as evacuation routes.

Most of the WUI is under high risk for wildland fire, including the higher elevations of the Hualapai Mountains where the Mogollon Chaparral, Great Basin Pinyon-Juniper Woodland, and Sonoran Mid-elevation Desert Scrub vegetation associations are prevalent; within the developed areas of Kingman. Fire-start data for the last 28 years indicates that a high number of occurrences (<4 per 1,000 acres) are located along I-40 and near other developed areas within the WUI. The Kingman Fire Department has 55 line personnel with various levels of wildland firefighting training and experience. The KFD maintains a mobile command post that may be used in extended major fire events. Since 2000 the Kingman FD has responded to an average of 50 wildland fires annually, with less than 20 percent of the response outside the district boundary. The Kingman FD has an ISO rating of 4 (MCCWPP).

Pinion Pines

The Pinion Pine response area includes the communities of Pinion Pines and other rural areas north and south of Interstate 40 and Highway 93 east of Kingman, including those in the Peacock and Cottonwood Mountains. Population and housing-unit data was not readily available for Pine Lake/Pinion Pine but is estimated at several hundred persons. Lands south of I-40 near the Hualapai Mountains are primarily owned by BLM; most of the lands in the middle of the WUI are owned by private entities or State Land. Interstate 40 and Highway 93 have been identified as evacuation routes for the area. Many areas of the WUI have limited access, and evacuation of residents and access into the area by first responders and wildland firefighters is a concern. The Pinion Pine Fire District has an ISO rating of 9. BLM in association with the local fire department does implement prescribed fire for resource benefit and wildland vegetative fuel management.

The areas at highest risk for wildland fire occur in the higher elevations of the Hualapai, Peacock, and Cottonwood Mountains where the Mogollon Chaparral, Great Basin Pinyon-Juniper Woodland, Sonoran Mid-elevation Desert Scrub, Pine Woodland, and Colorado Plateau Pinyon-Juniper Woodland vegetation associations are prevalent. This includes much of the privately owned parcels along I-40. Fire-start data for this area, however, is relatively low in occurrence at 0–1 instance per 1,000 acres (MCCWPP).

Wikieup

The Wikieup response area includes the community of Wikieup and other rural areas along Highway 93 and south of Interstate 40. These major routes have been identified as evacuation routes for the area. Many areas of the WUI have limited access, and evacuation of residents and access into the area by first responders and wildland firefighters is a concern. According to the 2000 census data for the zip code (85360) that includes Wikieup, the population is 305, with 190 housing units, of which 94 are owner occupied. Lands in the vicinity of Wikieup are owned by BLM, with privately held lands scattered throughout. North of Wikieup in the Aquarius Mountains lands are either privately owned or owned by State Land. The communities in this area are not within an organized fire district and must rely upon other districts for assistance.

Most of the WUI is at a high level of risk for wildland fire, especially in the higher elevations of the Aquarius Mountains and Hualapai Mountains where the Colorado Plateau Pinyon-Juniper Woodland, Mogollon Chaparral, and Inter-Mountain Basins Semi-desert Shrub Steppe vegetation associations are prevalent and in areas with a high density of residential communities. These higher elevations generally occur outside of the area plan boundary. Fire-start data indicates that most of the area has had a relatively low number (0–1 per 1,000 acres) of fire occurrences in the last 28 years, with higher occurrences (2–3 per 1,000 acres) occurring along Highway 93 (MCCWPP).

Summary of Wildfire Risks

The communities along the Northern corridor typically have a lower percentage of high risk wildfire acreage than those along the southeast corridor (see table). High risk areas along the

Cumulative Risk Levels by Percentage of the WUI Area							
Community	**% High**	**Acres**	**% Moderate**	**Acres**	**% Low**	**Acres**	**Total Acres**
Lake Mohave Ranchos	33.0%	115,248	19.0%	67,115	47.0%	163,479	345,842
Chloride	36.0%	46,953	21.0%	27,257	42.0%	54,594	128,804
Golden Valley	22.0%	42,396	50.0%	96,336	28.0%	54,414	193,145
Kingman	48.0%	32,413	28.0%	18,569	24.0%	16,446	67,428
Pine Lake/Pinion Pine	62.0%	263,211	17.0%	71,623	22.0%	92,383	427,217
Wikieup	64.0%	244,798	15.0%	56,218	21.0%	79,637	380,652
Total		**745,019**		**337,118**		**460,953**	**1,543,088**

Northern corridor are generally confined to the eastern side of the highway, in the higher elevations where rainfall is more frequent and vegetation more plentiful. The high risk areas predominate west of Chloride and in the So-Hi vicinity.

High fuel loads occur along the south side of Interstate 40, moving up towards the Hualapai Mountains, in Windmill Ranch east of the Highway 93 and south of Wikieup on either side of the highway. Lands directly adjoining the highway generally have a low risk along the Southeast corridor, with a high risk area crossing the highway in the vicinity of Signal Road. Fire risks along the Northwest corridor vary from, low along the portion of roadway from Chloride Road to mile post 26, with most moderate risk areas from Chloride Road to So-Hi. High risk areas are found from So-Hi to the City of Kingman boundary. Residential community development is occurring throughout the WUI in a mix of high-density, single-family, and multi-acre parcels. Structures associated with housing and commercial development located in isolated subdivisions and in more dispersed areas of the WUI are also at high risk (MCCWPP).

Mitigation and Implementation Plan

Residential treatments, firebreaks, and fuel mitigation treatments for undeveloped landscape areas have been divided into nine categories suitable for both public and private lands to allow treatments to be continuous across property boundaries, establishing the most effective protection from wildfires.

For small, privately owned parcels under two acres in size, fuel reduction should be considered within 100 feet of the residence and includes tree trimming, elimination of insect-infested, diseased, and dead trees, brush thinning, mowing of grasses and removal of dead plant material. Between 100 to 600 feet around the home, trees may be thinned to achieve an average tree density of 100 per acre. Parcels which contain two or more acres, either developed or undisturbed, should follow the general guidelines for smaller developed parcels, with an emphasis on defensible space for wildlife preservation and groundwater protection. Most all of the privately held lands within the area plan boundary are at least two acres in size. Fire breaks are advised for grasslands and Oak/pinyon/juniper and shrublands with wider fire breaks on steeper slopes in excess of 20 percent.

Mohave County should advise and assist developers and land owners in the establishment of fire districts within new or existing developed areas of the county. New residential and commercial developments in high-risk areas within the WUI should not be approved by the Mohave County Planning and Zoning Commission unless the developers provide prior written commitment to obtain and financially support fire protection services or fire district formation or annexation into an existing fire district before a pre-agreed phase of project build out. In addition, adequate road conditions and water supplies for emergency services shall be provided for each project and developer agreements shall be secured to establish and fund fire services and equipment in residential and commercial developments as a condition of approval of such entitlements by the Mohave County Planning and Zoning Commission (MCCWPP).

Road Hazards

Over 90 percent of the road miles within the area plan boundary are unpaved and many of these native material roadways (natural soil) are not maintained as noted in the Transportation Element. In addition, roadways on the tertiary maintenance schedule are accepted by the County at their original level of improvement and are not further modified leaving some roadways with deficient travel lane construction, narrower shoulder widths, and shorter sight distances along curves and over steep terrain. This may lead to accidents if motorists are not aware of these design limitations and exceed speed limits.

The road network is also incomplete in many areas reducing connectivity and requiring a more circuitous route to access property. Roadways may end at washes, steep terrain and other wise cease to exist where maintenance stops and historical paths become less traversable. These obstacles pose challenges to both residents and emergency responders alike that are not familiar with the particulars of road system causing frustration and possibly loss of life due to increased travel times.

Additional signage may be one technique to mitigate these problems. Placing road name signage on county maintained roadways and noting “dead-end” or “un-maintained” roads that intersect would help with way-finding and safety. For roadways maintained by homeowners associations, signage should follow County standards for design and location. Where roadways intersect the wildland urban interface, evacuation routes should be clearly marked.

Local residents may also petition Mohave County to maintain roadways. Typically, roadways must be built to a County standard prior to acceptance into the County’s road maintenance system. Construction is the responsibility of the petitioners; however, roadways serving a broad population base may also be petitioned to become County Highways. If the roadway is designated a County Highway, then the County may expend public funds to construct the roadway since it is in the public interest to do so.

Mohave County Sheriff's Office

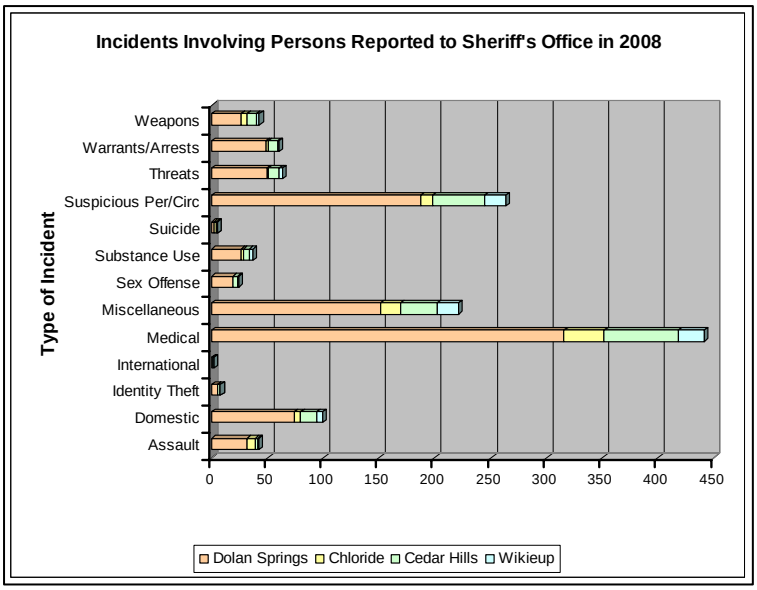
Incident reports for 2008 were collected for the areas in and around the communities of Dolan Springs, Chloride, Cedar Hills and Wikieup. The geographic extent of these areas is as follows:

- Dolan Springs, the largest reporting area, includes White Hills and the Cottonwood Road area.
- Chloride contains the town site and the lands between Grasshopper Junction and Mineral Park Road along Highway 93.
- Cedar Hills includes areas along the north and south side of I-40 east of Kingman – the Blake Ranch Road area – east to the freeway's intersection with Highway 93.
- Wikieup covers that part of Highway 93 south of I-40 to the Yavapai County line, including Windmill Ranch, Cane Springs and the Wikieup town site.

There were 2,861 incident reports in five broad categories as follows:

- Animals (45), relating to noise and control,
- Persons (1,311), including assault, citizens disputes, substance abuse, medical emergencies and suspicious activity reports,
- Property (489), burglary, theft and vandalism,
- Traffic (493), typically automobile accidents, moving violations, abandoned vehicles and assisting motorists,
- Miscellaneous (523), such as assisting citizens and other agencies.

A review of incidents involving persons shows that a majority of occurrences were within the Dolan Springs reporting area. This can be expected because the area also possesses the majority of the population within the planning area. The most prevalent type of incident was related to medical emergencies and welfare checks, typically on the elderly. This category also includes coroner responses in cases where dead bodies were found at a residence.



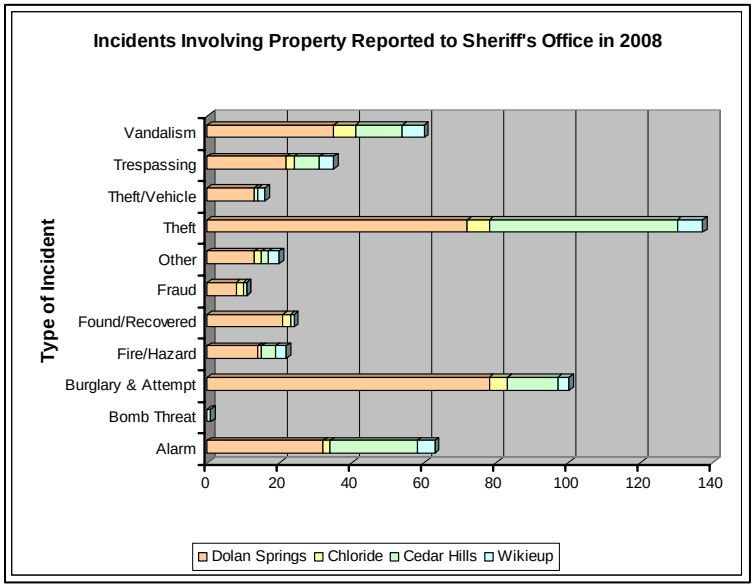
Reports of suspicious persons, activities and circumstances accounted for some 260 incidents with about seventy percent occurring within the Dolan Springs reporting area. These reports were typically made by residents concerned about the safety of their neighborhoods.

A majority of domestic incidents ranged from verbal disputes to orders of protection against one member of the family. Miscellaneous incident reports were typically non-violent in nature such

as citizen disputes, disorderly conduct, juvenile problems and loud parties. Sixty warrants and/or arrests were reported, including interfering with a judicial procedure. Reports of violence included 42 assaults, most of which were not committed with a weapon, and one attempted murder. Five suicides were also reported. No homicides occurred within the plannning area in 2008.

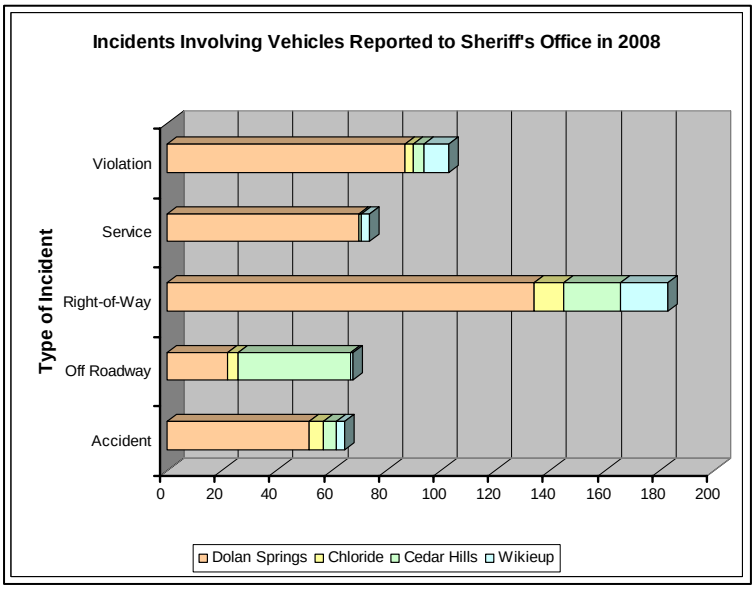
It should be noted that one instance of human smuggling on one illegal alien were detected in Chloride and Wikieup, respectively. Although not a significant level of activity was reported in these two categories it does indicate that communities along the corridor, far from the international borders, are also subject to these types of illegal immigration activities.

Incidents regarding property were dominated by theft with the number of thefts in Cedar Hills (52) being only 20 fewer in number than the much larger reporting area of Dolan Springs. These thefts also included shoplifting, auto burglary and taking of cacti and cattle.



Other crimes against property such as attempted burglary (10), burglary (90) and vandalism (60) may be indicative of rural isolation where patrols are less frequent and human population densities less prevalent giving perpetrators a sense of free reign. This may also be seen by the large number of alarms reported (63), possibly aborted attempts at burglary. There were six reports of littering and public health violations.

Of the 493 traffic related reports, only two involved fatalities. Twenty three accidents reported injuries and another 40 vehicular incidents reported damage to the vehicle. Thirty four of the 41 accidents on private property occurred in the Cedar Hills area. This may be attributed to off-highway vehicle use on challenging terrain.



Over one third of traffic related reports involved use of the road right-of-way and involved abandoned vehicles, traffic hazards and reckless driving. Officers

assisting motorists occurred on 104 occasions such as giving directions and helping with vehicular repair and changing of tires. Nearly all commercial vehicle inspections, under Service category, occurred in the Dolan Springs area.

Animal issues, totaling 45, related mostly to noise and trespassing dogs without a lease. Community service, such as giving information to citizens over the telephone or in person (360) and assisting other agencies (105) including Game and Fish and the local fire districts shows the Sheriff's Office to be co-operative with various the communities and jurisdictions.

From these statistics, sufficient and safe access is necessary to aid in emergency response times and possibly increased patrols to check on elderly residents and also help reduce the prevalence of petty theft and burglaries.

Goals and Policies for Public Safety

Goal 17 Provide adequate sheriff and fire protection to all residents within the planning area, including transient services at travel centers.

Policy 17.1 Create defensible space through treatments within the home ignition zone via strategically placed fuel breaks and the modification of hazardous wildland fuels (11/18/2008).

Policy 17.2 Encourage the maintenance of defensible space through individual education and personal responsibility (11/20/2008).

Policy 17.3 Each new commercial and residential development shall be provided with an adequate level fire protection (10/16/2008, see Northwest Committee 10/18/2008).

Policy 17.4 Ensure adequate road conditions and water supplies for emergency services and secure developer agreement to establish and fund fire services and equipment in residential and commercial developments as a condition of approval of such developments by the Mohave County Planning and Zoning Commission (10/16/2008).

Policy 17.5 Establish fire services in grandfathered developments when residential and commercial densities and vegetation and fuel load factors approach a threshold correlating to high risk to public and fire fighter safety, and private property protection (10/16/2008).

Policy 17.6 No new residential subdivisions and commercial developments in high-risk areas within the Wildland Urban Interface will be approved by the Mohave County Planning and Zoning Commission unless the involved developers provide prior written commitment to obtain and financially support fire protection services or

fire district formation or annexation into an existing fire district before a pre-agreed phase of build-out (12/16/2008).

Policy 17.7 Designate Recreation and Public Purpose sites in the White Hills, Cottonwood Road and Cane Springs areas along Highway 93 (12/16/2008).

Goal 18 Decrease emergency response times.

Policy 18.1 Work with the BLM to designate Recreation and Public Purpose sites along Highway 93 for future fire and sheriff stations in the White Hills, Cottonwood Road and Cane Springs areas (11/18/2008 & 12/16/2008).

Policy 18.2 No new residential subdivisions and commercial developments in high-risk areas within the Wildland Urban Interface will be approved by the Mohave County Planning and Zoning Commission unless the involved developers provide prior written commitment to obtain and financially support fire protection services or fire district formation or annexation into an existing fire district before a pre-agreed phase of build-out (12/16/2008).

Goal 19 Decrease emergency response times *through better way-finding*

Policy 19.1 Place road name signs on legacy rights-of-way and roadway easements that are in use (11/20/2008).

Policy 19.2 Locate signage at the entrance to dead-end and non-passable roadways (11/20/2008).

Implementation Measures for Public Safety

P.1 Each new development will be reviewed with the provision of adequate fire protection as required by the Mohave County Land Division Regulations and Zoning Ordinances. These official County documents should be amended to reflect the policy advice provided by the Mohave County Community Wildfire Protection Plan.

P.2 The County may consider development clustering and open space design as part of the subdivision, minor land division and site plan review process as way to mitigate fire threats.

P.3 Become actively involved with the revision and re-adoption of the Bureau of Land Management's Resource Management Plan for the Kingman Field Office, with an emphasis on establishing lands along the Highway 93 Corridor for Recreation and Public Purpose uses for emergency responders

P.4 The Mohave County Sheriff's Department should look at the feasibility of extending patrols within the planning area and increasing its presence in general via the construction of substation within the boundary of the planning area. Capital improvement plans developed by the Sheriff's Department should prioritize public facility improvements in the planning area, such as Recreation and Public Purpose sites.

P.5 "All-weather roadways" and better signage will be constructed via developer exactions, building permit impact fees, or through HURF monies, provided the roadways are designated County Highways.

Economic Development

Economic Development Element

Introduction

Economic development strategic planning has never been more important to the future success of communities, regions, states or even nations than it is today. The speed of socioeconomic change and technological advances is increasing around the world, and therefore having a plan in place that provides solid footing to address these changes is important. The challenge that economic development faces today is providing value and remaining relevant in this changing world (NRER). The Highway 93 Area Plan offers such an opportunity for the creation of economic development activities that offer employment to local residents, provide support services for trade activities along the corridor and allows for the establishment of renewable energy technology and production. In addition to the vision statement, the guiding philosophy of the plan is to "ensure a clean bright future for Mohave County residents where the air is not fouled, the land is not trashed and our water resources are not wasted." (County Manager, April 17, 2007).

This element will review key findings of recent studies for the region, 2000 Census data related to the labor force, the existing enterprise zone, the implications of the CANAMEX Corridor, the potential of the corridor to support renewable energy and a set of goals, policies and implementation measures to bring the plan to fruition.

Findings of the North River Economic Region Economic Development Plan

The North River Economic Region Economic Development Plan, published in 2005, was the result of a collaborative effort of educational institutions, business leaders, workforce development agencies, government officials and other decision-makers in both Mohave County and La Paz County. The plan combined previous studies and plans, analyses of wage and labor as well as the region's strengths, weaknesses, opportunities and threats (SWOT), a visioning exercise and suggested protocols for various agencies to follow when working together to ensure implementation. Findings in seven areas, including strategic priorities, are discussed as follows:

Economic Development

The region lacks large, fully improved sites that are ready for construction, and available buildings that meet current industry standards. Communities who are successful at recruitment and retention have an adequate supply of fully improved land and vacant buildings. There are however many large sites without infrastructure and many small sites that are ready for construction. Ways to develop basic infrastructure to key parcels and creating a fast track building program will encourage economic development by reducing amount of time needed to begin operations.

Education

More than one-half of the jobs created in the U.S. between 1984 and 2005 required some education beyond high school. In 2000, nearly 24 percent of the region's population 25 and

older did not have a high school diploma, and only 15 percent had an Associate's Degree or higher, as compared to Arizona's 19 percent and 30 percent, respectively. The next generation does not appear to be changing this trend of lower educational achievement. In the North River Region, 7.7 percent of students dropped out in the 2003-2004 school year compared to 5.8 percent in the State.

Labor Force

Labor is the single largest expense for most businesses. The skills of the existing labor pool, expected employee turnover, and work ethic have huge impacts on corporate location decisions. It is not always the place with the lowest cost of labor, but rather the place that provides the best match of skill sets, company needs, productivity and overall quality of environment that allow businesses to compete in the marketplace. Workforce development must focus on assuring a minimum level of basic skills, develop appropriate training programs for new sectors and encourage participation in these programs.

Skilled and semiskilled labor is in very short supply in the North River Region. Local training providers are tailoring training programs at the request of area businesses; however, a comprehensive workforce assessment and specialized training programs must be completed and implemented, respectively. In addition, identifying occupations that are currently in short supply and recruiting this labor force to the area will help diversify the labor force.

Infrastructure

Investments in roads, bridges, communication systems and other public resources allow an economy to be more productive. In the North River Region, the transportation infrastructure has not kept pace with growth. The two key issues/opportunities relating to transportation are planning for growth and financing growth. The second major constraint within the North River Region is the large holdings of State Trust and Federal lands which are not presently available for development. Public land ownership makes land assemblage for development particularly difficult within the region. Given the mission/policy of the State Land Department, the sale of State Trust lands within the North River Region may not happen until the value is determined "optimal" for a trust land sale. The North River Region needs to maximize the potential of public lands and work with the State Land Department to identify key parcels for conceptual land use planning.

Tourism

In Arizona, tourism accounts for $16 billion in direct spending, with the majority of this coming from out-of-state visitors. This export industry, the strength of the North River Region, out-competes and brings more income to area residents than traditional base industries. The North River Region is well positioned geographically within the tri-state area of Arizona, California and Nevada to benefit from the tourist trade. Outdoor recreation is abundant and is ranked high as a quality of life amenity with area employers. The North River Region boasts several tourist attractions, with annual visitations of well over one million people. In addition, the region is rich with Native American culture and includes the scenic attractions of the Colorado River, Lake

Mead National Recreation Area and the Hualapai Tribal attraction of Grand Canyon West. The current coalition of chambers of commerce is one of cooperation; however, expanding this coalition to include Tribal governments will broaden its base and tap other resources.

Leadership and Collaboration

The North River Region has had an influx of new residents, primarily from California and from empty-nesters, who have excess equity and are purchasing homes in the region. The housing demand on the part of this affluent population is driving up the housing prices. However, with recent collapse of the housing market, demand has lessened and values have reduced to approximately 2003 levels. While on the one hand an influx of people with disposable income stimulates the economy, the somber reality is that these people are equity refugees with no real stake in the community and little interest in becoming involved. The result is a populace who is less inclined to support bond issues for education and infrastructure improvements for the region. Welcoming these new residents and encouraging them to become a part of the "social fabric" of the community is critical for the future economic success of the region.

Strategic Priorities

To help advance the vision of creating a vibrant and diverse regional economy that provides economic and educational opportunities for all residents, the North River Region Economic Development Plan lists eleven areas to focus policy efforts. Those recommendations that are best considered by the Economic Development Element of the Highway 93 Area Plan are described as follows:

1 Retain key existing businesses and assist in their expansion and continued economic viability by focusing on industries that create local value, economic growth and are part of a business/industry cluster (p. 58).

2. Document skill sets among local residents, with an emphasis on those skill sets which are transferable among industries, match jobs with the abilities of the underemployed, and identify skill gaps, training opportunities and skill deficiencies in the existing workforce (p. 69).

3. Take advantage of tourism amenities to enhance the tax base and improve the image of North River Region by pursuing regional recreation opportunities in partnership with local communities, identifying additional workforce training needs and developing new programs to foster the growth of the industry (p. 61).

4. Facilitate access to building and site information to meet the needs of business by developing support for local efforts to increase the supply of land and buildings in the communities and gather information on existing sites and buildings (p. 57).

SWOT Analysis

Companies choose to expand and locate in communities that are strong in the site selection criteria most important to their success. North River Economic Region ranked employer interview results and averaged all the responses to create an index which measures labor availability and other factors on a one to ten point scale (1=poor; 5=average; and 10=excellent). Generally, scores of 3 to 4 are below average, 5 to 6 are average; 6 to 7 above average; 7 to 8 are good, and 8 to 9 are very good.

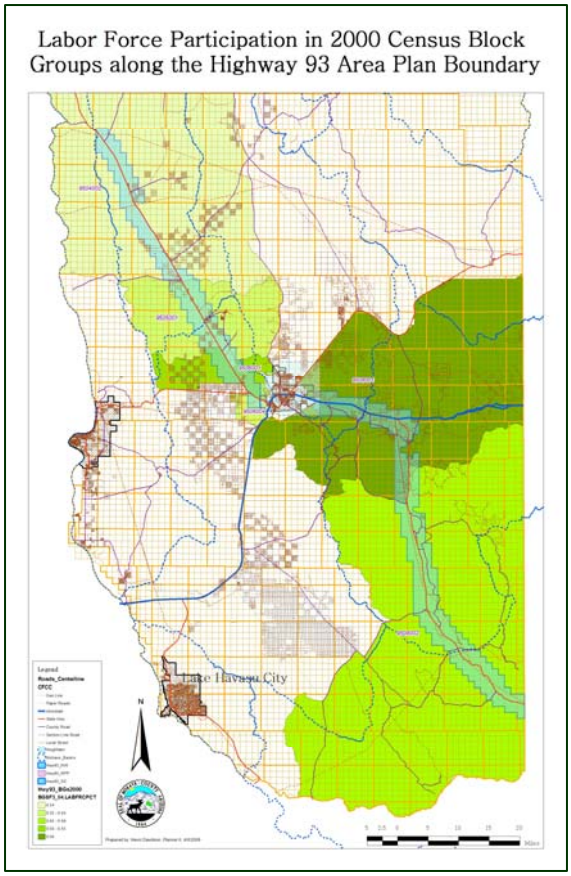
Site Location Factor	Rating	Assessment
Labor force		
Wages	5	Average
Availability	4 to 7	Below average to good
Quality	5 to 7	Average to good
Education		
Local Schools	3	Below average
Training Providers	6	Slightly above average
Transportation/Market Access		
Interstate Access	4 to 5	Below average to average
Commercial Air Service	3	Below average
Rail Service	7	Good
Sites and Buildings		
Availability	3	Below average
Incentives	3	Below average
Utility/Municipal Services		
Water and sewer capacity	8	Very good
Electric and Gas	8	Very good
Telecommunications	6	Slightly above average
Quality of Life		
Medical Services	6	Slightly above average
Housing	5	Average
Recreation	7	Good
Cultural Facilities	4	Below average

Source: Table 22 - Site Selection Factor Rating Summary Checklist, NRER

In summary, the SWOT analysis shows mixed results with workforce availability, primary education, commercial air service, availability of building sites and incentives, and certain aspects of quality of life being less than regional competitors such as Coconino, Maricopa, Pinal and Yuma Counties. The availability of the workforce was good for semi- and unskilled workers and for clerical workers, the latter indicating a positive environment for office/service employers. Utility services and recreation were given good to very good ranking. Transportation, while a regional issue, is less so within the planning area given close proximity to Highway 93.

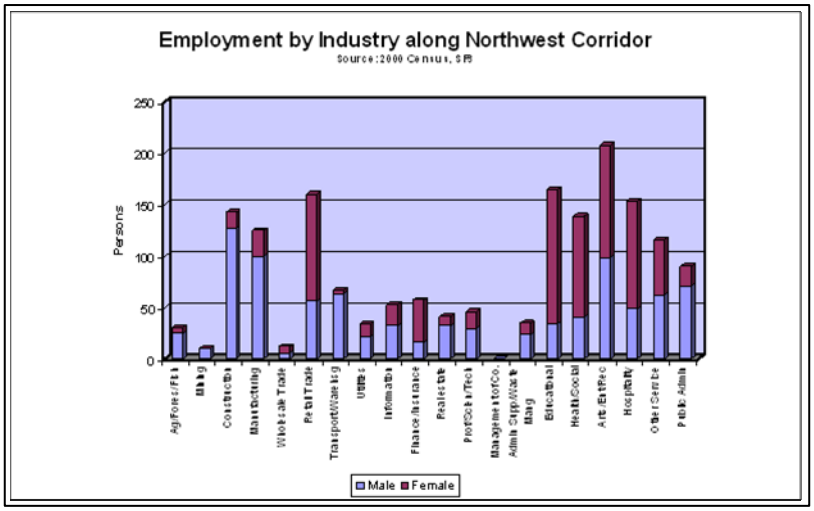
To conclude, several visioning exercises expounded the realization "that clean air, spectacular views, good schools, nice parks, and clean, safe neighborhoods need to be part of the economic development strategy," and be "able to provide good quality of life for its residents to include affordable housing, living wages for its workers, quality businesses in the area." Other visioning exercises asked that "all industries be 'clean' and low-water users, have a diversified industrial/distribution base with fully integrated freight logistics, utilize the NAFTA corridor, and be supported by locally owned retail/trade establishments, with up-scale tourism sector developed, and be nationally recognized for its development of abundant alternative energy sources, while also retaining a rural community look and feel." All this, of course, is dependent on a youthful population as one vision exercise noted as follows: "Young professionals are attracted to the area, knowing there are educational opportunities for their children that will create the future workforce."

Demographics Relating to Labor Force, Industry and Occupation, Income and Poverty Rate from the 2000 Census



To specifically discuss those most likely to be affected by the economic development activities along the Corridor, several Census Block Groups have been reviewed using 2000 Census data. Even though this information has aged over nine years since it was first collected, it gives valuable insight into the nature of the two segments of the corridor, how they compare to each other, and to the County averages.

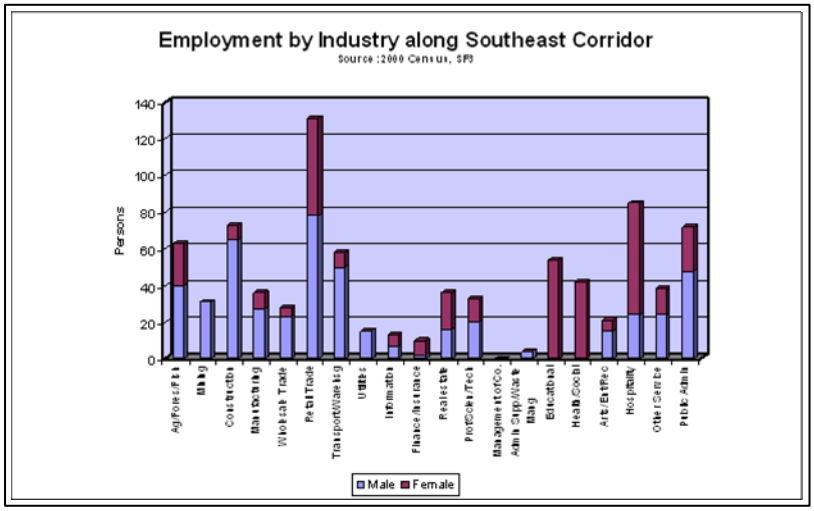
The civilian labor force participation rate of those 16 years of age and older varied from a low of 34 percent in the Dolan Springs/White Hills Area (Block Group 9504-2) to a high of 56 percent in the Cedar Hills/Round Valley Area (Block Group 9508-01). As a comparable, labor force participation in the City of Kingman stood at 57 percent with the County being somewhat lower at 52.8 percent. This variation may be explained by a larger percentage of senior citizens in the outlying communities and the level of disability among those 16 to 64 years of age. For example, along the Northwest Corridor, 19.42 percent of the labor force had a work related disability and nearly 23 percent of the labor force along the Southeast Corridor had a work related disability. The level of work related disabilities for the County was 17.46 percent with the City of Kingman's percentage at 18.75 percent. Physical disabilities predominated as compared to sensory, mental or self-care disabilities.



The Northwest Corridor had 1,685 persons working in 20 industries ranging from less than one percent in mining to over one-eighth of the workforce engaged in the arts, entertainment and recreation industry. Other industries of note included education, hospitality management, retail trade and health and social services. Construction and manufacturing jobs combined to make up over 15 percent of jobs

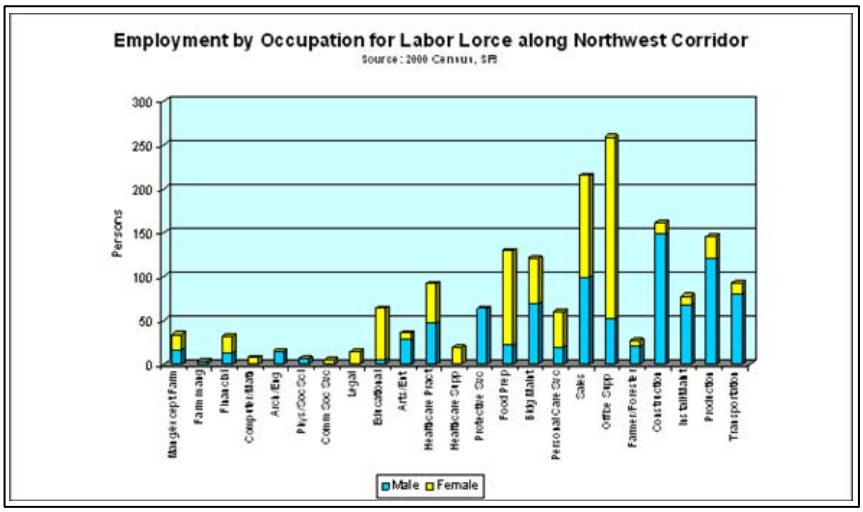
in the area.

By contrast, mining employment comprised 3.68 percent of employment along the Southeast Corridor with the arts, entertainment and recreation industry employing some 2.5 percent of the labor force. Retail trade workers amounted to 15.5 percent of the 859 strong labor force. Other significant industries included hospitality management, construction, agricultural and forestry and fishing, and civil service.



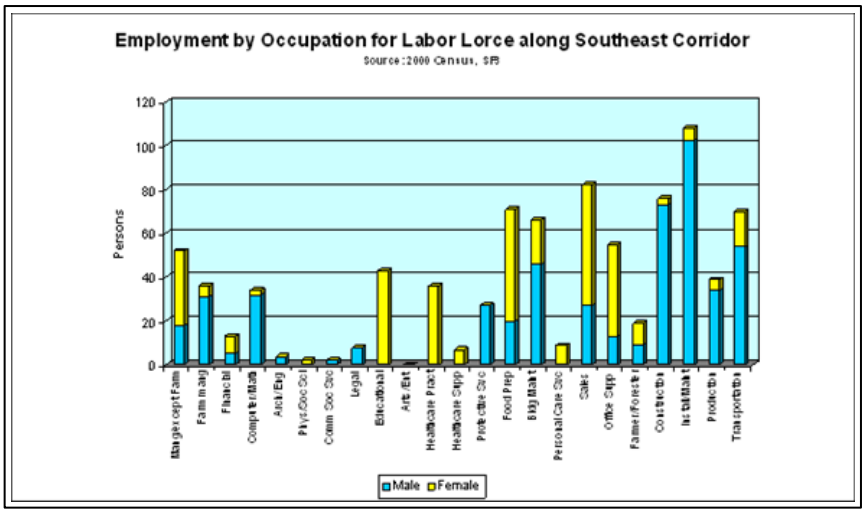
Both Kingman and Mohave County have lower rates of employment in the mining, and the agricultural and forestry and fishing industries. However, with 24.8 percent of County workers employed in arts, entertainment and recreation industry and related industries and only 9.5 percent of City of Kingman's talent pool involved in such pursuits, it may be said that the rural environment is attractive to such endeavors. Retail trade activities for both the City of Kingman (13.2%) and the County (13.8%) fall between the lower levels encountered along the Northwest Corridor (9.5%) with the higher percentage along the Southeast Corridor as noted above.

Along the Northwest Corridor, sales and office support occupations combined for over 28 percent of all occupations. Transportation and production workers accounted for approximately half this amount at 14.18 percent. Construction, extraction and maintenance workers were 14.29 percent of the occupations. The area had fewer managerial, professional and technical employees (19.58 percent) when compared to Mohave County (20.4 percent) and City of Kingman (28.5 percent).

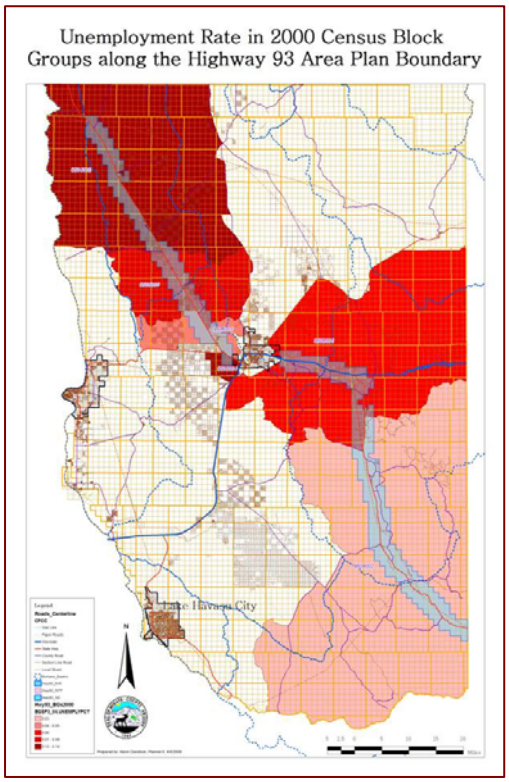


The Northwest Corridor's percentages of managerial, professional and technical employees were also substantially less than the percentages found along the Southeast Corridor where the rates tend to mimic the City of Kingman at 27.59 percent. The Southeast Corridor's sales and office support occupations were less dominant at 15.95 percent of the labor force. Transportation and

production workers were also fewer in number at 12.69 percent when compared to the Northwest Corridor. Construction, extraction and maintenance workers made up 21.42 percent, some fifty percent more than that found along the Northwest Corridor and nearly twice as many found in the City of Kingman (11.2 percent).



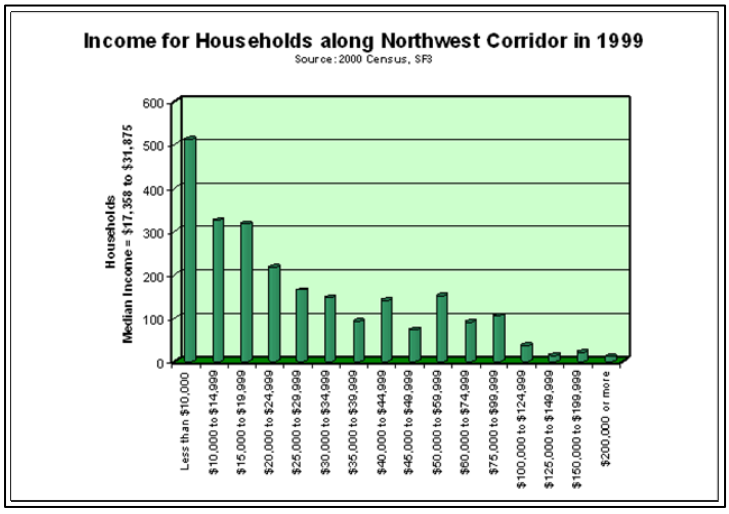
In addition to labor force participation, industry and occupation, the unemployment rate should be reviewed along the Corridor. Generally, the unemployment rate is higher along the Northwest Corridor with Block Group 9504-2 reaching 17 percent and Block Group 9506-01, lying just south of Highway 68 and east of Bacobi Road at 18 percent. In contrast, Block Group 9508-02 which includes greater Wikieup and Cane Springs had an unemployment rate of three percent. The Wikieup area is also more likely to have mining and agriculturally related employment.



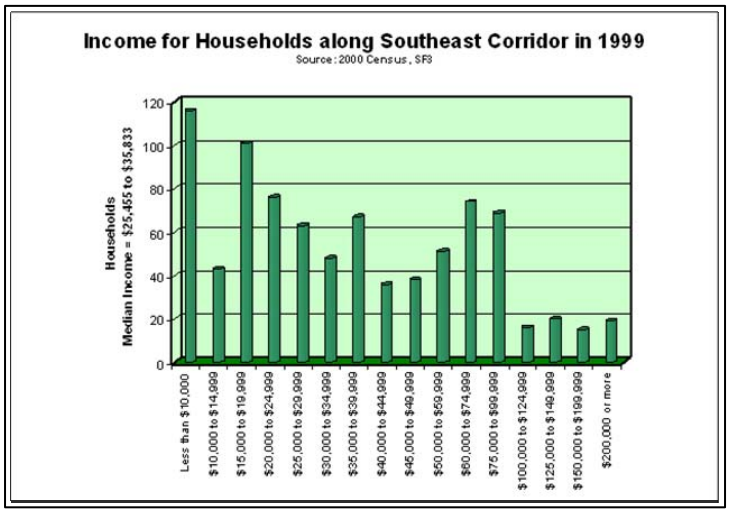
Other areas of moderate to high unemployment include Cedar Hills/Round Valley Area (Block Group 9508-01) and Chloride/Grasshopper Junction (Block Group 9505-01) with rates of six percent and nine percent, respectively. Unemployment levels in northern Golden Valley, north of Highway 68 and generally south of Jurassic Drive were five percent. Three of the six Block Groups have lower unemployment rate than the County as a whole which stood at seven percent in 2000. This statistic is also true when compared to the City of Kingman which had an unemployment rate at 6.1 percent. Recently, unemployment rates have climbed several percentage points in Arizona with the Lake Havasu City-Kingman metropolitan statistical area (Mohave County south of the Colorado River) rate at 9.3 percent.

In a review of job loss and creation between February 2008 and February 2009, total employment remains down in every sector except the leisure and hospitality industry and government which witnessed increases of 100 and 300 jobs, respectively in the first two months of 2009. Construction sustained the worst losses proportionally, with employment down 14.3 percent between February 2008 and February 2009. Since the collapse of the housing construction boom, the industry has lost nearly half its workforce (3,700 jobs), which peaked in June 2006 at 7,900. The trade, transportation and utilities sector, however, have lost the most

jobs by sheer numbers, having shed 1,000 workers over the same period. There were also were 100 fewer professional and managerial jobs in the region.

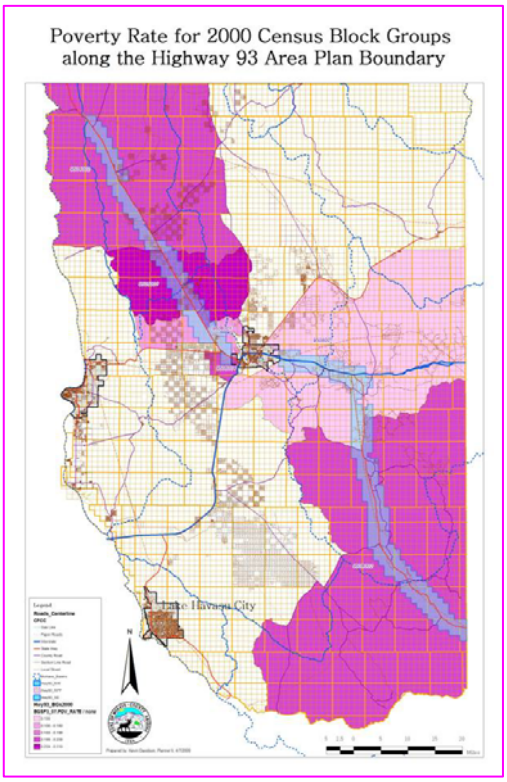


A discussion of income levels, although from 1999, will give a relative comparison between the two parts of the Corridor and with the City of Kingman and Mohave County. Along the Northwest Corridor, household income is generally clustered at the low-end of the spectrum, with over one fifth of all households having an income of less than $10,000 (un-adjusted for inflation) and nearly half of all households having an income of less than $20,000. Median income for the four block groups ranged from $17,358 in Dolan Springs/White Hills (Block Group 9504-02) to $31,875 in northern Golden Valley (Block Group 9506-01). Only 3.3 percent of households along the Northern Corridor had incomes exceeding $75,000. Family household income is somewhat higher ranging from $22,500 in Dolan Springs/White Hills to $34,375 in northern Golden Valley. This comparison is important because it indicates the living conditions of children, those often most affected by poverty. Median incomes peak at $39,706 for householders between 35 and 44 years of age.



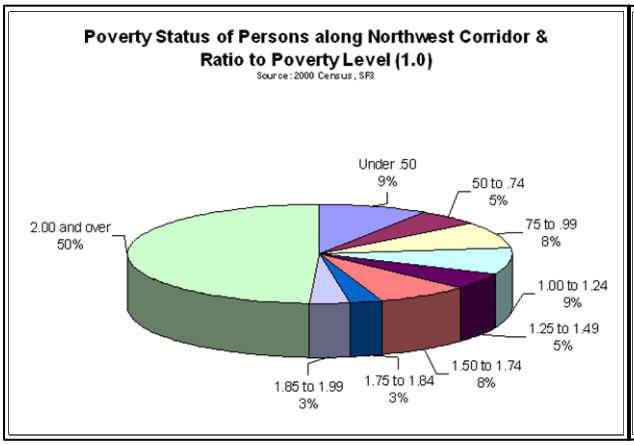
The household annual income distribution along the Southeast Corridor is somewhat bimodal with a cluster of 30 percent having under $20,000, akin to the Northwest Corridor, and then a moderate to high-income cluster of 29 percent earning over $50,000 per year. The latter distribution is similar to residents in Mohave County and Kingman where 27 percent and 32 percent of households had incomes of $50,000 or more, respectively. Median income for Cedar Hills/Round Valley Area (Block Group 9508-01) was $35,833, the highest in the planning area. Median income for Wikieup/Cane Springs (Block Group 9508-02) was $25,455. Over 14 percent of households along the Southern Corridor had incomes exceeding $75,000. Family household income is significantly higher than household in Cedar Hills/Round Valley at $45,298; however, the increased income level for family households in Wikieup/Cane Springs is only about $1,500 more, or $27,000. Median incomes peak for householders between 55 and 64 years of age at $35,590.

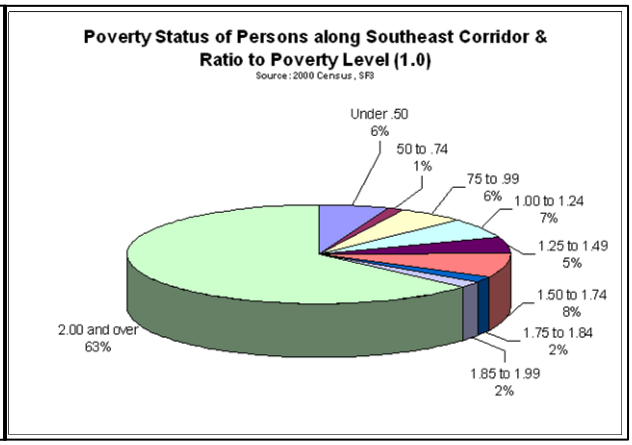
A review of persons in poverty reveals that most all Block Groups along the Corridor have poverty rates exceeding the City of Kingman (11.6 percent) and County (13.9 percent) values.



Chloride/Grasshopper Junction (Block Group 9505-01) reported the highest level of poverty at 31 percent. Dolan Springs/White Hills (Block Group 9504-02) and Wikieup/Cane Springs (Block Group 9508-02) reported poverty levels and 26 percent and 24 percent, respectively. Poverty levels are lower for those block groups nearest to Kingman with eastern Golden Valley (Block Group 9506-01) reporting 20 percent of persons in poverty and northern Golden Valley (Block Group 9506-01) having some 16 percent of its population living in poverty. Only Cedar Hills/Round Valley (Block Group 9508-01), at 10 percent, had a lower poverty rate than the City of Kingman and Mohave County.

The poverty rate can also be analyzed by depicting the magnitude of poverty those individuals are surviving on with fifty percent of the poverty level being considered in extreme poverty. Over nine percent of persons along the Northwest Corridor are in extreme poverty. Less than six percent of individuals along Southeast Corridor are so economically challenged. Looking at the opposite side of the spectrum, approximately 50 percent of all persons along the Northwest Corridor have income levels affording them a relative level of affluence at 200 percent of the poverty rate. The percentages are higher along the Southeast Corridor where 63 percent of persons are enjoying incomes raising them to at least 200 percent of poverty.



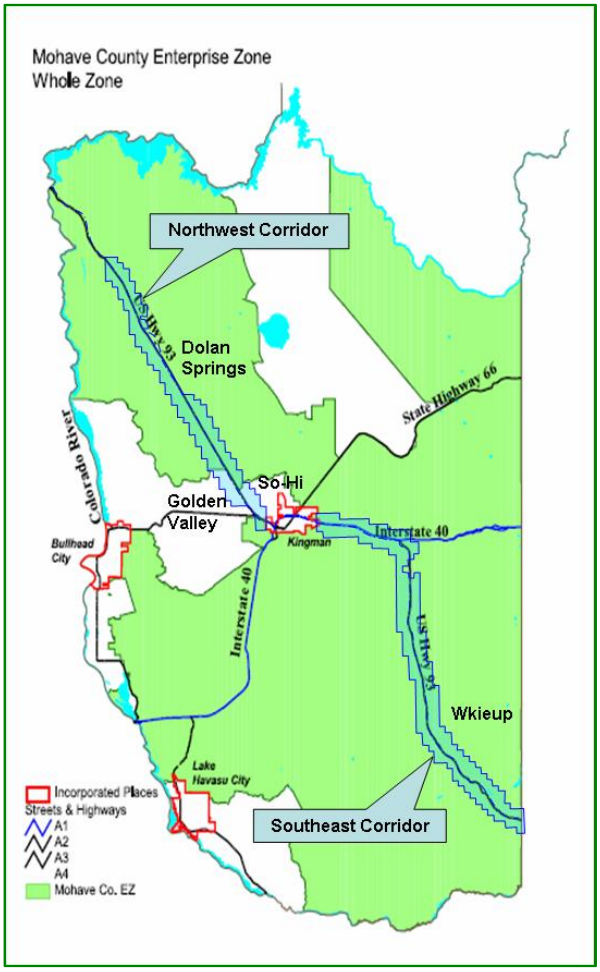


The distribution of persons in poverty shows that 27.1 percent of children (under 18 years old) are in poverty along the Northern Corridor. Along the Southern Corridor, the rate for child poverty is approximately half at 12.57 percent. The percentage of seniors in poverty is also sharply contrasted between the Northwest Corridor and Southeast Corridor where 19.66 percent

of persons are impoverished in the former and only 4.71 percent are so challenged in the latter. For the City of Kingman child poverty (15.3 percent) and senior poverty (7.9 percent) falls in the middle of the two extremes along the Corridor, with the County levels of poverty for these two age cohorts being at 20.4 percent and 7.7 percent, respectively.

Enterprise Zones

As established under A.R.S. §41-1521, et. seq., enterprise zones may be designated by the Arizona Department of Commerce to improve the economies of areas in the state with high poverty or unemployment rates. The program does this by enhancing opportunities for private investment in certain areas that are called enterprise zones. Increased investments in such areas tend to strengthen or stabilize property values and encourage quality job creation to promote the vitality of the local economies. The program focuses on income/premium tax credits and property tax credits.



Income/Premium Tax Credits

Credit for net increases in qualified employment positions at a site located in an enterprise zone are qualified except for those at a business location where more than 10% of the activity is the sale of tangible personal property. Exceptions include: a) food and beverages for consumption on the premises solely by employees and occasional guests of employees at the location, b) promotional products displaying the company logo or trademark, c) products sold to company employees.

Credits may total up to $3,000 per qualified employment position over three years for a maximum of 200 employees in any given tax year. Qualified employment positions are as follows: 1) a full-time permanent job (1,750 hours per year), 2) pays an hourly wage above the "Wage Offer by County" (currently between $7.64 and $15.93 depending on the county in which the business is located), 3) offers health insurance to employees for which the employer pays at least 50 percent, 4) must work at least 90 days in the first tax year, and 5) cannot have worked for the employer within 12 months from current date of hire.

Credits for qualified employment positions in the first year are equal to: one-fourth of wages paid to an employee up to $500. In the second year, credits are one-third of wages paid to each previously qualified employee up to $1,000. In the third year the amount increases to one-half of

wages paid to each previously qualified employee up to $1,500. At least 35 percent of the net new eligible employees on whom the business is claiming a credit must live within an enterprise zone in the same county as the business on the date of hire (Arizona Dept. of Commerce).

Property Tax Credits

Property reclassification is available for qualified manufacturing businesses that fabricate, produce or manufacture products, wares or articles for use from raw or prepared materials or commercial printing businesses which include a lithographic, flexographic or other mechanical process in an enterprise zone. A manufacturer or commercial printer in an enterprise zone is eligible for an assessment ratio of five percent on all personal and real property (for primary tax purposes only) in the zone for five years if it meets all the criteria as follows:

1) A minority-owned, woman-owned or small business (a small business has fewer than 100 employees or gross sales of $4 million or less), and

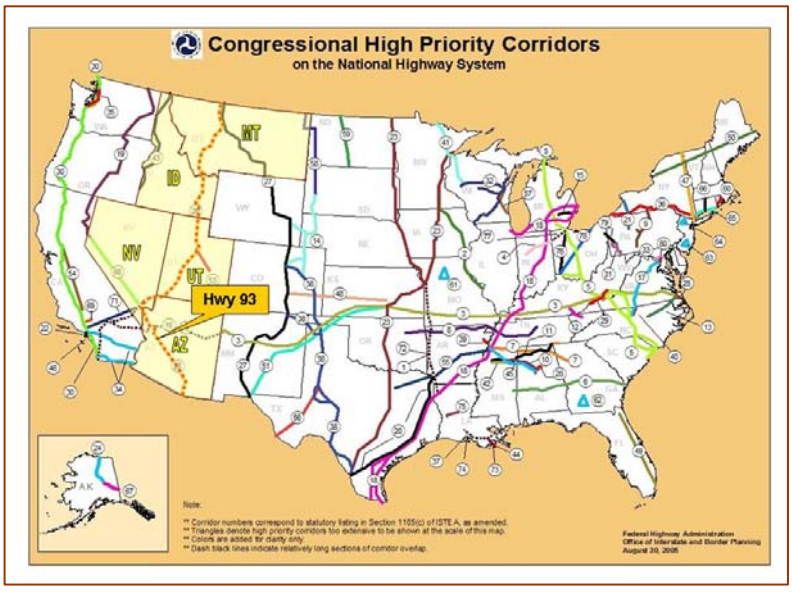
2) Independently owned and operated (not owned more than 50 percent by another company unless the ultimate ownership is primarily family-owned or closely held), and

3) Makes an investment in fixed assets at the zone of $500,000, $1 million or $2 million, depending upon the location of the facility. The investment can be aggregated from 1/1/2001 as long as the zone was in place during that time (ADoC).

The enterprise zone within Mohave County covers most of the rural areas, beyond city boundaries, and certain Census Designated Places that have urban-like population densities and qualities. The program is designed to encourage small businesses who hire local employees. Currently, the poverty rate within the 6,532 square zone is 22.94 percent.

CANAMEX Trade Corridor

In 1995, Highway 93 was designated as one of several High Priority Corridors under Public Law 104-59 traversing the United States. The corridor was also reconstituted under Executive Order 2008-08 by then Governor Napolitano. The corridor links Canadian, American and Mexican markets and is designed for the seamless and efficient transportation of goods, services, people and information between these three nations. With the implementation of North American Free Trade Agreement (NAFTA),



the CANAMEX Corridor will begin to fully realize the benefits of increased trade, tourism and economic activity within the region. The Corridor provides many opportunities to create safer and more efficient transportation, improvements to telecommunication, and ostensibly a better quality of life through a shared commitment to the region. Attributes are as follows:

Smart Freight Corridor - The ability for states to operate on shared Information Technology Systems (ITS) with the same information would enhance the safety and efficiency of the Corridor for both freight and tourists by providing information to the public, enforcement agencies, and to emergency medical, fire, and hazardous material teams. A recent report found that Arizona generates an estimated $340 million in container based exports each year from the trade through LA/Long Beach. Nearly 4,300 jobs in the State and approximately $27 million in State and Local taxes are generated annually from such trade activity.

Smart Tourist Corridor -Tourism is an important component in the economics of all five CANAMEX States (Arizona, Nevada, Utah, Idaho and Montana). Information Technology Systems improvements could provide considerable opportunity for a robust tourism business and enhanced traveler safety. ITS systems could help tourists in an emergency by creating quicker responses and allowing full cellular coverage by eliminating dead spots.

Telecommunications Access for Rural Areas - The essential infrastructure for economic growth for the early part of the 21st century will be telecommunications infrastructure. Main elements are: a) using government authority to leverage telecom companies to install broadband service b) deployment of fiber optics, and c) a north-south broadband backbone for Information Technology Systems.

Corridor Highway Improvements - In urban areas, approximately $4 billion of highway improvements are already planned and programmed for the Corridor. The Hoover Dam Bypass Project and the widening Highway 93 to the approaches are vital to the safety and efficiency goals of the CANAMEX Corridor. The CANAMEX Corridor is likely to experience congestion in and around major urban centers over the next 30 years. The plan proposes approximately $2 billion (in Year 2000 dollars) in additional funds. Over the next five years, the State programmed over $1.3 billion to improve segments of the corridor. In addition, the federal government has committed nearly $60 million to redesign and construct border stations.

Smart Process Partnerships - The Corridor Plan advances three ideas in e-commerce and e-government to facilitate the work of these partnerships including: a) license renewals and business registration, b) creation of a "borderless economy," and c) develop a common system and a single set of standards for secure electronic commercial transactions.

Multi-state and international partnerships will be used to identify initiatives to support trade and job growth. CANAMEX also seeks to identify funding and initiatives that enhance the safety, security and efficiency at the border and along the corridor. These concerns must be addressed to maintain and enhance the relationship between the five western states and Canada that supports 309,000 jobs and $13 billion in annual trade. Canadians made more than 2.4 million visits to the region, spending some $1.5 billion.

Recently, with the exporting of American manufacturing jobs to Mexico and Canada, and the resulting loss of higher income jobs for the traditional industrial labor force, NAFTA, and, by extension CANAMEX, have drawn criticism from various groups such as labor unions and those seeking traditional American independence. Concerns raised during the area plan's creation are as follows: 1) condemnation of private property along the CANAMEX super-highway, 2) increase in illicit trade causing more criminal activity within the County, 3) lower wages and standard of living, 4) more illegal immigration and 5) first step in the creation of a North American Union, ultimately leading to loss of US sovereignty. Items one and two will be discussed in the Transportation and Public Safety Elements, respectively. The lowering of the standard of living, however, at least for the existing residents of Mohave County, may not be an issue given the high levels of unemployment and lower incomes with the planning area. Developing tourism, commercial businesses and limited amounts of light industrial activity, including renewable energy projects, along the corridor is designed to support the local labor force. Addressing illegal immigration moves beyond the scope of a typical county-level planning document and is part of the state and national debate. Loss of national sovereignty is also part of the national debate, but at a more existentially philosophical level.

Solar Resources

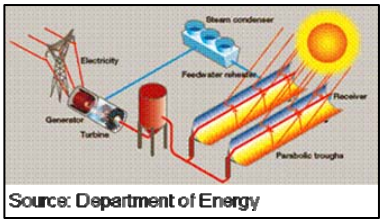
Arizona is often called the "solar capital" or the "Saudi Arabia" of solar insolation (incoming solar radiation) for the United States. Despite the state's tremendous solar and other renewable resources, Arizona lags behind the rest of the region with only a dozen megawatts of installed renewable energy capacity. However, with the approval of a Renewable Energy Standard and Tariff rules by the Arizona Corporation Commission in 2006 designed to boost the development of renewables, especially solar, to 15 percent of the state's energy portfolio by 2025, a number of new large-scale solar projects are now under construction or contemplated on private and public lands. The new tariff will help ensure the electricity produced in Arizona will stay within the state and be sold by local utilities such as UniSource Energy Services and Arizona Public Service.

Energy from the sun is converted to electricity using a variety of technologies described as follows:

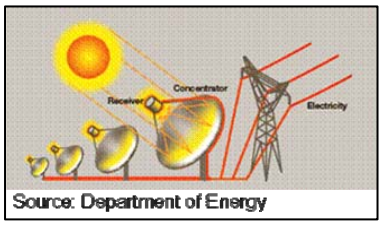
Concentrating Solar Power (CSP) is electricity generated from mirrors to focus sunlight onto a receiver that captures the sun's energy and converts it into heat that can run a standard turbine generator or engine. These systems range from remote power systems as small as a few kilowatts up to grid-connected power plants of 100's of megawatts (MW). The systems work best in bright, sunny locations like the Southwest. Because of the economies of scale and cost of operation and maintenance, CSP technology works best in large power plants. Compared to fossil-fueled power plants, CSP power plants generate significantly lower levels of greenhouse gases and other emissions. A typical solar plant requires approximately five acres of land per MW of installed capacity. Enough suitable land is available in the Southwest to generate six times the current U.S. demand for electricity. However, CSP plants use approximately 0.83 gallons of water per kWhr of output, of which 0.76 gallons is used for cooling (Last Straw). This amount of water is similar to conventional fossil fuel power plants. Wet/Dry cooling technology

has been employed at a CSP plant in Mammoth, California. The energy payback time of CSP systems is about five months.

The most common CSP technology is the parabolic trough collector where the sun's energy is concentrated on an oil-filled, solar absorbing transparent glass tube running along the focal line of the parabolically shaped trough. The fluid inside the tube is heated to create superheated steam that powers a turbine generator to produce electricity.



Source: Department of Energy



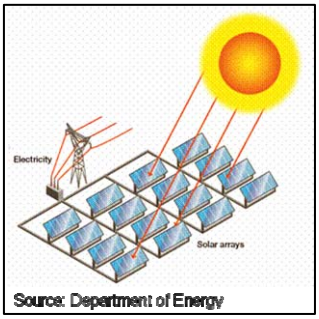
Source: Department of Energy

Another CSP technology being developed is the Solar Dish-Engine System. Here an electric generator that uses sunlight produces electricity. The dish, a concentrator, collects the sun's energy and concentrates it onto a receiver. A thermal receiver absorbs the concentrated beam of solar energy, converts it to heat, and transfers the heat to the engine/generator. Unlike parabolic trough collectors, these system do employ water as part of the process.

Photovoltaics (PV) technology converts sunlight into electricity and is also known as solar electricity. The most common solar cell material is crystalline silicon, but newer materials for making solar cells include thin-film materials such as cadmium telluride, copper indium diselenide, and amorphous silicon. Solar technology has been developing for over 50 years with application ranging from the mundane hand held battery charger to the exotic power source such as space stations and ETVs. Life-cycle greenhouse gas emissions range from about 25-32 g/kWh and are expected to decrease to 15 g/kWh in the future. (A coal-fired power plant emits some 915 g/kWh.) Using renewable power for manufacturing and transportation could drop emissions to close to zero. Photovoltaic power stations located in the desert Southwest use relatively small amounts of land with approximately 10 acres of land per MW of installed capacity; however, improvements in solar cell efficiency are reducing the amount of land needed for each MW. Arrays also provide shading for wildlife. Utility-scale PV systems can be placed over existing land used for parking lots and commercial buildings. Water use is typically none aside from cleaning as necessary in dry climates without significant rainfall.

A PV module pays for itself in terms of energy in a few years (1-5 years). With life expectancies of 30 years, 87 percent to 97 percent of the energy produced by a PV system will be free of pollution and greenhouse gas emissions. Concentrator PV energy payback is estimated at eight months on a site having a good solar resource because they use more common materials such as steel and plastic and their production plant costs are low.

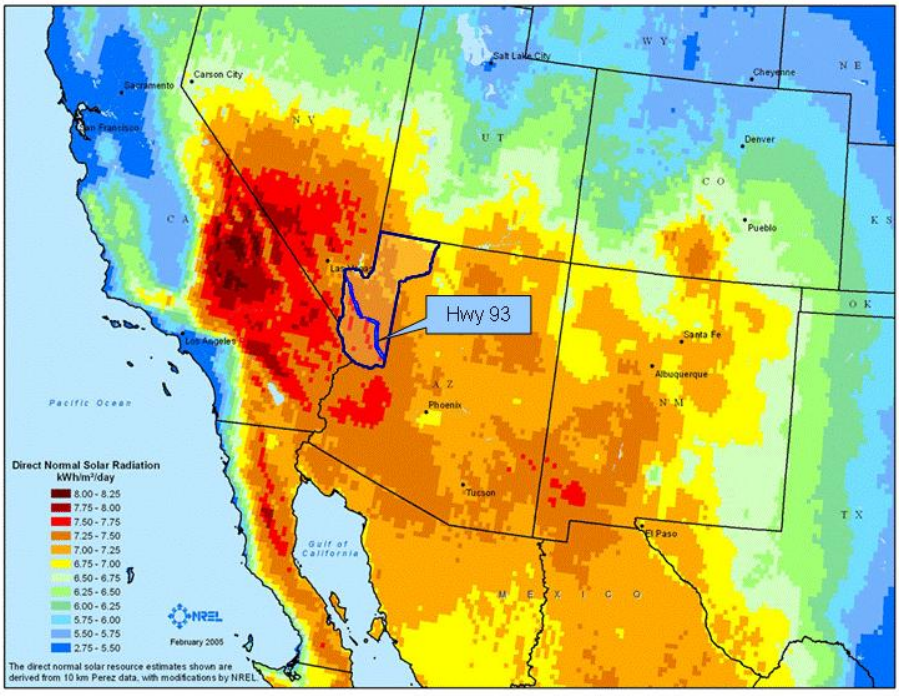
Flat-plate PV panels convert sunlight into electricity. Flat-plate panels do not require direct sunlight and they generate energy regardless of where the light source is located. They can be fixed in place or allowed to track the sun with solar trackers. A single-axis array tracks the sun from East to West during the day, which provides 30 to 40 percent more energy than a fixed array. Output power is also more uniform. They use light sensors or computer programming to avoid unnecessary



Source: Department of Energy

tracking movement.

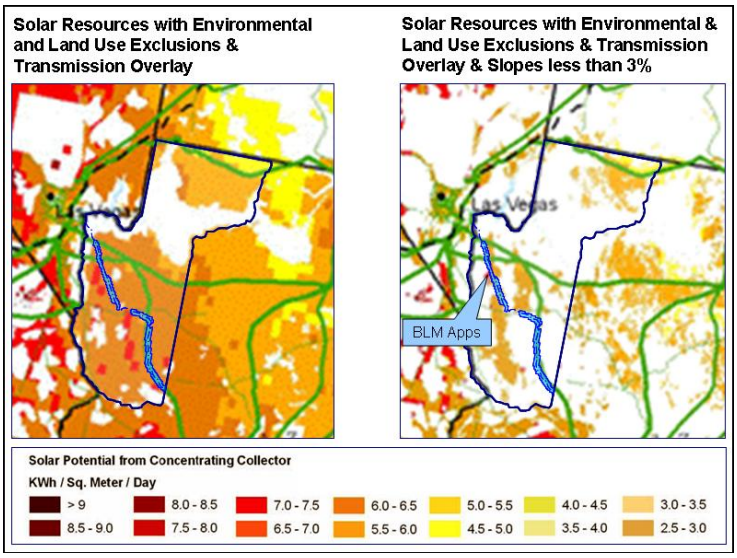
Concentrator photovoltaics (CPV) uses inexpensive materials such as mirrors or plastic lenses to capture the sun's energy and focuses it onto PV solar cells. CPV technology differs from flat-plate PV modules in several ways: they are usually made using high-efficiency, multi-junction PV solar cells and they use mirrors or lenses to concentrate sunlight onto the solar cells. The primary reason for using concentrators is to be able to use less solar cell material. Concentrator systems increase the power output while reducing the size or number of solar cells needed.



Source: Analysis of Solar Resource Potential and Siting Opportunities for the State of Arizona Presentation to Arizona Corporation Commission October 6, 2006, Mark S. Mehos, National Renewable Energy Laboratory

Siting criteria for solar arrays include high solar insolation values, typically expressed in kilowatt hours of electricity that may be converted from a single square meter of land on a typical day, having few cloudy or overcast days, occupying a large level site, preferably less than a three percent slope over several square miles, being close to a major transmission line with available capacity, and, in the case of concentrating solar parabolic troughs, an adequate supply of water.

Mohave County has several sites that meet most or all of the above criteria, several of which occur along the Highway 93 Corridor. Applications with the BLM are pending on two sites along the northern corridor between Pierce Ferry and White Hills Roads. Additional solar parabolic trough power plants on private land may also be proposed along the corridor where transmission and sufficient flat and open land of two or more contiguous square miles is available.

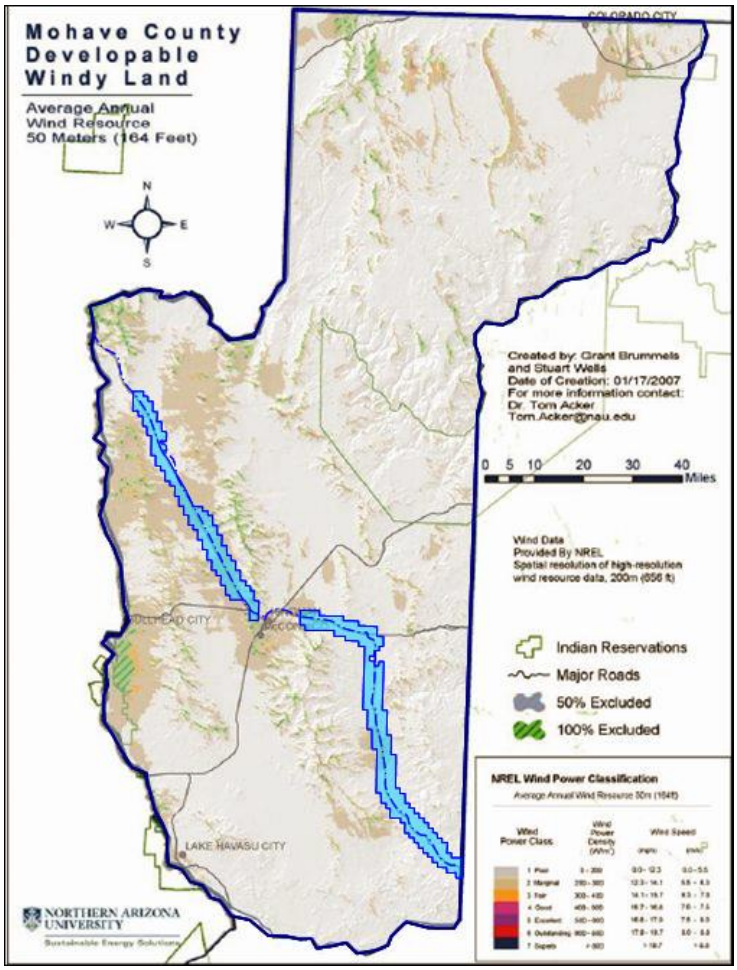


Wind Resources

Wind resources vary along the Corridor from poor to marginal (Northern Arizona University). Wind resources are mostly dependent upon terrain with broad valleys having less wind force than mountain ridges.

Land categorically excluded from wind development are as follows:

National Park Service Land, U.S. Fish and Wildlife Service lands, Congressionally Specially Designated Areas such Wilderness Areas, inventoried road less areas, State and other environmental lands such as wetlands and water bodies, certain BLM lands, urban developed areas including airports, non-ridge crest forests, and steep slopes greater than 20 percent.



Developable wind energy potential in the County is estimated to be 1,100 megawatt hours. The majority of developable windy land, 88 percent, is Class 3, which is considered to be "fair.' Assuming 5 mWhrs of output per square kilometer, 220 square kilometers (hectares) or approximately 89 square miles of Mohave County can support commercial-scale wind farm development with most of this area residing outside the planning area.

<u>Goals and Policies for Economic Development</u>

Goal 20 Support commercial development that is determined by the local residents and local government to serve the needs of the residents and tourists

Policy 20.1 Identify areas designated for future commercial development on the land use diagrams.

Policy 20.2 New locations for economic development activities should be considered once a need can be demonstrated by the community.

Policy 20.3 Encourage private and quasi-public entities, such as the North River Economic Region Coordinator, local chambers of commerce, and other economic development organizations to engage in the creation of employment opportunities for local residents.

Goal 21 Encourage economic development activity at existing and planned traffic intersections along the corridor

Policy 21.1 Support the retention and expansion of existing businesses at these locations.

Policy 21.2. Encourage the establishment and/or relocation of commercial and light industrial developments at traffic intersections or interchanges along Highway 93.

Policy 21.3. Provide for economic development activities along the Highway 93 Corridor that create sufficient jobs for the local labor force.

Policy 21.4. New locations for economic development activities must be able to be supported by existing or developer-provided infrastructure.

Goal 22 Support organized recreation and tourists activities at appropriate locations

Policy 22.1 Identify areas designated for future recreational development on the land use diagrams.

Policy 22.2 New locations for recreational development activities should be considered once a need can be demonstrated by the community.

Policy 22.3 New locations for recreational development activities must be able to be supported by existing or developer-provided infrastructure.

Policy 22.4 Encourage recreational activities that are less fossil fuel intensive and leave fewer impacts on the environment.

Goal 23 Recognize and maintain open space and vistas as an essential part of the community's attractiveness to residents and tourists

Policy 23.1 Encourage economic development at existing and planned traffic intersections or interchanges along Highway 93.

Policy 23.2 Encourage development activities that blend into the natural desert aesthetic and have low-profiles.

Policy 23.3 Preserve existing Rural Development Area land use designations along Highway 93 between roadway intersections or interchanges.

Goal 24 Allow only a limited amount of environmentally responsible industrial development

Policy 24.1 Pursue and support industries that consume less water and non-renewable energy resources than traditional industry.

Policy 24.2 Pursue and support industries that create fewer emissions than traditional industry with zero-net-emissions as the preferred standard.

Policy 24.3 Pursue and support industries that reduce and/or offset greenhouse gas emissions from traditional industry.

Goal 25 Allow only environmentally responsible development

Policy 25.1 Pursue and support development activities that consume less water and non-renewable energy resources.

Policy 25.2 Pursue and support development activities that have zero-net-energy consumption as the preferred standard.

Policy 25.3 Pursue and support development activities that have smaller environmental footprints in regard to clearing of the land's vegetation, terrain modification, and use of sustainable building materials.

Implementation Measures for Economic Development:

E1. Establish a regular schedule of meetings between County representatives, the Mohave County Economic Development Coordinator, the Arizona Department of Commerce's North River Economic Region coordinator, the chambers of commerce and other economic development organizations. Use these meetings for communication and coordination regarding issues such as recent economic trends, cooperative programs, alternative economic development projects, marketing efforts, and development opportunities occurring along the US Highway 93 Corridor.

E2. The Mohave County Economic Development Coordinator, the Arizona Department of Commerce's North River Economic Region coordinator and the private sector will review possible new economic development programs, such as economic gardening, which focuses on building the economy from the inside out, and establish an action agenda for cooperative economic development efforts emphasizing business activity along the Corridor.

E3. Establish regular monitoring programs to evaluate the Corridor's employment growth, by job type and location, and the jobs-to-resident worker ratio for the planning areas. Develop periodic outreach to businesses along the Corridor to identify skill gaps, training opportunities and skill deficiencies in the existing workforce. Also, identify jobs that match the abilities of the underemployed. Report this information and consider policy changes as part of the Area Plan's 10-year review.

E4. Develop information on the skills and experience of the resident labor force along the Corridor and collect this information in a report available for use in economic development efforts. Work with leaders in the travel and tourism industry to identify workforce training needs and fine-tune existing programs or develop new programs as needed to foster the growth of the industry.

E5. Conduct a business retention survey, in cooperation with the Mohave County Economic Development Coordinator, the Arizona Department of Commerce's North River Economic Region Coordinator, chambers of commerce and other economic development organizations to identify the needs of Corridor businesses.

E6. Together with the private sector, conduct a study to identify particular goods or services desired by local residents and businesses, to shape the focus of efforts to attract new firms to the Corridor.

E7. Evaluate opportunities to obtain economic development funding from state, federal or other sources that are available and appropriate, such as infrastructure development, to support business retention and growth along the Corridor.

Transportation

Transportation Element

Introduction

Transportation infrastructure and economic development are two regional issues which are intrinsically linked. An efficient transportation system is required to move employees between home and work, to link their communities, to import materials and export finished goods, and all the while increasing safety, reducing pollution and generally increasing the quality of life. Given the cost of improvements in creating an interconnected transportation network to facilitate the access to land and to allow for economic activity to occur, both must be addressed regionally. The Highway 93 Area Plan allows for such regional planning to occur. The Element will discuss the status and future plans of the dominant traffic artery for which the Area Plan is named, a review of access management for state highways, a review of Mohave County's roadways as they relate to the highway, their traffic volumes and maintenance status, identification of major wash crossings for wildlife protection, locations of trails for motorized and non-motorized uses and a series of goals, policies and implementation measures to solve the issues and bring the ideas and concepts to fruition.

US Highway 93 - Overview

US Highway 93 is an Arizona state highway that runs generally north/northwest from US 60 in Wickenburg to the Nevada border at Hoover Dam. Highway 93 serves as the primary surface route between Phoenix and Las Vegas, two of the fastest growing cities and metropolitan areas in the United States. As noted in the Economic Development Element, the highway is an important link in the CANAMEX commercial corridor defined by the North American Free Trade Agreement (NAFTA). Traffic volumes are expected to grow as the communities served by the route expand, and as both general and commercial traffic increase—the latter largely due to NAFTA. Corridor highway improvements have begun which include the Hoover Dam bypass project, a new four-lane bridge over the Colorado River allowing through traffic to bypass the slow and circuitous route across Hoover Dam, and the four-lane 15-mile approach through Lake Mead National Recreation Area which are both scheduled for completion in late 2010 and 12 other projects further south along the Corridor to date (ADOT, DMJM).

The Arizona Department of Transportation (ADOT) envisions the US 93 study corridor ultimately as an Interstate-type facility with full access control, at which time access will be provided only at grade-separated traffic interchanges (TI). This is consistent with ADOT's vision for the entire extent of the US 93 Highway in Arizona (ADOT, DMJM).

Review of ADOT Access Management

Purpose of Access Management

The purpose of access management is to preserve the capacity of public highways, maintain or enhance safety for motorists, and maintain access to private land in a manner that serves the public interest. Access is managed through the regulation of vehicular access to public roadways from adjoining property—and through legislative acts and administrative permits available to

political jurisdictions under their police powers which further the health, safety, and welfare of their residents (ADOT, DMJM).

Need for Access Management

The primary function of major transportation corridors is to allow the safe and efficient movement of people and goods with minimal delay or interference from conflicting vehicle movements. The addition of more traffic signals, intersections and driveways reduces the corridor's efficiency and safety. Land uses along a corridor having no internal circulation systems or County roadway access forces more trips onto major highways. This is particularly true of "legacy lots" which existed prior to a highway's creation, many of which have been bisected by the highway.

The projected year 2022 traffic volumes on US 93 are estimated to be approximately 65 percent higher than current volumes on this segment of the route, with roughly 21,000 vehicles per day (vpd) projected in the Kingman area. The construction of the Hoover Dam Bypass will reintroduce truck traffic on the route. Given the heavy volumes of high-speed through-traffic on this highway, a strong need exists to establish access control. Otherwise, the combination of slow turning vehicles such as trucks with high-speed through traffic will create an increasingly unsafe and inefficient operating environment. Businesses may begin to feel the effects due to a deterioration of access. Potential customers are deterred by delays in leaving and re-entering the highway, or if they perceive a safety risk in making difficult turning movements. In response, some businesses may relocate to areas that offer better accessibility (ADOT, DMJM).

Goal of Access Management

The goal of an access management program is to successfully balance roadway operational needs with land development needs. The main benefits of an access management plan are the preservation of safety and service. With an adopted plan in place, zoning and permitting agencies have a blueprint that will provide guidance in permitting access to a roadway, regardless of ultimate roadway build-out conditions. Proposed developments can be required to provide internal and parallel circulation, as well as driveway/access point design that conforms to the adopted plan (ADOT, DMJM).

Statewide Access Management Program and Policies

The State Transportation Board[1] has established a "State Highway System Priorities Policy." This policy implements "an integrated statewide transportation system by placing priority on state highways that:

1. "Connect Arizona's regions and population centers by an efficient network of highways to carry travelers and commerce throughout the state;

2. "Connect Arizona, its regions and population centers with other states of the United States and Mexico; and

[1] Under the authority ARS 28-304 et. seq.

3. "Connect major population centers and through routes within urban areas with high volume routes that increase mobility of people and goods."

The "Access Management Policy," still development by the State Transportation Board, is designed to preserve the functional integrity of the State Highway System through the development and implementation of a comprehensive access management program by:

1. Directing ADOT to develop an access management classification system for the State Highways with appropriate access management standards for each access management classification.

2. Directing ADOT to develop a comprehensive access management manual to guide the uniform application of access management throughout the state.

3. The Board and ADOT shall work closely with regional planning agencies and local governments to encourage early notification to ADOT of zoning and other land use decisions…that will impact the State Highway System in order to coordinate system planning.

4. Purchasing access rights to highways, where appropriate and feasible.

5. Maintaining that the approximate minimum spacing between interchanges…be three (3) miles in rural areas, two (2) miles in suburban or transitional areas, and one (1) mile in urban areas.

6. Considering ramifications to the corridor, and its future use, when access is granted.

7. Reassessing road segments as demand changes over time.

Under Title 28 of Arizona Revised Statutes the ADOT director may exercise complete, exclusive and operational control and jurisdiction over the use of state highways and routes; coordinate the design, right-of-way purchase, and construction of controlled-access highways, etc; and exercise other duties or powers necessary to carry out efficient operations.[2] The director may acquire any interest in real property the director considers necessary for transportation purposes and the state may exercise eminent domain to acquire property or an interest in property necessary for transportation purposes.[3]

Owners of property abutting a public highway have a private right of easement for the purpose of ingress and egress to and from the property, subject to regulation. This right may not be taken without compensation. Along state highways, ADOT is the regulating agency. Direct access between a property and a highway may be closed and replaced with alternative access, via an access road or another public road abutting the property (ADOT, Jacobs). No access will be granted where access control rights has been established by deed or judgment unless waived by

[2] See ARS 28-332 and 28- 363.
[3] See ARS 28-7093

the State Engineer in accordance with Federal Highway Administration standards (ADOT, DMJM). Direct access to US 93 is currently allowed through permit application to the ADOT Kingman District Office.[4] The number and spacing of access points are approved by the District, subject to providing adequate traffic engineering criteria (ADOT, Jacobs).

Other methods to control access along a highway include zoning and subdivision approval and site plan review through local government ordinances, adopted by various jurisdictions along the ADOT right-of-way (ADOT, DMJM).

Determining Future Traffic Interchange Locations

The major factors warranting a future traffic interchange (TI) are roadway and intersection crash rates, heavy traffic volumes projected on the mainline and cross road, and heavy left turn volumes at the intersection. Adequate spacing between TIs is also important to maintain a free flow of traffic. In rural areas, ADOT Roadway Design Guidelines recommend a desirable spacing of five miles and a minimum spacing of two miles (ADOT, DMJM).

The most desirable traffic interchange locations will have little to no impact on existing drainage channels or drainage patterns. An ideal TI location will also minimize impacts to the existing ground, balance earthwork quantities, and maintain the aesthetics of the surrounding environment. The existing topography should provide adequate sight distance on the cross road and allow the cross road profile to reach the existing ground level quickly. A cross road alignment at 90 degrees to the highway mainline will provide the most desirable ramp design, accommodate intersection sight lines between ramp and cross road, and minimize bridge construction costs (ADOT, DMJM).

For potential future traffic interchange locations, existing and future land ownership and land use within the study area are evaluated for potential trip generators and destinations in association with the existing and proposed road networks outside of the ADOT right-of-way to avoid unreasonable trip lengths to and from the TI locations (ADOT, DMJM).

Northwest Corridor – Lake Mead National Recreation Area to Kingman

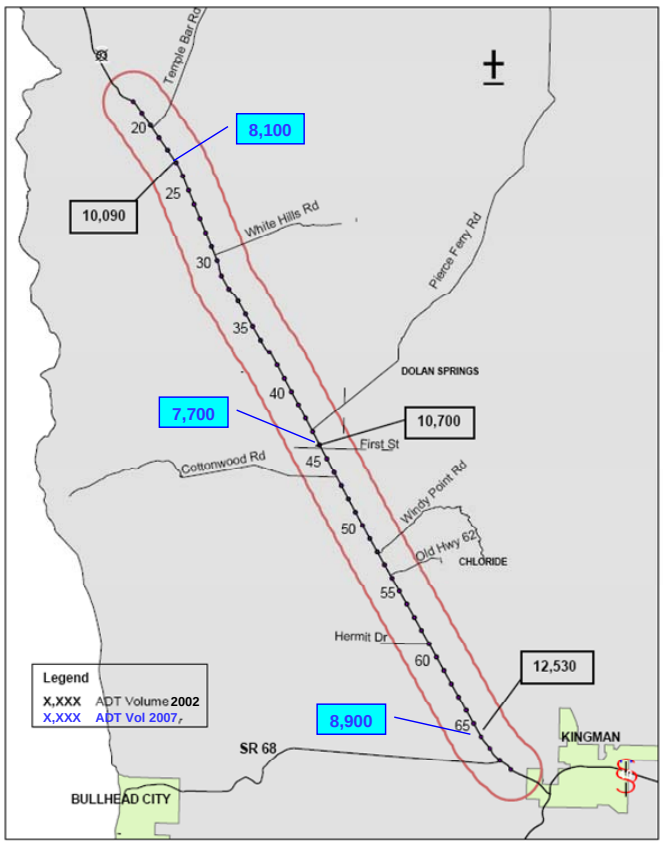
In January 2006, Mohave County adopted the US Highway 93 Access Management Study, Milepost 17 to 68.[5] The study corridor traverses federal lands managed by the Bureau of Land Management (BLM), state trust lands administered by the Arizona State Land Department (ASLD) and private lands and also provides access to several recreational sites within Lake Mead National Recreation Area. The purpose of the US Highway 93 Access Management Study is to provide ADOT, Mohave County and other jurisdictions with a cost-effective plan to manage access on this route and provide guidance for future development adjacent to US Highway 93. Through appropriate access management, the highway's principal function of providing mobility for long distance through traffic can be maintained in the future as development occurs along the corridor (ADOT, DMJM).

[4] Under the authority of ADOT Administrative Rule R-17-3-702, Encroachment in Highway Rights-of-Way

[5] Published in November 2004. The shorter segment of US Highway 93 from the State Route 68 TI to the Kingman city limit was addressed in a previous access management study prepared for State Route 68.

Corridor Description

The US Highway 93 corridor study area has been defined as a two-mile-wide strip centered on the existing roadway centerline (see map). US Highway 93 has been improved to a four-lane divided rural principal arterial roadway throughout the study area (ADOT, DMJM).



Source: DMJM/Harris, US Highway 93 Access Study

Given the corridor's strategic location between Las Vegas and Phoenix, its proximity to I-40 and the Burlington Northern Santa Fe Railroad, undeveloped land, and nearby recreational activities that attract retirees and others, there is interest in the eventual development of this area.

All travel lanes of the four-lane divided facility are 12 feet wide. Roadway grades, alignments, cross slopes and shoulder widths on the new northbound lanes meet modern design criteria. However, the original two-lane roadway now serves as the highway's southbound lanes. Dedicated turn lanes are provided northbound and southbound at many median crossover locations. All intersections are controlled with STOP signs on the minor cross road or access driveway (ADOT, DMJM).

Peak hour traffic counts were taken in June 2002 at several major cross roads along US Hwy 93, including Temple Bar Road, White Hills Road, Pierce Ferry Road, Chloride Road, Colorado Road, and Agua Fria Road. Additional 24-hour directional counts were taken in August 2002 near Temple Bar Road and Pierce Ferry Road. The current 24-hour data collected for this study resulted in a ratio of peak hour volume to daily traffic volume (K-factor) of approximately 8.5 percent and a directional distribution (D-factor) of 54 percent. The existing intersections operate at level of service (LOS) B or better during the peak hours (ADOT, DMJM).

Since the terrorist attacks of September 11, 2001, commercial trucks have been prohibited from using the US 93 crossing of the Colorado River at Hoover Dam. Therefore, the traffic counts obtained in June and August 2002 reflect a decrease in traffic volumes over Hoover Dam. Historical traffic counts on US 93 showed truck traffic at 15 to 20 percent of the total volumes. Currently, trucks on the route constitute approximately five percent of the total traffic. Therefore, previous traffic data was referenced to estimate what the current traffic volumes on US 93 would be without the truck restrictions and to project future traffic volumes (ADOT, DMJM). Traffic counts at the end of 2007 show approximately a 25 percent decrease in traffic volume (ADOT,

Kingman). This may be due to recent increases in gasoline prices and a tapering off of the economy in general.

US 93 Interim Access Management

Prior to the funding of the ultimate access plan, an interim access management plan has been developed to address access and safety needs for the existing at-grade facility. Implementation of the interim plan is expected to evolve over time, as funding becomes available and traffic volumes increase. Implementation of the interim plan should also incorporate the background roadway system that will be needed to facilitate the future construction of TIs on US Highway 93 (ADOT, DMJM).

The following criteria are recommended for the US Highway 93 Interim Access Management Plan:

1. Maintain existing median crossover locations.
2. Provide acceleration and deceleration lanes on US Highway 93 at intersections with heavy traffic volumes and turning movements.
3. Provide dedicated turning lanes on the cross roads at their intersections with the highway.
4. Acquire access rights at selected locations along the route that are currently undeveloped.
5. Develop frontage roads or alternative access ways to reduce direct access to the highway and provide access to US Highway 93 at identified major access points.
6. The minor street approach to each intersection should provide one shared through/left turn lane and one right turn lane.
7. To avoid the construction of new driveways to US Highway 93, require the use of access points identified in the plan.

To provide for efficient intersection operations and to accommodate future growth in the area, dedicated turn lanes are recommended on minor cross roads approaching US Highway 93. However, it should be noted the proposed location of future full access points is based on the recommended minimum spacing and sight distance requirements, and does not reflect an intention to promote development in any particular areas (ADOT, DMJM).

Installation of traffic signals at intersections is not an access management recommendation at this time. It is the intent and desire of ADOT to maintain this segment of US Highway 93 as an un-signalized route. Preliminary traffic projections and signal warrant evaluations indicate that traffic signals will likely be warranted at the intersections of Pierce Ferry Road and Agua Fria Road within the next 20 years. Traffic signals are undesirable on this route; therefore, it is important that access control be implemented and funding be identified for the final design of the ultimate facility (ADOT, DMJM).

Access/Frontage Roads

The following table summarizes the recommendations for frontage/access roads as part of the interim access plan. All proposed improvements to be implemented as warranted by future traffic are noted with an asterisk. Access between mile posts 37 and 37.52 in the vicinity of Eleventh Street in Dolan Springs and between mile posts 57.64 and 58 near Hermit Road are recommended for frontage roads on both sides of the highway.

Frontage Roads for Interim Highway Access

Mile Post	Access Type/Cross Road	Permit No.	Recommendations
37.0 NB	Residential Access	50781	Remove Access - Use Existing Reverse Access Road to Access US 93 at MP 37.52
37.19 NB	Residential Access	43043	Remove Access - Use Existing Reverse Access Road to Access US 93 at MP 37.52
37.3 SB	Ramos Ranch	N/A	Remove Access - Use New Reverse Access Road to Access US 93 at MP 37.52
37.32 SB	Troy Larabee - Business Access	43043	Remove Access - Use New Reverse Access Road to Access US 93 at MP 37.52
37.35 SB	Business Access (Evangillista)	13738	Remove Access - Use New Reverse Access Road to Access US 93 at MP 37.52
37.38 SB	Business Access	N/A	Remove Access - Use New Reverse Access Road to Access US 93 at MP 37.52
37.52 NB	Graded Section Line Road	34916	Maintain Access - Construct New Access for SB Lanes and Construct New Reverse Access Road from MP 37.30 to MP 37.52 (west side)*
57.64 SB	Business Access	N/A	Remove Access - Construct Reverse Frontage*
58.00 NB	Unknown	N/A	Construct Reverse Frontage Road to Serve Adjacent Parcels
58.00 SB	Hermit Drive	N/A	Construct Reverse Frontage Road to Serve Adjacent Parcels

Source: ADOT/DMJM US Highway 93 Access Management Study

Acceleration and Deceleration Lanes

The following table summarizes the recommendations for acceleration and deceleration lanes as part of the interim access plan. These lanes may occur inside or outside the existing ADOT right-of-way and occur from Temple Bar to Sundown Drive. Eight of the twelve lanes serve north bound traffic. All proposed improvements to be implemented as warranted by future traffic are noted with an asterisk.

Decelerations Lanes for Interim Highway Access

Mile Post	Access Type/Cross Road	Permit No.	Recommendations
19.17 NB	Temple Bar Road	8908	Construct NB Accel Lane (outside) and SB Accel Lane (inside)*
22.10 NB	Canyon Sand Access Road	69009	Construct NB Right Turn Decel Lane, NB Accel Lane (outside) and SB Accel Lane (inside)*
43.21 NB	First Street	NA	Construct NB Right Turn Decel Lane, NB Accel Lanes (inside & outside) and SB Accel Lanes (inside & outside)*
45.33 SB	Cottonwood Road	NA	Construct SB Accel Lane (outside)*
45.50 NB	Unknown	NA	Construct NB Right Turn Decel Lane and NB Accel Lane (outside)*
52.73 NB	Chloride Road	46484	Construct NB Accel Lane (outside)*
58.00 NB	Unknown	NA	Construct NB Right Turn Decel Lane, Construct NB Accel Lanes (inside & outside) and Construct SB Accel Lanes (inside & outside)*
58.00 SB	Hermit Drive	NA	Construct Reverse Frontage Road to Serve Adjacent Parcels and Construct SB Right Turn Decel Lane*
58.68 NB	Mineral Park Road	14493	Construct NB Right Turn Decel Lane, NB Accel Lane (outside) and SB Accel Lane (inside)*
62.06 SB	Legend Ranch Road	86348	Developer should be responsible for constructing SB Right Turn Decel Lane and SB Accel Lane (outside)*
65.01 NB	Sundown Drive	12091	Construct NB Accel Lane (inside & outside) and SB Accel Lane (inside & outside)*
65.82 SB	Residential/Business Access	NA	Construct SB Right Turn Decel Lane and SB Accel Lane (outside)*

Source: ADOT/DMJM US Highway 93 Access Management Study

Recent Projects

Along US Highway 93 north bound from mile post 2 to 17, the project is under construction to widen the 15-mile section to a four-lane divided highway. ADOT will maintain security during construction and minimize traffic delays throughout the project. Completion is scheduled for Fall 2010.

In FY 2008 the Pierce Ferry Road intersection lighting project was completed to improve the safety of the intersection.

Recommended Locations for Future Traffic Interchanges

Temple Bar Road is an existing two-lane rural roadway that extends east of US Highway 93 and serves lands managed by ASLD, BLM and National Park Service. The road is primarily used to access Lake Mead National Recreation Area. It is recommended that a future TI be provided at existing Temple Bar Road to serve Lake Mead National Recreation Area. Constructing the TI on the existing roadway alignment will reduce impacts to the environment and aesthetics of this mountainous area. This is a lower priority project for the acquisition of access rights and right-of-way (ADOT, DMJM).

White Hills Road also know as Mohave County Highway 145 serves the community of White Hills, located on the east side of US Highway 93. This roadway is located approximately 9.7 miles south of Temple Bar Road. It is recommended that a future TI be located to access White Hills Road, which will serve the existing developments east of US Highway 93 as well as expected future master planned development such as the Villages at White Hills and the Ranch at White Hills. The recommended TI location will cross US Highway 93 approximately one-fourth mile south of existing White Hills Road in order to avoid any impacts to existing buildings and development in this area. This project has a high priority for the acquisition of access rights and right-of-way (ADOT, DMJM).

Pierce Ferry Road begins at US 93 and extends east to Lake Mead. It serves the communities of Dolan Springs and Meadview and provides access to recreation areas at Lake Mead. Pierce Ferry Road is the only all-weather roadway to provide access from US Highway 93 to Dolan Springs and Meadview. Pierce Ferry Road is located approximately 13 miles south of White Hills Road. It is recommended that a TI be located in this area to serve Dolan Springs and Meadview. The proposed location for this TI follows the existing Pierce Ferry Road alignment. This project has a high priority for the acquisition of access rights and right-of-way (ADOT, DMJM).

Cottonwood Road is less than four miles south of Pierce Ferry Road and currently serves the privately owned parcels west of US Highway 93, which are primarily residential land uses. The existing distance between Pierce Ferry Road and Cottonwood Road is 3.7 miles, which provides adequate TI spacing on US Highway 93. It is recommended that a TI be located at the existing Cottonwood Road alignment. This TI will serve the BLM lands east of the TI and the private development near the highway. West of US Highway 93, this TI will serve a large area of privately owned lands. This project has a high priority for the acquisition of access rights and right-of-way (ADOT, DMJM).

Chloride Road extends east from US Highway 93 and serves the small community of Chloride, as well as Lake Mohave Vista Estates, which begins approximately one-fourth mile east of US Highway 93. Although very few of these parcels have been developed, the section has been subdivided for future residential development and could generate large peak period traffic volumes when built out. A TI at this location will serve the developments likely to occur on the State land in the future, and on the lands south and west of the TI. The west side of US Highway 93 also has the potential to develop with the disposal of BLM lands in this area. It is recommended that a TI be located at the existing Chloride Road junction, providing access to US Highway 93 near Chloride. Existing Mohave County Highway 125, Old Boulder Dam Highway,

will serve as a background roadway that runs parallel to US Highway 93 and can provide an alternative route for vehicles making short trips between locations served by Mineral Park Road and Chloride Road. This project has a high priority for the acquisition of access rights and right-of-way (ADOT, DMJM).

Mineral Park Road provides access from US Highway 93 to the County landfill east of the highway. The BLM traded approximately 20 sections of land in this area west of the highway in 2002, with the majority of this land to be developed as "Legend Ranch," an "un-subdivided development" of lots 36-acres and greater in size. The land within Legend Ranch will be sold for residential development. It is recommended that a TI be located at the existing Mineral Park Road alignment. This location will serve the community of Santa Claus and Legend Ranch, as well as the existing privately owned parcels west and north of Legend Ranch. This project has a high priority for the acquisition of access rights and right-of-way (ADOT, DMJM).

Ranch Road, accessing So-Hi Estates, is located on the east side of US Highway 93 and links the highway at So-Hi Road, which aligns with Agua Fria Road. The latter provides access to businesses and residences west of US Highway 93. This proposed TI location will provide access to the homes and businesses that now use So-Hi Road and Agua Fria Road. By constructing the TI at Ranch Road, however, construction and right-of-way impacts will be significantly less than those that would occur with the TI at the existing Agua Fria Road alignment. This is a lower priority project for the acquisition of access rights and right-of-way (ADOT, DMJM).

Developer Funded TIs - two additional future TI locations have been identified at MP 24.5 and MP 38.0. These locations are based on potential future developments that may occur. Both of these areas have a substantial amount of private land that may develop in the future. If a TI is warranted at these locations in the future, it would be driven by private development. Therefore, the developer(s) would be required to fund the design and construction of the TI (ADOT, DMJM).

These locations do not preclude additional TIs within this corridor, if they are warranted at some future date. Additional TI locations may be needed if a master-planned community or other large development in this area generates the traffic volumes to warrant a TI (ADOT, DMJM).

Ultimate Access Implementation

The ultimate access management plan for US Highway 93 recommends maintaining a minimum two-mile spacing between grade-separated TIs and the purchase of access rights and right-of-way, where feasible, at the locations of the proposed TIs. The interim access management plan provides guidance to begin implementing the background roadway network necessary for implementation of the ultimate plan (ADOT, DMJM). The potential locations for future full access points connect to County section-line roadways that have existing public roadway easements or rights-of-way. Using these roadways will help establish the secondary or background roadway network and reduce direct driveway access to the highway (ADOT, DMJM).

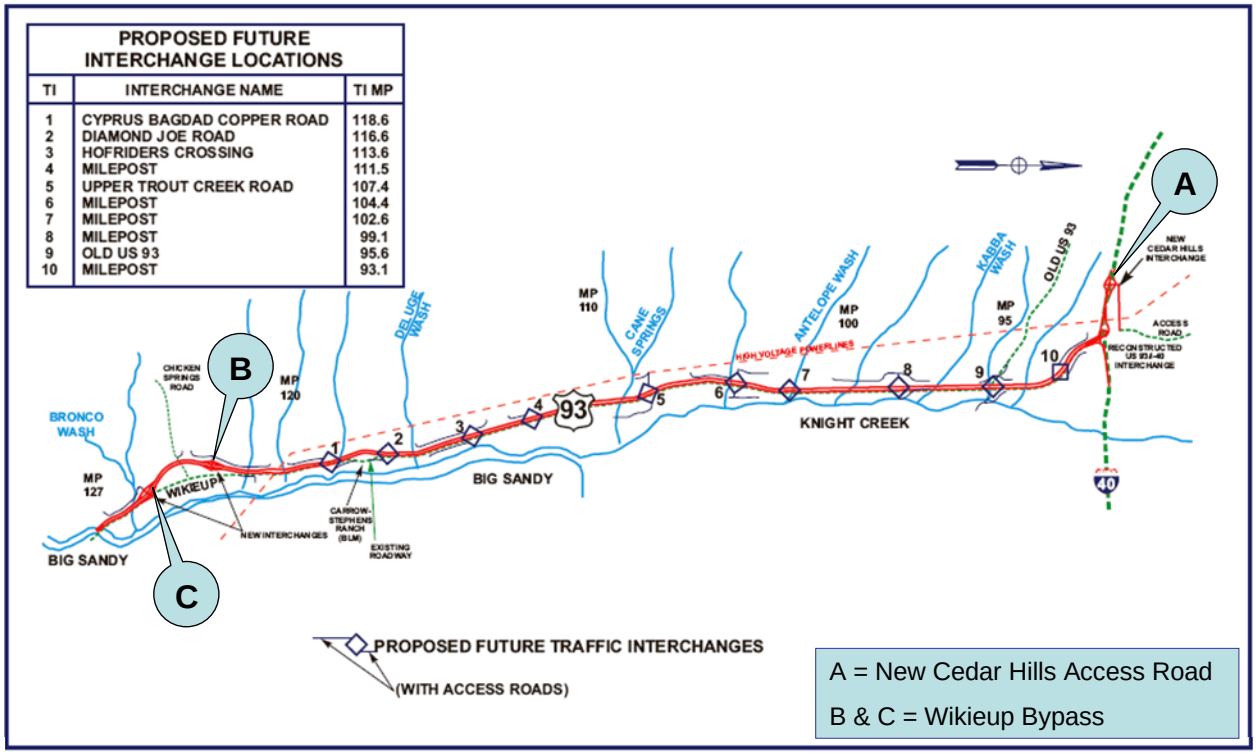
It is recommended that ADOT work with Mohave County to establish access control along this route and develop the background public roadway as part of the Mohave County's General Plan and area plans for this segment of US Highway 93.

South Corridor – City of Kingman to Yavapai County

The US Highway 93/I-40 to Wikieup Location Design and Concept Report published January 2006 and the Santa Maria River to Wikieup Full Access Control Plan published in May 2004 provide a similar set of design and operation polices and procedures for ADOT and the County to follow when approving new access point and projects along the right-of-way. Access points to comply with interim access control are being built as part of the reconstruction of the highway to provide a four-lane divided highway, such as the road widening in the Windmill Ranch area and points south; however, these access points will removed when the TIs are constructed.

Corridor Description

The portion of US Highway 93 starting at the intersection of Interstate 40 (mile post 91) and extending to the Yavapai County line (mile post 149) contains approximately 58 miles of two-lane and four-lane highway - the two-lane portion, much of it constructed in the 1950s, has been



widens south of Wikieup, between mile posts 91 - 102 and 119 - 121. The highway traverses large areas of State Trust and BLM holdings and well as numerous private parcels. Modern developments such as Windmill Ranch and Cedar Hills have access to County roads and do not rely on the highway for direct access. The community of Wikieup, settled in the late 19th century, has numerous access points on the highway. Interstate 40 is an example of a full access controlled roadway (freeway) with traffic interchanges giving access to adjoining lands via a system of frontage roads and County access roads.

Interim Access Management

Direct access to US Highway 93 is currently allowed through permit application to the ADOT Kingman District. There are no restrictions on the number of turnouts requested or the distance between turnouts, as long as adequate stopping sight distances for entering or leaving the highway is present. Properties fronting on US Highway 93 will continue to have reasonable access to the new highway. Direct access turnouts will be right-in/right-out only, spaced no closer than 1/4 mile on four-lane sections. At this time properties fronting on US Highway 93 are large enough that the 1/4 mile spacing provides reasonable access. At-grade median crossovers will be provided at major intersections. Additional median crossovers will be provided as requested by the Arizona Department of Public Safety and to provide reasonable access from all directions to right-in/right-out turnouts, subject to a minimum one mile spacing. Access roads will be constructed as part of the reconstruction to serve as collector roads in areas that cannot meet the 1/4 mile minimum spacing. However, once the highway is reconstructed to a four-lane divided roadway, and as the volume of traffic and the proportion of commercial and recreational vehicles increase, some form of access control will be needed as a matter of highway operation and safety (ADOT, Jacobs). Traffic volumes at the end of 2007 along this portion of the highway were 6,700 annual average trips per day which gives the roadway a level of service B or better for light to moderate traffic volumes.

It is anticipated that the recommended improvements for US Highway 93 will be accomplished over an extended period of time, perhaps 15 or more years, and will involve numerous reconstruction segments. As a practical matter, applying full access control to individual segments as they are reconstructed is not realistic. Applying full access control would also require that additional traffic interchanges and associated access roads be constructed as part of the corridor reconstruction. This would be a significant, additional investment in the corridor improvement program, which cannot be justified at this time. Given these limitations, an interim form of partial access control will be used initially with the provision that full access control will be implemented later as conditions warrant. The access management plan makes recommendations for changes to the current permitting requirements, recommendations for interim (partial) access control and ultimately, full access control (ADOT, Jacobs).

No new interim access roads connecting directly to US Highway 93 will be allowed unless they provide access directly to future interchange locations. In those areas where the current property is located adjacent to a future interchange location, no additional access points will be allowed. If, however, an existing property parcel is ultimately provided access to US Highway 93 via an access road that must cross over several adjacent private property parcels, the Department may consider allowing an interim connection directly to US Highway 93, if the access road is not constructed as part of the initial roadway widening project. New permit applications for direct access onto the highway are subject to revocation when access provisions are converted to full access control (ADOT, Jacobs).

If future subdivision of adjacent properties results in frontages along US Highway 93 that cannot meet the minimum one quarter mile spacing, they will be interconnected by access roads to a common entrance onto the highway, with all costs borne by the property owner(s). In these instances, the access roads will be constructed outside the highway's right-of-way. Mohave

County, the platting authority for such developments, will cooperate with ADOT to ensure that access to the highway will meet the one quarter mile access point spacing, sight distance requirements, and safety requirements. Under full access control exceptions would be granted where existing, contiguous properties could not meet these criteria due to narrow frontages along the highway. The exception would not be granted to accommodate the future subdividing of existing large properties into smaller parcels fronting the highway and where gated and locked access may be allowed by permit to provide access for utility companies or public agencies for intermittent use only (ADOT, Jacobs).

ADOT Responsibility for Interim vs. Ultimate Design Improvements

Interim Conditions: If a public road that is maintained by the County is displaced by the construction improvements, it will be relocated using County standards. Adjustments to existing facilities, such as Cedar Mine Road near Wikieup or the facilities providing access to BLM and Arizona Game and Fish access roads, will remain as gravel surfaces. The only exception is the construction of the new access road to the Cedar Hills Interchange. That access road, as specifically agreed to during public meetings, will be paved upon construction, as it will provide access to a large community. Access to individual properties will be relocated as needed. Private roads, such as the parallel facility on the Windmill Ranch, will be relocated in-kind. Similarly, extensions of private roads or drives will be replaced/realigned in-kind. All turnouts and crossroads perpendicular to the mainline will be paved to the right-of-way limits (ADOT, Jacobs).

Ultimate Conditions: When the highway becomes access controlled, access to the highway will be restricted to the interchange locations. Access that is allowed for the interim condition will be consolidated in some cases using frontage roads. These roads will be constructed following County standards, and will be paved facilities due to the amount of traffic that will be using them. In the negotiations of acquiring the access rights to the corridor, some private driveways that currently have direct access to US 93 will be consolidated, and not use dedicated public roadway easements. If a private property owner must jointly use a new access road with several other property owners, ADOT may have negotiated with the property owners to pave that access road as part of the Right-of-Way Cost-to-Cure Agreement. (ADOT, Jacobs).

Full Access Management

Full access control will be implemented along any portion of the reconstructed US Highway 93 at such time when traffic volumes and safety issues justify the cost of conversion. All turnout permits in effect when full access control is implemented will be revoked and access roads will be provided to ensure that properties fronting on the highway will have reasonable access to the highway via the nearest traffic interchange. Those parcels where access does not appear to be reasonable to maintain are shown in the Appendix C. However, if access is not feasible then ADOT will purchase the property. The funding of traffic interchanges and access roads required to implement full access control will be determined by new demand. For an example, if full access control is required by a combination of increased traffic on US Highway 93 and new development along the highway, then ADOT and the developers may share funding of required improvements. If multiple access points are desired by property owners, or if properties are later

subdivided and require new access, the cost for the additional access roads will be borne by the property owners alone (ADOT, Jacobs).

Ten future traffic interchanges are recommended for conversion of US 93 to a full-access controlled facility (see above). An additional four TIs are proposed between the Big Sandy River and the Yavapai County line. Generally, new grade-separated interchanges will be located near major intersections that have at-grade intersections under the partial access control provisions. Access roads will be extended or added to ensure that properties fronting on US Highway 93 at the time of conversion have access to the nearest traffic interchange if terrain permits (ADOT, Jacobs).

Access Consistent with the Adjacent Land Requirements

Cedar Hills Community: There are several homes located north of the US Highway 93/Interstate-40 interchange that currently gain access directly from the interchange ramp. Direct access to the interchange from this gravel road will be eliminated, and diverted to a new interchange that will be constructed on I-40 approximately 1.75 miles to the west near mile post 70. As this new access road will carry a large volume of local traffic, it will include drainage improvements and be surfaced when it is constructed (ADOT, Jacobs).

Hidden Valley Road: This gravel road currently ties directly into US Highway 93 south of the Round Valley Interchange. It will remain a gravel road to a paved turnout with an interim median crossover until the roadway becomes fully access controlled. When this occurs, a new frontage road will be required from the new interchange at MP 93.1. As this frontage road will provide access to this community as well as several other access points, it will be constructed as a local County road complete with paving (ADOT, Jacobs).

General Improvements south of Windmill Ranch to Wikieup: Access rights will or have been acquired for the entire corridor in preparation for the interim improvements. Access to many local roads will be maintained in many locations as interim access points until the entire corridor becomes access controlled. When the corridor becomes access controlled, all of the permitted interim access points will be terminated, and access will only be granted at the interchange locations. To consolidate the many access points, frontage roads may be necessary as shown in the Design Concept Report plans to provide access to these properties. These roads, if constructed by ADOT with the final improvements, will be paved to County standards. All other interim connections will be adjusted as necessary to maintain access for the interim condition (ADOT, Jacobs).

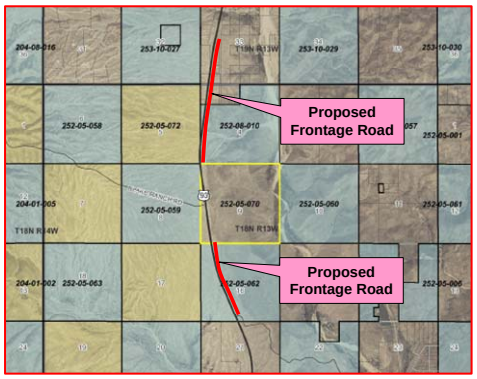
Design and Construction of Frontage Roads or Alternative Access Ways

Access or frontage road facilities may be constructed parallel to and adjacent to the highway facility or can be constructed on independent alignments. They may be improved, public roads with dedicated right-of-way, or may be unimproved roads on privately or publicly owned property to replace current access roads (ADOT, Jacobs).

Much of the property adjacent to US Highway 93 south of Cane Springs Wash within the project limits is public land managed by BLM. Where the public land abuts the highway, access is currently on primitive roads. New or relocated facilities will be constructed to match the size and general design of existing access roads. After construction, ADOT's responsibility for the access road will end and the transfer of improved access road right-of-way and maintenance responsibilities to Mohave County may be initiated in accordance with the State's "Turn back of State Routes Policy." ADOT will work to assist the County with the financial and administrative impacts of the changes on the affected jurisdiction.

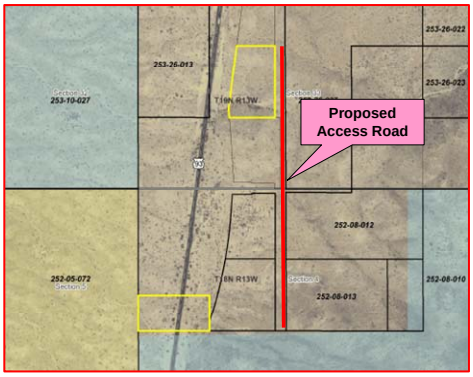
If crossing public lands is necessary to access lands beyond, the acquisition process is the same as acquiring access on private lands. Where access must cross private land or across public land to access private lands where the owner or manager objects to such crossing, ADOT will acquire right-of-way immediately adjacent to US Highway 93 for an access road and construct an improved road to provide access (ADOT, Jacobs).

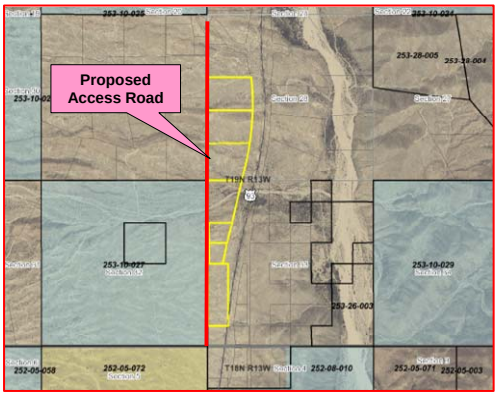
Recommended Access Roads



Between the future Upper Trout Creek Interchange at mile post 107.4 and the unnamed TI to its north (mile post 104.4), lies Section 9, T18N, R13W (APN 252-05-070). This 640 acre parcel is bordered on the north and the south by State Lands. A frontage road can be constructed parallel along the east side of the highway from one of the future interchanges. Coordination with State Lands will be necessary in developing this road (ADOT, Jacobs).

Two parcels east of the unnamed Traffic Interchange at mile post 104.4 are lacking adequate access to the crossroad. Building a road south from the crossroad along the mid-section line that forms the eastern boundary of parcel 252-08-004 will provide that parcel with adequate access to the cross road for the nearby TI. Parcel 253-26-038 can be provided with access by building a road north from the crossroad along the property line running along the eastern edge of the parcel (ADOT, Jacobs).





Several parcels (APNs: 252-23-023, 252-23-026, 252-23-028, 253-26-018, 253-26-031, 253-26-033 and 253-26-036) between mile posts 103 and 104, west of US Highway 93 and south of the "Antelope South" TI at MP 102.6 will have inadequate access. Access can be provided by a new frontage road built on the section line running along the western border of these properties. Given further analysis, this frontage road may be extended to the unnamed interchange to the south at mile post 104.4 in order to give access to parcel 253-26-013 (ADOT, Jacobs).

Future Projects

Several additional four-lane improvements to US Highway 93 are as follows:

1. South Bound Antelope Wash from mile post 101.8 to 104.1, with design scheduled for Fiscal Year 2010 and construction in Fiscal Year 2012
2. South Bound Ranch Road from mile post 104.1 to 106.0, with construction scheduled in Fiscal Year 2009
3. Cane Springs from mile post 106.0 to 108.9 with construction pending.
4. South Bound Wagon Bow Ranch Road from mile post 108.9 to 113.0, with construction pending
5. South Bound Deluge Wash from mile post 113.0 to 116.3, with construction pending.
6. Carrow-Stephens frommile post 116.3 to 119.7 with construction scheduled for FY 2013.

Redesign of Interstate 40/US Highway 93 West Kingman Traffic Interchange

Alternatives for improving traffic flow at the Interstate 40/US Highway 93 traffic interchange in west Kingman are also under analysis by ADOT. Although not within the area plan boundary these improvements are necessary to provide a free-flow connection between the two routes. This intersection, along with the Hoover Dam Bypass and the Wickenburg bypass that connects the Highway 93 to Highway 60, are the last remaining bottlenecks in the roadway system connecting Arizona to Nevada. With traffic volumes expected to double in the next twenty years, based upon a 2009 feasibility study, these portions of the highway will become more hazardous to motorists and reduce the value of the roadway to interstate commerce.

Joshua Forest Scenic Road Corridor Management Plan

As part of the planning process to designate that portion of US Highway 93 between Wikieup and Wickenburg a National Scenic Corridor, a Corridor management plan is being completed to create a vision for the byway, inventory its unique characteristics, features and resources, develop strategies to enhance the natural views and scenery and secure new funding sources. Such a designation will not affect surrounding land uses and will only regulate land within the ADOT right-of-way.

Overview of Mohave County Public Works Department

The Public Works Department is responsible for the maintenance and operation of all roadways, bridges and related drainage structures which have been accepted by the Board of Supervisors for such maintenance. In addition to roadway maintenance, the Department provides for the design and construction of new roadway projects which are scheduled on the Five-Year Capital Improvement Plan through the Mohave County Transportation Commission and approved by the Board of Supervisors. Additional functions relating to roadway operations include traffic control such as signage and pavement marking installation and maintenance and traffic data collection and studies. Public Works administers improvement districts, many of which are established by landowners within a community to improve roadways and construct and operate other civil infrastructure.

Operating Revenue

Mohave County receives revenue for the operation, maintenance, and improvement of County maintained roads and County highways through a distribution from the Arizona Highway User Revenue Fund (HURF). The County's HURF distribution funds Public Works personnel and equipment resources, materials, contracts, and direct costs supporting (1) rights-of-way acquisition and (2) construction, reconstruction, maintenance, repair, and roadside development of roads, streets, and bridges. Sources of state HURF collections primarily include gas tax, use fuel tax, registration, motor carrier fee, operator licenses, and vehicle license tax. Trucks account for the largest contribution to HURF through diesel purchases and fees.

Funding Capital Road Improvements

The Mohave County Transportation Commission, appointed by the Board of Supervisors, makes recommendations to the Board on how to prioritize projects on the Five Year Capital Improvement Road Program. The projects are re-evaluated each year. The Western Arizona Council of Governments (WACOG) receives monies via the Local Transportation Assistance Fund, not inclusive of HURF. These are typically grant allocations that fund a partial amount of the construction project. The creation of roadway infrastructure is also development-driven by the County's development codes, including the Land Division Regulations and Traffic Impact Analysis Standards. This requires developers to fund their share of the infrastructure improvements, particularly roadways that provide access to subdivision or commercial site generated ingress and egress traffic.

Road Maintenance Policies

There are three categories of roadways maintained by the County. County highways established by the Board of Supervisors such as Pierce Ferry Road, can be improved and maintained. Newly dedicated roads that are built in accordance with the County specifications are maintained to their original level of construction, such as an asphalt or hard-surfaced roadway. Unpaved, or native material roadways accepted for maintenance are maintained to a "non-structural" improvement standard; this would include chip-sealed and soil-stabilized roadways. All candidate roadways for regular maintenance must, at no cost to the County, connect to a state or

other County maintained road and have adequate right-of-way of 50 feet or more and sufficient roadway cross-section.

Roads dedicated for use prior to June 13, 1975, not meeting the County standards may be maintained to preserve the status quo. Roads not meeting a County design standard may be petitioned for acceptance into the County Road Maintenance system for tertiary maintenance. The candidate roadway must, at no cost to the County, connect to a state or County maintained road, contain minimum 30-foot right-of-way width, provide a minimum 24-foot-wide rough graded travel way with adjoining 2-foot shoulders (28-foot roadway) plus a drainage ditch to accommodate a 2-wheel-drive subcompact automobiles and be free of brush and large boulders/rocks.

Traffic Control

Approximately 25,000 traffic control devices are placed on County streets and highways. The Department installs and maintains pavement markings in accordance with policies relative to area and roadway characteristics. The Mohave County Traffic Safety Committee, made up of representatives from Engineering, Traffic Control, Road Maintenance Divisions, Risk Management and the Sheriff's Office, considers requests for traffic control devices. In all, the County maintains some 2,028 centerline miles of roadways of which over one third are paved.

Design of Existing County Roadway System

County roadways within and providing links to other communities outside of the area plan boundary, have their origins, in some cases, pre-dating statehood such as Hackberry Road and Pierce Ferry Road which were used to connect the ranches in the Big Sandy Valley to the rail head in Hackberry and to provide ferry boat access across the Colorado River, respectively. Other roadways, for example those in Windmill Ranch and So-Hi Estates, have been established relatively recently by Record of Survey and subdivision plat, respectively. These roads have adequate rights-of-way, connect to other public roads to provide legal access, and may be improved to a native material or a paved standard acceptable for maintenance by the County depending upon the size of the lot created and under which set of design regulations were in force at the time lots were recorded. However, a large number of roadways in the planning area, many occurring only on paper, are the result of "legacy subdivisions" that were created for purposes of land liquidation from the 1920s up until 1965. In some instances, the roadways do not provide access to other public roads and may be land-locked by BLM and State Trust land. These roadways often have substandard width rights-of-way and poorly constructed travel surfaces, if at all, making them difficult to be accepted even for tertiary maintenance by the County. On occasion, land owners will form improvement districts and vote to incur cost to pave roadways and then have them accepted by the County for regular maintenance.

Roadway Inventory and Maintenance Status along Northwest Corridor

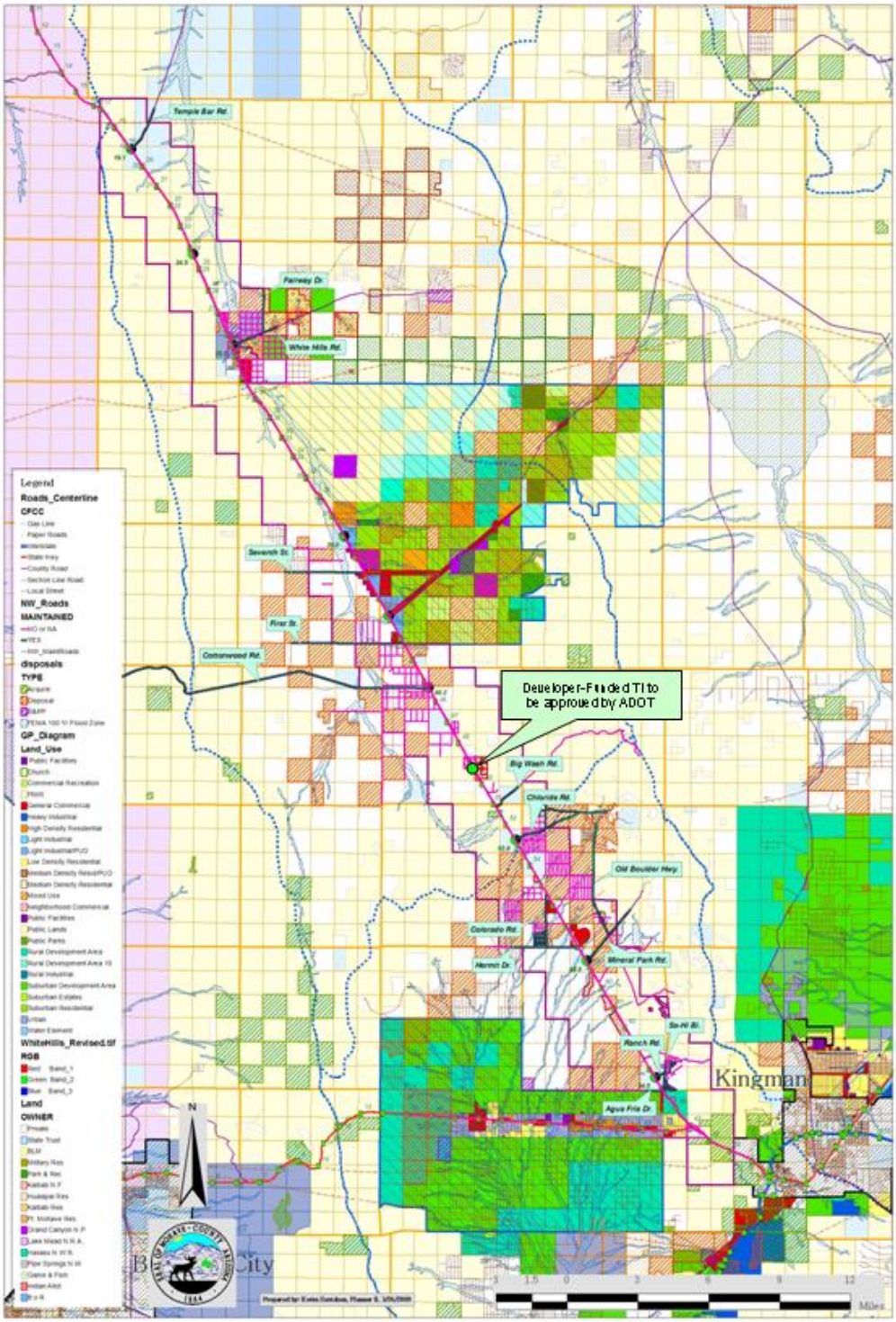
Mohave County Road Types in Northwest Corridor	Paved and Maintained Miles	% Paved	Unpaved but Maintained Miles	Total Maintained Miles	UnMaintained Miles	% Unmaintained	Total Miles*
County Road	8.91	*31.99%*	18.95	27.87	1.63	*5.54%*	**29.50**
Section Line Road	0.00	*0.00%*	1.87	1.87	9.09	*82.97%*	**10.96**
Local Street	5.45	*19.30%*	22.78	28.22	180.35	*86.47%*	**208.58**
Totals	**14.36**	***24.78%***	**43.60**	**57.96**	**191.08**	***76.73%***	**249.04**

There are over 14 miles of paved and maintained major County roads within or connecting to the lands within the Northwest Corridor. These include portions of Temple Bar, White Hills, Pierce Ferry, Chloride, Mineral Park and Ranch Roads as well as certain roadways within the community of So-Hi. These roads serve communities on the east side of the highway, exclusively (see map on following page). The county also maintains nearly 19 miles of native material major roadways including Cottonwood Road, of which 13 miles is outside of the planning area, accessing Lake Mohave, and Old Boulder Dam Highway between Chloride Road and Mineral Park Road. Old Boulder Dam Highway, paralleling US Highway 93, may be improved to relieve traffic volume on US Highway 93 in the future. County designated roads account for roughly 30 miles of the 249 centerline miles of roadway within or adjoining the planning area.

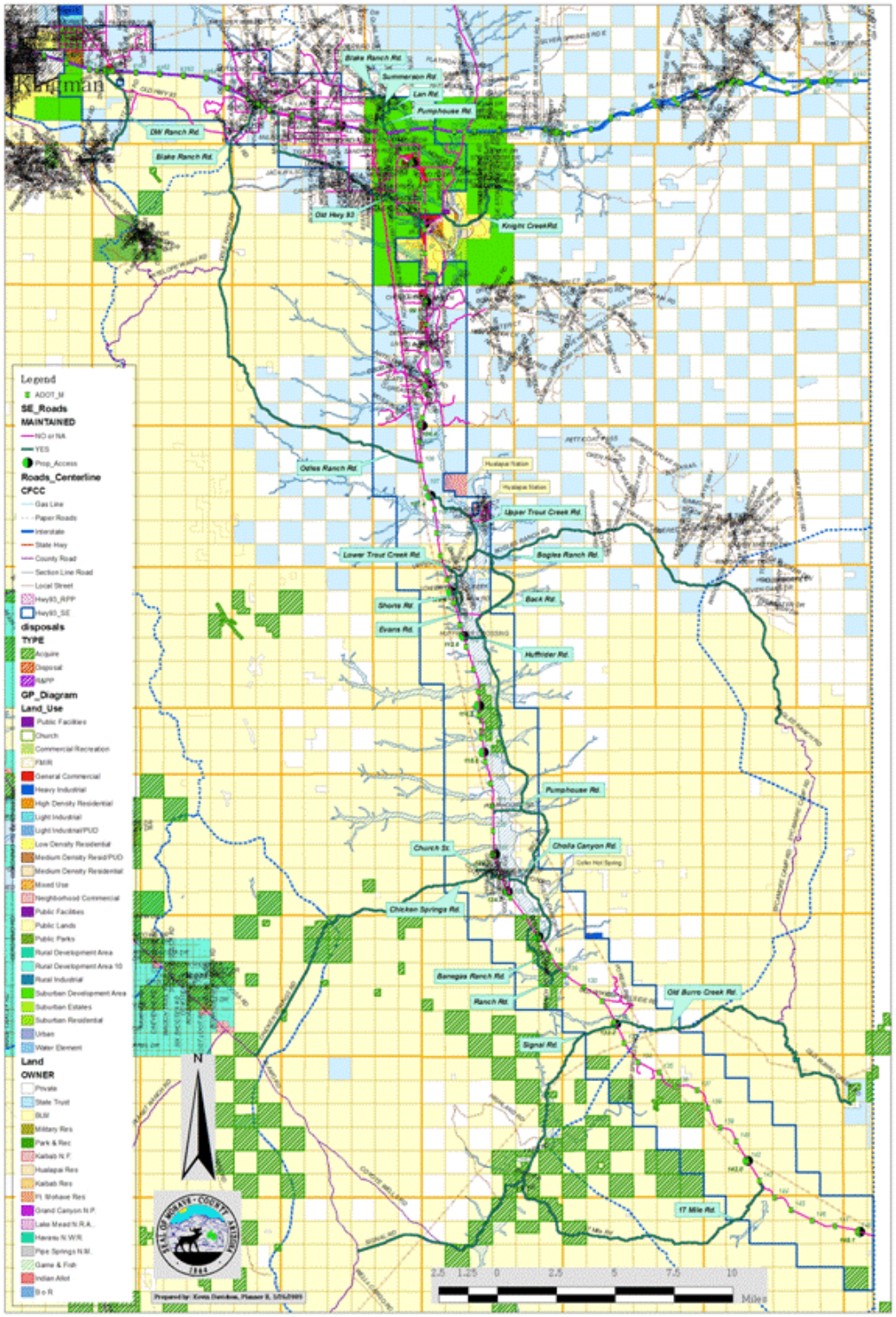
Agua Fria Drive is an example of a section line road which is maintained by the County. Given their one mile spacing, section line roads may serve as major collector or arterial roadways and can be considered major roads when traffic volumes increase.

Nearly all of the local streets that are paved lay within the So-Hi community. Some 23 miles of local streets are maintained to a native material standard and can be found in the greater Dolan Springs area and west of the highway providing access for residents in the northern part of the Sacramento Valley. Colorado and Hermit Roads are two such local streets which exclusively serve the sparsely populated areas west of the highway. However, an 86 percent majority of local streets are un-maintained within the planning area. These 180 plus-miles of roadway are typically serving “legacy subdivisions” on either side of the highway. Such roadways typically have rights-of-way of 40 feet or less with some having only 30 feet of roadway easement. Travel surfaces may or may not be established or have been created by residents taking it upon themselves to create and then maintain to some extent access to their property.

Maintenance Status of Roads within the Hwy 93 Area Plan – Northern Corridor



Maintenance Status of Roads within the Highway 93 Area Plan – Southern Boundary



Roadway Inventory and Maintenance Status along Southeast Corridor

Mohave County Road Types in Southeast Corridor	Paved and Maintained Miles	% Paved	Unpaved but Maintained Miles	Maintained Miles	UnMaintained Miles	% Unmaintained	Total Miles*
County Road	10.67	*7.31%*	135.19	145.86	25.34	*14.80%*	**171.20**
Section Line Road	0.00	*0.00%*	5.62	5.62	1.33	*19.18%*	**6.95**
Local Street	6.73	*26.44%*	18.72	25.44	167.78	*86.83%*	**193.22**
Totals	**17.39**	***9.83%***	**159.52**	**176.92**	**194.45**	***52.36%***	**371.37**

Of the 171 miles of major County roads within and along the Southeast Corridor, 10.7 miles are paved to some standard and include portions of DW Ranch, Blake Ranch, Chicken Springs and Cholla Canyon Roads. Some three fourths of a mile of Old Highway 93 is also surface treated. These roadways are spread along the Corridor to serve residents from Cedar Hills to Wikieup. Over 135 miles of native material County roads are also maintained along the Corridor. Upper Trout Creek, Huffrider Crossing, Old Burro Creek and Signal Roads are among these whose intersection with the highway has been designated for future traffic interchanges. Approximately one half (87 miles) of the County maintained roads connect to destinations outside of the area plan boundary.

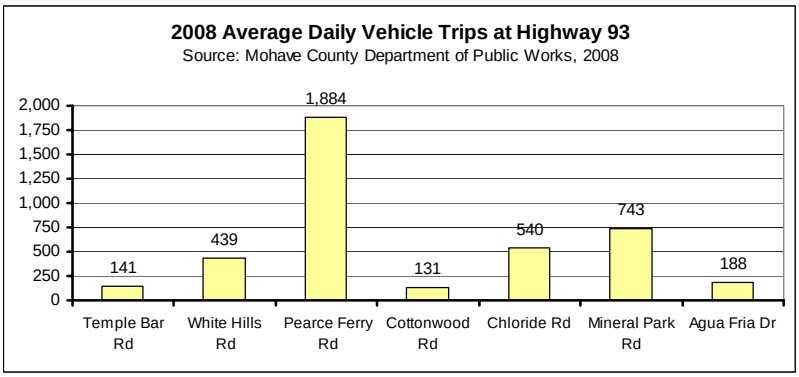
Several maintained roadways within the Cedar Hills area have been identified as having deficient design causing potential safety hazards for motorists not familiar with the roadways. For example, sight distances on Blake Ranch Road at Stephan Road and Blake Ranch Road at Summerson Road require caution when approaching. Due to the current low traffic volumes, motorists typically do not encounter on-coming traffic in these curves; however, as traffic volumes increase due to increased housing densities, the current design will become more problematic.

In some instances, maintained roadways serving these large parcels established by Record of Survey, and subsequent rezone activity to create up to five smaller parcels from the single parent parcel, also have roadbeds which have driving surfaces impeded by the underlying rock base found near the surface. These obstacles may have the unintended consequence of slowing traffic speeds, but also increase the chance of mechanical failure and driver stress as additional vehicles use the roadways.

Knight Creek Road, a section line road, is also maintained by the County to a native material standard and connects the planning area with new the master planned community of Silverado. This roadway is expected to see significant increases in traffic volume as the community is built out over the next several decades.

Local streets such as Nellie and Dubois Drives are frontage roads on the north and south side of I-40 and serve to access commercial centers and residential homes sites east of the Blake Ranch Road TI, respectively. Hackberry Road is also a residential street which has been surface treated and provides access to the highway for residents living in the northeastern part of the planning area. Other County maintained native material local streets cover some 19 miles of roadway and are distributed along the length of the corridor. Similar to the Northwestern portion of the Area Plan, nearly 87 percent of local streets (168 miles) are un-maintained. These streets occur generally north of Odles Ranch Road (mile post 106) and serve new developments of large parcels established by Record of Survey such as Windmill Ranch and Cedar Hills, "legacy subdivisions" predating County review and historic uses such as ranches and mining sites.

Traffic Volumes along the Northwest Corridor

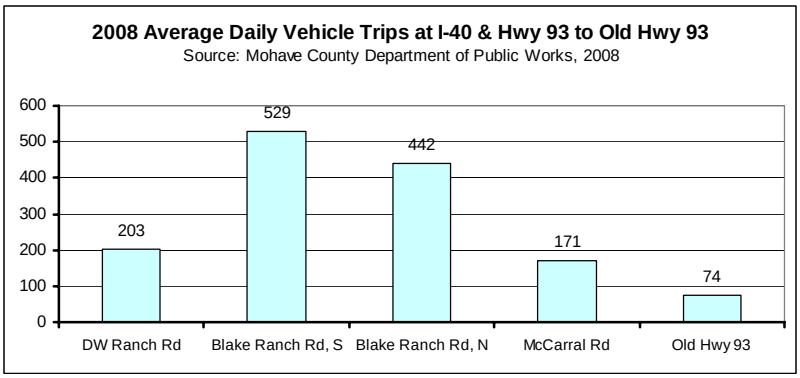


A 2008 traffic count of major roadways intersecting US Highway 93 along the Northwest Corridor showed that Pierce Ferry Road carried nearly as much traffic as the other six roadways combined for which traffic count data was available. These 1,884 trips, which were actually some 650 less than counted in 2007, were made by the residents of Dolan Springs, those living further north along the route in the Greg's Hideout and Meadview, and the tourists accessing the newly completed Grand Canyon West facility on the Hualapai Indian Reservation. Tourists generally arrive via shuttle bus, jeep or in private automobiles. The 25 percent reduction in traffic volume between 2007 and 2008 may be attributed to increased gasoline prices, a general falling off of the economy and the possibility of increased use of tour buses and local residents car-pooling to save on fuel costs.

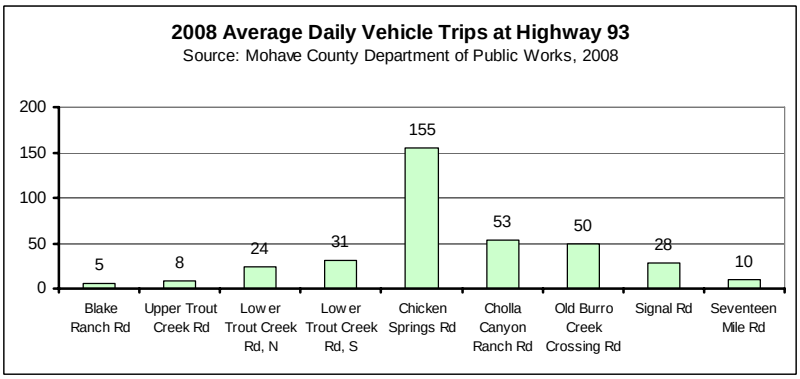
White Hills Road, with a traffic count of 439, has the potential to carry some 10,000 or more trips per day with recent entitlements given to the Ranch at White Hills for 25,167 homes and the Villages at White Hills (20,049 homes). These are multi-decadal master planned communities. However, for every 1,000 single-family homes constructed, an estimated 9,500 trips are generated and include commutes, shopping trips, visitation, mail delivery, trash pickup and other activities. When daily traffic volumes exceed 10,000 vehicles per day, additional lanes may be added to White Hills Road to accommodate the traffic flow. Such volumes may also require the construction of a traffic interchange at the highway intersection.

Cottonwood Road (131 average daily trips) and Agua Fria Drive (188 average daily trips) have the lowest traffic counts and will likely remain unpaved for the foreseeable future. Roadways are considered for paving when traffic volumes reach 400 to 500 trips per day, with heavy truck or bus traffic justifying the lower trip count because of the severe impact of their increased axle weights on native material road surfaces.

Traffic Volumes along he Southeast Corridor



With the exception of Blake Ranch Road, serving the commercial uses along I-40 and the residents north and south of the freeway, traffic volumes on these roadways were less than 400 average trips per day in 2008. DW Ranch Road, at 203 average daily trips serves primarily the commercial activity adjoining the interstate and residents living along the base of the Hualapai Mountans. Aside from McCarral Road, all these roads or surface treated.



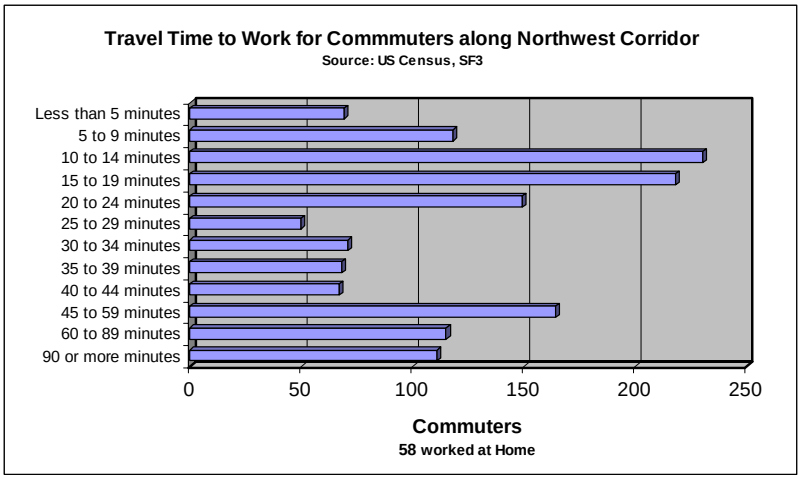
Along the southern portion of the Corridor, south of Old Highway 93, traffic volume on County maintained roads is neglible with only Chicken Springs Road having over 100 average daily trips. These roadways will likely remain in their native material state of maintenance for many decades to come.

The largest significant traffic generator along the highway will be the master planned community of Silverado lying in and around the intersection of Old Highway 93. Nearly 12,000 residential dwelling units are proposed, all of which will access US Highway 93. Akin to the master planned communities in White Hills, this will be a multi-decadal project.

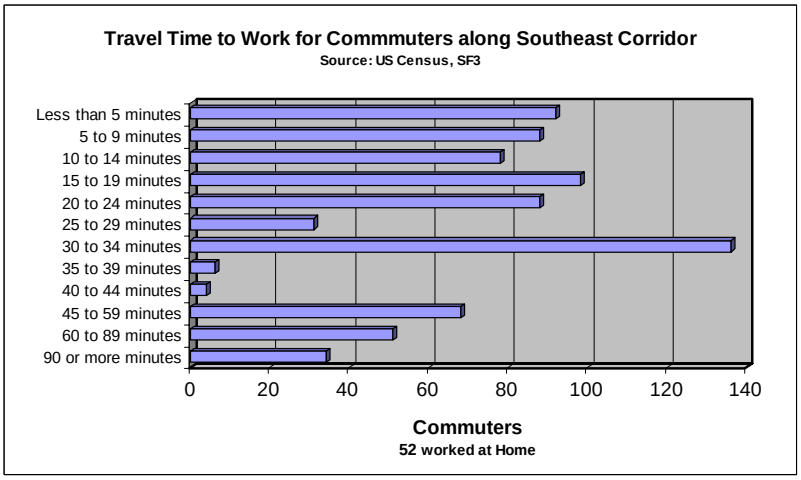
Journey to Work

As part of the transportation demand and needs of local residents, an evaluation of their commuting patterns or journey to work is performed. A review of 2000 Census data revealed that most residents along the corridor work in Mohave County. Along the Northwest Corridor, over one fourth of employed persons commuting worked out-of-state. Given the relative close proximity to the Las Vegas/Henderson metropolitan area, Nevada is the state they are driving to and from. It is anticipated that this percentage will substantially increase with the completion of the Hoover Dam Bypass. Along the Southeast Corridor, nine percent of commuters work in another Arizona county. Given the proximity to the Bagdad Mine, just beyond the planning area's boundary, workers will be most likely commuting to Yavapai County. Interesting to note is that six percent of workers journey out-of-state for employment from this more distant area.

Commuting times for those residents along the Northwest Corridor show a bimodal split, with one cluster under 25 minutes and another over 45 minutes. This pattern is not atypical with the average commute time of US workers being some 21 minutes. US Highway 93 facilitates those seeking employment outside of their communities, with over 370 workers driving for at least 45 minutes. Of the 1,430 workers, 58 worked at home.



A slightly different distribution of commute times is found for those workers residing along the Southeast Corridor. Over half of the 774 workers have commute times under 25 minutes. On the other hand, the largest single group of commuters spend at least one half hour behind the wheel. This could indicate people driving to Kingman or to the Bagdad Mine for employment. Over 150 people spend 45 minutes or more commuting to work, a smaller percentage than those living along the Northwest Corridor; however, a higher percentage of employed persons (52 of 774) worked from home.



The most common method of travel for these 2,200 commuters was the single-occupancy vehicle. Over 1,700 workers drove to work alone. With a dearth of alternate means of transporation due to remoteness from employment centers, much of it caused by a rural density development pattern, difficult terrain, requiring four-wheel-drive vehicles, and varied work hours, single occupancy vehicles may be the only realistic option. Given the above constraints, the next most popular form of transportaion was carpooling. Over 300 persons living along the Northwest Corridor and nearly 150 persons living along the Southeast Corridor carpooled to work. Over 130 people walked to work with 68 along the Northwest Corridor doing so and 64 along the Southeast Corridor following close behind. Given the size of the Census Block Groups, these persons were most likely walking to an employment center in Chloride and central Dolan Springs, both outside of the area plan boundary. However, commercial centers along the Southeast Corridor such as those at DW Ranch, Blake Ranch and Wikieup could be expected to generate most of the pedestrian traffic and reflect a more realistic jobs-to-housing balance.

An Alternative to the Single-Occupancy Vehicle

Providing alternative means of travel to and from communities along the highway, especially for residents in the greater White Hills and Dolan Springs area, who seek employment in southern Nevada, may lie in the creation of a park-and-ride rapid transit system connecting Mohave and Clark Counties. Such a system would most likely employ public bus service with the possibility of a light rail system by the mid 21st Century. Another approach would be to lessen the need for interstate commuting by establishing a sufficient job base in each community to reduce commute distances, making walking and bicycling a more attractive option in a future carbon-constrained economy.

Off-road Vehicles

Off-highway vehicle use and uncontrolled recreation traffic represent some of the greatest threats to sensitive elements of the ecoregion such as the desert tortoise and other reptile, amphibian and small mammal populations. Unauthorized roads and trails are a serious threat in the southern portion of the ecoregion in the Big Sandy Valley. Off-road recreational use is increasing and many people travel from adjoining states to participate in these activities (CWCS).

Vehicular traffic on roads, tracks and trails creates disturbance to natural wildlife behaviors and movements. Lakeshores and stream sides have high levels of human presence during day use and overnight camping. Off-road travel by four-wheel drive vehicles, quads and dirt bikes has caused habitat damage to plants and soils and high levels of disturbance to wildlife. The trend for all these types of disturbances continues to be on the increase (CWCS).

Off-road vehicles currently use a well developed trail system that links the planning area to many sights and destinations beyond the plan boundary. It is recommended that off-road vehicles obtain permission of the land owners, including State Trust Land, limit hours to daytime (after sunrise and before sunset) operation and keep to designated paths and outside of washes and streams to minimize negative impacts on habitat.

Wildlife Crossings

In recognition of the wildlife occurring on both sides of the highway and the need to accommodate some type of wildlife linkage across this major route during future development, over three dozen locations along the 130-plus-mile route have been identified (see table). The criteria for selection included any wash or stream that required a bridge structure, any reinforced concrete box (RCB) structure that conveyed a named wash such as Caterpillar, Dead Rat and Dead Man, monikers indicative of both habitat and flood volumes, structural width of 40 feet or more and/or connectivity via the median to the adjacent structure traversing the opposing traffic lanes. These crossings occur on State Trust, BLM and private lands and provide 13,709 feet of crossing potential with structural span length, measured parallel to the roadway ranging from 10 feet for most RCBs to 700 feet at the Burro Creek Bridge. Further identification of setbacks from such crossings will be identified in the Land Use Element.

Significant Bridges and Structures at Wash Crossings along Hwy 93									
Area	Route	Mile Post	Bridge/Stucture Name	No. of Spans	Max. Span Length Ft.	Structure Length Ft.	Bridge Roadway Width Ft.	Year Built	Sufficient Rating
Northwest Corridor	Hwy 93	20.47	Un-Named RCB EB	3	10	32	61	1936	95.0
	Hwy 93	20.50	Un-Named RCB WB	5	10	53	40	1982	97.8
	Hwy 93	23.70	Un-Named RCB EB	2	10	21	72	1936	87.4
	Hwy 93	23.70	Un-Named RCB WB	4	10	43	38	1982	97.8
	Hwy 93	35.80	Detrital Wash Bridge NB	13	30	382	42	1982	97.7
	Hwy 93	35.80	Detrital Wash Bridge SB	14	30	412	42	1982	97.7
	Hwy 93	39.30	Tex Ring Gulch RCB	3	10	32	73	1935	70.0
	Hwy 93	51.50	Big Wash Bridge SB	5	35	164	44	1972	80.0
	Hwy 93	51.50	Big Wash Bridge NB	5	35	166	40	1992	80.0
	Hwy 93	54.80	Dead Rat Wash RCB	3	10	32	42	1937	65.0
	Hwy 93	59.15	Bismark Canyon Bridge SB	5	35	164	44	1972	80.0
	Hwy 93	59.15	Bismark Canyon Bridge NB	5	35	167	42	1994	80.0
	Hwy 93	60.24	Cerbat Wash Bridge SB	4	30	111	44	1972	79.7
	Hwy 93	60.24	Cerbat Wash Bridge NB	4	35	132	42	1994	80.0
	Hwy 93	60.80	Caterpillar Wash RCB	2	10	24	30	1938	65.0
	Hwy 93	64.63	Wash Bridge SB	3	30	81	42	1961	73.7
	Hwy 93	64.63	Wash Bridge NB	4	35	132	42	1994	80.0
Southeast Corridor	I-40	60.11	Frees Wash Bridge EB	5	30	141	38	1965	97.2
	I-40	60.11	Frees Wash Bridge WB	5	30	141	38	1965	97.2
	I-40	65.29	Un-Named RCB EB	4	10	49	76	1966	65.0
	I-40	65.29	Un-Named RCB WB	4	10	49	76	1966	65.0
	Hwy 93	94.60	McGarry's Wash RCB	5	10	53	40	1965	80.0
	Hwy 93	96.09	Un-Named RCB	3	10	37	30	1957	85.1
	Hwy 93	96.13	Bottleneck Wash RCB SB	4	10	53	40	2005	97.8
	Hwy 93	97.50	Kabba Wash Bridge NB	5	30	141	30.1	1958	57.2
	Hwy 93	97.55	Kabba Wash Bridge SB	3	89	273	42	2005	97.8
	Hwy 93	99.56	Wheeler Wash RCB	2	10	21	35.2	1957	78.9
	Hwy 93	100.34	Wheeler Wash Bridge SB	3	100	302	42	2005	97.8
	Hwy 93	102.17	Antelope Wash RCB	8	10	86	28	1956	83.9
	Hwy 93	100.25	Un-Named RCB	4	10	43	28	1956	83.9
	Hwy 93	102.73	Bat Wash RCB	2	10	21	28	1956	83.9
	Hwy 93	103.41	Dead Man Wash RCB	8	10	86	28	1956	83.9
	Hwy 93	108.63	Cane Springs Bridge	1	35	235	31.8	1961	70.2
	Hwy 93	112.63	Un-Named RCB	6	10	64	41	1954	79.9
	Hwy 93	114.41	Un-Named RCB	4	10	43	72	1954	80.9
	Hwy 93	115.15	Un-Named RCB	6	10	64	36.5	1954	78.9
	Hwy 93	115.67	Deluge Wash Bridge	7	30	202	32	1961	62.5
	Hwy 93	118.00	Un-Named RCB	4	10	43	33	1954	78.9
	Hwy 93	121.48	Natural Corral Bridge	6	30	172	32	1961	71.7
	Hwy 93	122.74	Un-Named RCB	4	10	43	85	1953	77.0
	Hwy 93	124.78	Un-Named RCB	5	10	54	40	1968	80.0
	Hwy 93	125.95	Bronco Wash Bridge SB	3	61	186	32	1961	95.8
	Hwy 93	125.95	Bronco Wash Bridge NB	3	100	304	42	2003	97.8
	Hwy 93	126.80	Big Sandy River Bridge SB	7	125	878	42	2003	97.8
	Hwy 93	127.00	Big Sandy River Bridge NB	7	125	881	44	1993	97.8
	Hwy 93	127.63	Sycamore Creek Bridge NB	6	30	172	32	1961	84.4
	Hwy 93	127.63	Sycamore Creek Bridge SB	3	100	304	42	2003	97.8
	Hwy 93	128.63	Gray Wash Bridge NB	4	30	112	36	1961	86.4
	Hwy 93	128.63	Gray Wash Bridge SB	3	80	244	42	2003	97.8
	Hwy 93	130.10	Un-Named RCB WB	4	10	43	40	1962	83.9
	Hwy 93	130.12	Wash Bridge SB	3	80	244	42	2001	97.8
	Hwy 93	131.80	Box Canyon Wash Bridge SB	3	125	378	42	2001	97.8
	Hwy 93	131.81	Box Canyon Wash Bridge NB	3	125	378	42	2001	97.8
	Hwy 93	135.00	Kaiser Springs Bridge SB	8	230	1646	41.4	2001	92.7
	Hwy 93	135.21	Kaiser Springs Bridge NB	7	213	1318	43.8	2002	97.8
	Hwy 93	139.07	Burro Creek Bridge SB (orig)	1	680	965	30	1965	54.9
	Hwy 93	139.07	Burro Creek Bridge NB	1	700	986	42	2006	97.8
	Hwy 93	144.20	Un-Named RCB EB	4	12	53	42	1999	83.9
	Hwy 93	144.20	Un-Named RCB EB	4	12	53	42	1999	83.9
	Average	Total		4.51	63.93	13,709	42.40	1974	84.50

Goals and Policies for Transportation

Goal 26 Maintain a reasonable free-flow of traffic along all County Maintained within the Planning Area.

Policy 26.1 Reduce trip generation by limiting higher density development in the planning area where the developer is exempted from roadway exactions (5/14/2009).

Policy 26.2 The developer or land owner will provide roadway improvements in proportion to the demand created by the new development, including the improvement of off-site roadways such as arterials, major collectors and frontage roads (5/14/2009).

Goal 27 Reduce automobile dependency for short trips less than one mile.

Policy 27.1 Incorporate trail systems into the design of new subdivisions and work with existing property owners to preserve existing trails with easements when crossing private lands (5/14/2009).

Policy 27.2 Expand shoulder widths on paved roadways to accommodate bicycle and pedestrian traffic (5/14/2009).

Goal 28 Improve existing roadways connecting to US Highway 93 to serve as access or frontage roads to avoid unnecessary highway trips and to provide an alternate access for those properties fronting along the highway.

Policy 28.1 Designate County-maintained roads to serve as arterials (5/14/2009).

Policy 28.2 Prioritize unpaved, arterial-designated county highways for paving within the next 10 years (5/14/2009).

Goal 29 Provide Safe and Efficient Access to US Highway 93 (5/12/2009)**.**

Policy 29.1 Develop frontage roads or alternative access ways to reduce direct access to the highway and provide access to US Highway 93 at identified major access points.

Policy 29.2 Construct dedicated turning lanes on the crossroads at their intersections with the highway (5/12/2009).

Policy 29.3 The minor street approach to each intersection should provide one shared through/left turn lane and one right turn lane (5/12/2009).

Policy 29.4 Locate Traffic Interchanges in accordance with the access needs of residents (5/12/2009).

Policy 29.5 Frontage Road design should respect natural terrain (5/12/2009).

Goal 30 Upgrade roadway network to meet County design criteria for safe travel.

Policy 30.1 Identify roadways with substandard design characteristics (5/14/2009).

Policy 30.2 Petition the Mohave County Transportation Commission to designate identified roadways as County Highways to have them improved (5/14/2009).

Goal 31 Preserve and enhance existing trails and establish new trails throughout the Planning Area to create a comprehensive trail network.

Policy 31.1 Identify existing walking and equestrian trails for non-motorized recreational use (5/14/2009).

Policy 31.2 Identify existing jeep trails for motorized recreational use (5/14/2009).

Policy 31.3 Provide reasonable accommodation of existing trails within new development proposals (5/14/2009).

Policy 31.4 Establish new trails within new developments that link to the existing trail system as occurs (5/14/2009).

Goal 32 Encourage telecommuting to reduce single occupancy vehicular trips to and from work.

Policy 32.1 The county shall provide incentives to local cellular service providers to equip their towers with current data transmission technology and to upgrade that technology as necessary.

Policy 32.2 Encourage employers to allow employees to work from home as practicable.

Implementation Measures for Transportation:

T1. Petition the Mohave County Transportation Commission to designate roadways for regular or tertiary maintenance as necessary.

T2. Petition the Mohave County Transportation Commission to designate certain roadways currently under regular maintenance for County Highway status as necessary.

T3. Collaborate with ADOT on the location of new traffic interchanges along US Highway 93 to ensure each location serves the needs of current residents and projected traffic demands from adjoining land uses and access roads.

T4. Coordinate ADOT and Public Works capital improvement plans to jointly fund new road projects.

T5. Use an improved soil stabilization technique as part of the maintenance program for native material roadways accepted by the County.

T6. The Mohave County Trails Association should contact existing land owners and ask for conservation easements.

T7. Plan for new trails within newly proposed subdivisions by providing for easements and/or open space.

T8. New rezones and site plans for development along the highway will be designed for primary access onto adjacent cross-streets and frontage roads as occurs. When the only available access is directly onto highway, provide right-turn only exiting and acceleration/deceleration lanes as prescribed in the interim access management plans.

T9. Require Traffic Impact Analysis for projects that generate 500 or more automobile trips per day or a have a large number of heavy axel weight vehicles accessing the site.

T10. Encourage the use of wildflowers in highway landscaping following the Surface Transportation and Uniform Relocation Assistance Act, Wildflowers, 23 U.S.C 319 (B) (1987), 23 CFR 752.

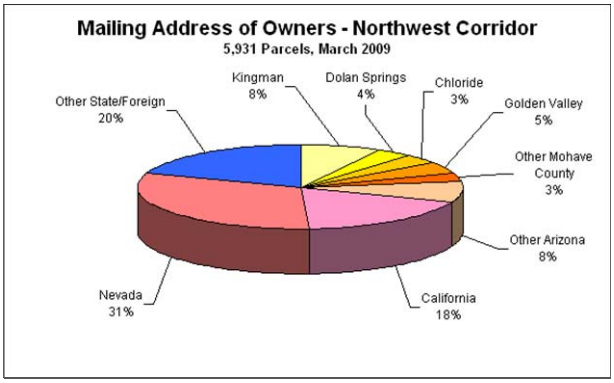
T11. New developments requiring developer-funded Traffic Interchanges to access US Highway 93, for example those proposed in the W ½ of Section 26, T24N, R19W, will be required as part of the rezone action and conditions of approval to have a Joint Project Agreement with ADOT, funding in place and construction of the interchange in progress prior to the issuance of building permits. The interchange must be constructed to the satisfaction of ADOT prior to the issuance of a Certificate of Occupancy for the first building.

Land Use

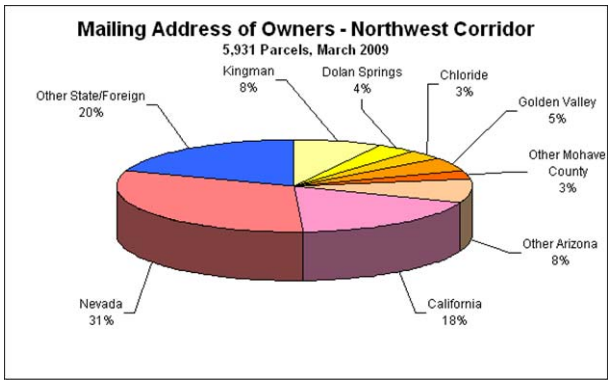
Land Use Element

Overview

With over square miles and over 8,500 individual parcels, the planning area encompasses a diverse and intermingled group of federal, state, and private land ownerships, each having unique and sometimes competing goals and aspirations for the land they own or manage on behalf of the public. Private land is primarily checker-boarded with BLM land along the Northwest Corridor as can be seen in the following diagram. Of the 168 square miles in this part of the Corridor, 100 square miles are under federal management; however, some 15,848 acres have been identified for disposal for private use potentially adding 25 square miles for development. Within the 259 square mile area of the Southeast Corridor, over 27,000 acres of Arizona State Trust lands are present, often interspersed with private land in a checkerboard pattern. These offer a challenge to management since access and control are often limited. The BLM also manages a significant portion of lands south of Cane Springs (see diagram) and has identified 6,350 acres of private land with valuable habitat for acquisition. The Hualapai Nation also has tribal lands adjoining the Southeast Corridor.

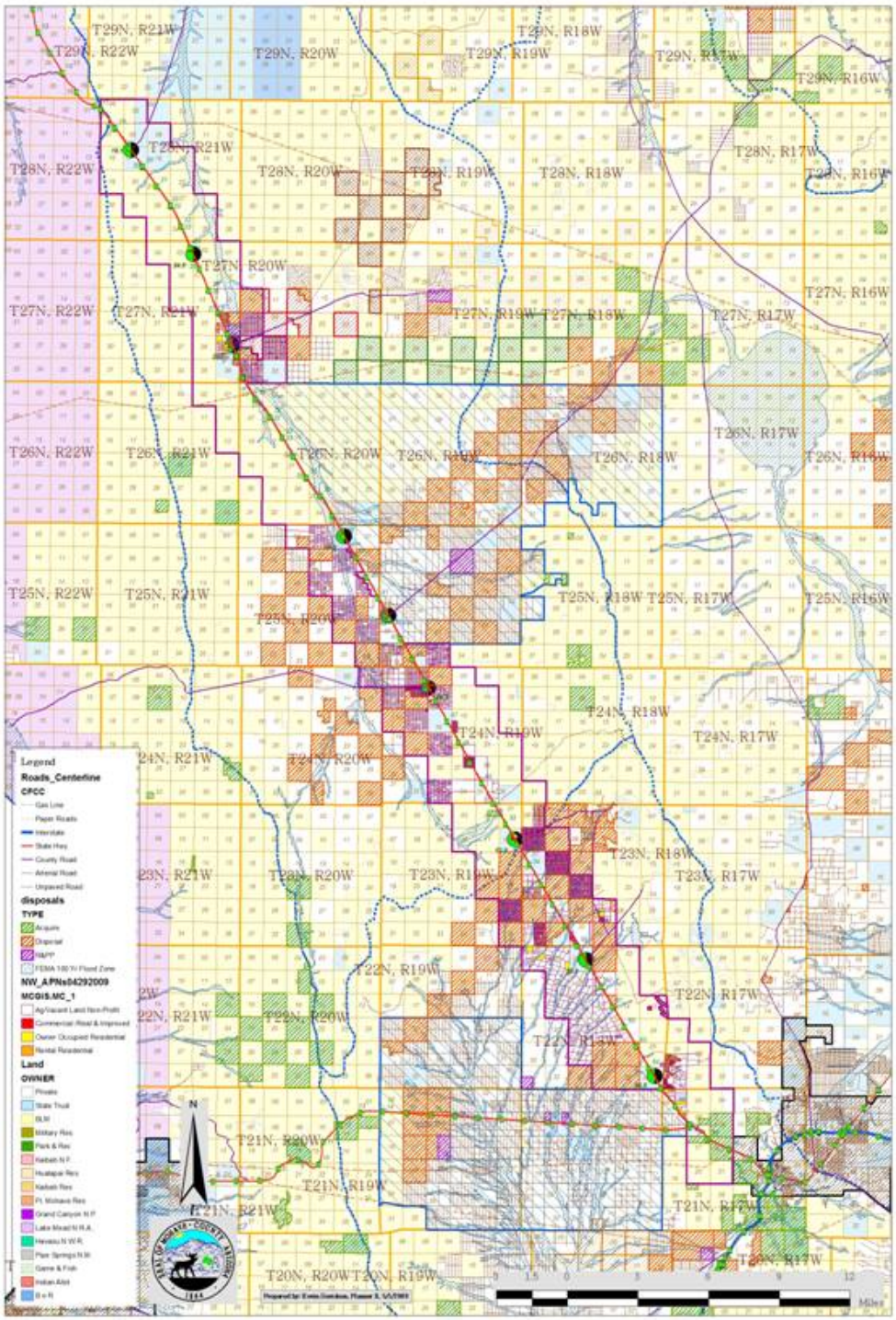


A review of ownership patterns by location of the land owner's or manager's mailing address shows that within the Northwest Corridor less than one third of the owners receive their tax bill at an Arizona address with local residents living in the Kingman, Dolan Springs, Chloride and Golden Valley areas owning one fifth of the parcels. Nearly half of the 5,931 parcels are owned by those residing in California (18%) or Nevada (31%). A large number of absentee owners typically reflect a more speculative market for land use decisions based on the area's perceived growth potential. Land owners residing in the 47 other states and foreign countries account for the remaining 20 percent.

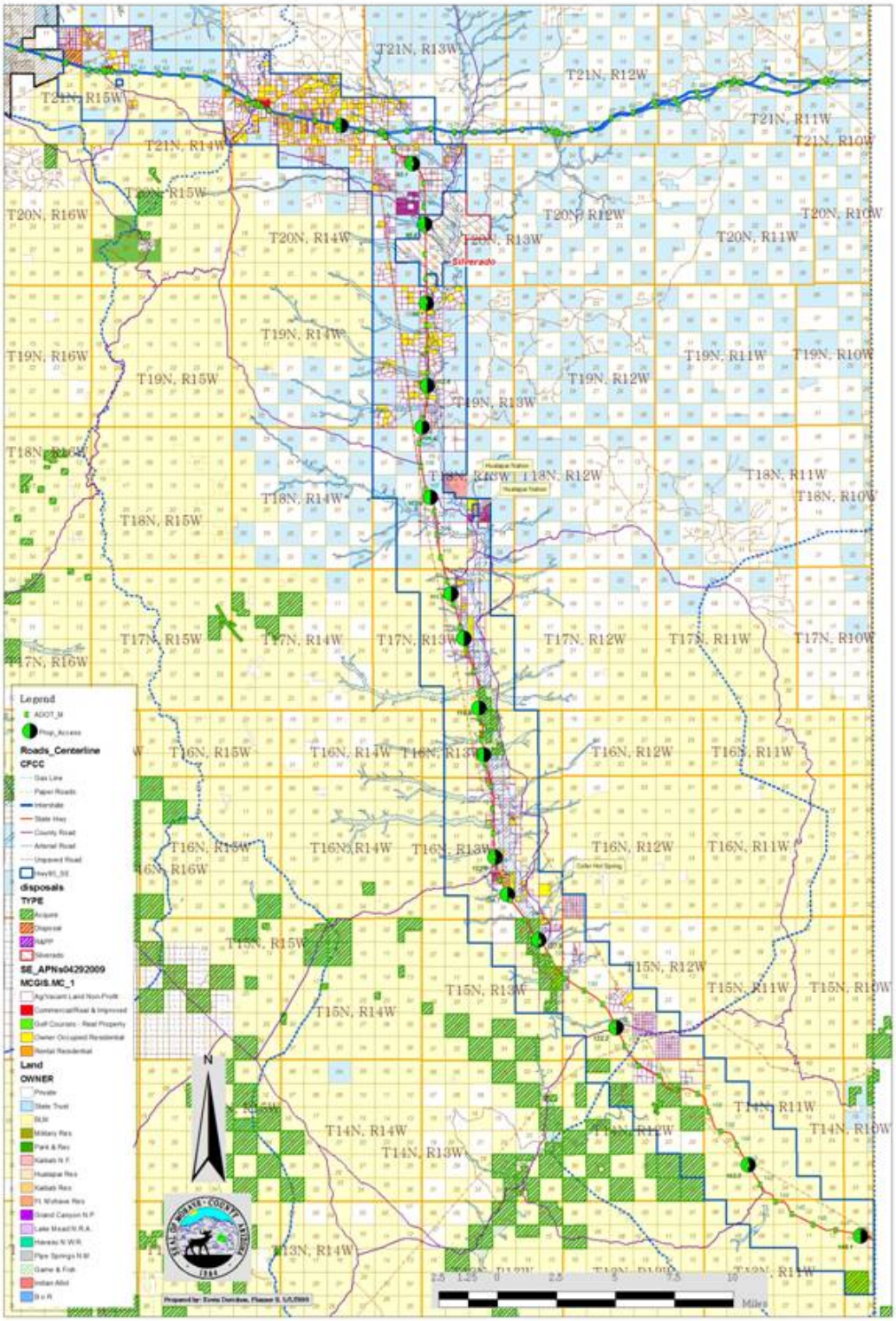


A higher percentage of local land ownership is prevalent within the Southeast Corridor, with 45 percent of land owners residing either in the Kingman or Wikieup areas. Arizona ownership accounts for nearly three-fourths of the 2,575 parcels. By contrast, land owners in California and Nevada make up just nine and six percent of parcels, respectively. Foreign ownership and those in other states accounts for approximately one-eighth or 308 parcels.

Land Ownership and Public Land Status within the US Hwy 93 Area Plan – Northern Corridor



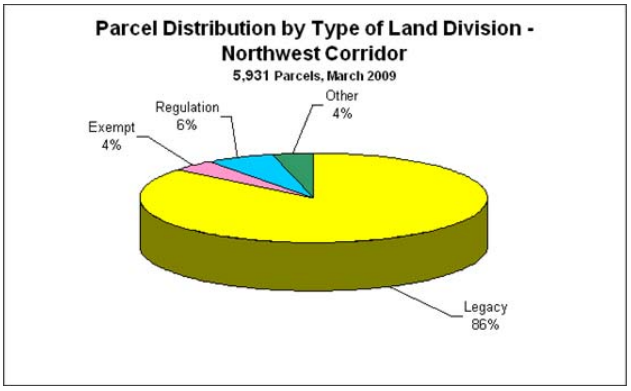
Land Ownership and Public Land Status within the US Hwy 93 Area Plan – Southern Corridor



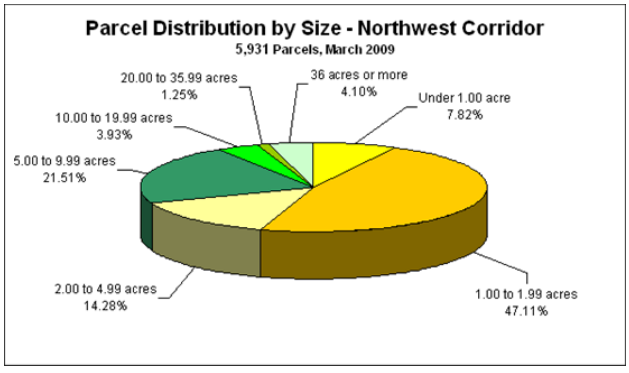
Similar to the wide variety land ownerships along the 130-mile-long planning area are the disparate physical characteristics including topography, depth-to-water, type of vegetation, access to roadways and access to public utilities, which may both limit or enhance various aspects of each parcel's development potential. For example, one parcel located near a major electrical transmission line with sparse vegetation and great depth to groundwater may not be ideal for residential development but may be ideal for a renewable energy project such as a photovoltaic power plant which requires good access to transmission lines, little vegetation to clear and negligible water to operate.

The Division of Land

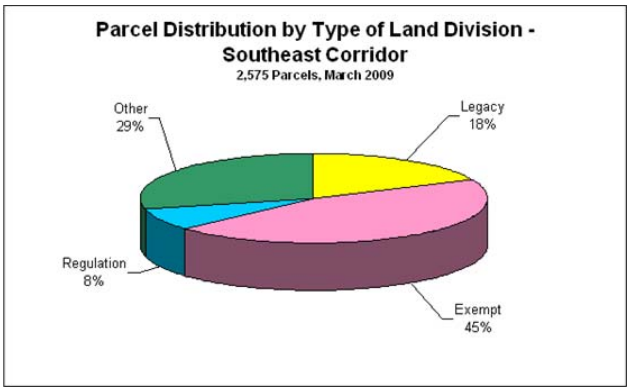
In the early part of the 20th Century, the US government deeded alternate odd numbered 640 acre sections of land to the Santa Fe Pacific Railroad Company as part of land grants issued as incentive and compensation for building the railroad. This created a "checkerboard" land pattern of federal and private land for a distance of 40 miles on either side of the railroad track that crosses northern Arizona. The pattern is predominating in the central part of the planning area between White Hills and Cane Springs where, in the later instance, the "checkerboard" is one of State Trust with private parcels. When the Santa Fe Pacific Railroad Company and other private land owners divested themselves of these properties, they were typically divided sections into smaller parcels and lots for individual sale to buyers throughout the nation if not the world. In Mohave County, up until 1965, and in many places in Arizona as well, this parcelization occurred only on "paper." For example, roadways were depicted but not put in place by the developer. In selling a "home site," community services accepted as a necessity to our modern standard of living were typically not provided. These lots and parcels are our legacy and the subdivisions which created these lots and parcels are classified as legacy subdivisions.



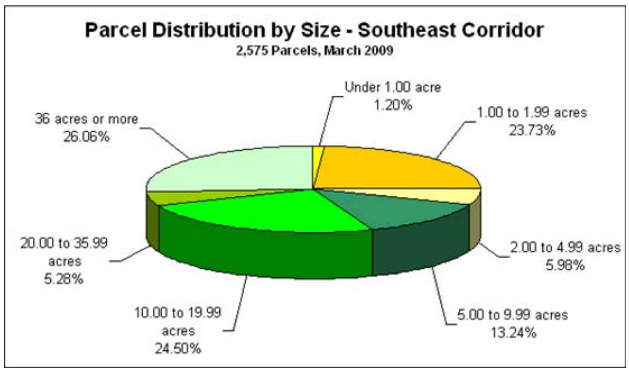
Along the Northwest Corridor, some 86 percent or 5,297 lots and parcels were created with legacy subdivisions such as various units of Gateway Acres (1,666 lots) platted between 1930 and 1965. These lots are typically five acres in size and have been arranged in a regular grid pattern of 128 lots per square mile. Other legacy lots such as those found in Lake Mohave Highlands and Lake Mohave Knolls Estates have further divided a square mile into more 500 one-acre-plus lots. This distribution of lots and parcels by size within the Northwest Corridor shows that more than one-half of lots and parcels contain less than two acres, making some residential development possible if enough land area can be found to drill a well, place a septic tank



and site the home. These small lots pose a considerable challenge for future development because they do not have the requisite public infrastructure, in many cases, and are difficult to consolidate to create larger scale projects due to the sometimes speculative aspirations of the multiple owners making raw land assembly costly.



Whereas legacy lots and parcels are dominate within the Northwest Corridor, they play a much less significant role within the Southeast Corridor comprising only 18 percent of all lots and parcels. The largest of these legacy subdivisions is Trout Creek with 187 lots on 400 acres creating lots from one to ten acres in size. The most prevalent form of land division is by Record of Survey, for example, Cedar Hills Ranches and Windmill Ranches. Being a product of Arizona Revised Statutes, ca. 1986, parcels that contain at least 36.00 acres are considered "un-subdivided" land and may be created without a formal subdivision reviewed and approved by local jurisdictions. These "exempt" parcels are surveyed, staked, title insured and have some form of legal access which makes for a better product than some lots created in legacy subdivisions; however, infrastructure and roadway improvements may or may not be present. Given the large number of exempt parcels (1,169), over 55 percent of the parcels contain 10 acres or more. Land assembly for development, if not constrained by topography and access to roadways and utilities should be less of a factor when compared to the Northwest Corridor.



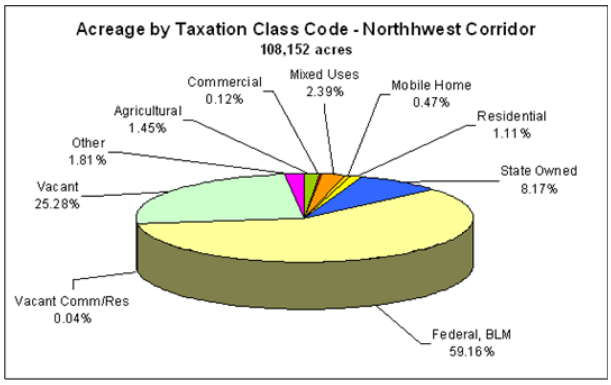
Regulation subdivisions, reviewed and approved under the County's oversight authority, make up less than ten percent of all lots along the Corridor. So-Hi Estates Units 3 & 4 and Triangle Park represent the two such developments along the Northern Corridor. The Orchards in Wikieup and Silverado Acre Estates, north of Windmill Ranch, occur within the Southern Corridor. The subdivisions have met with various levels of success, but the levels of improvement are nearly indistinguishable when compared to development occurring on less regulated neighboring lands.

In addition to the three methods of dividing land described above, occurs the fourth category of "other." Included are large tracts of land that have not been formally divided since their original Government Land Office survey of century or more ago and parcels which are created through the County's minor land division process. The latter process typically occurs on exempt or legacy lots and parcels which are divided, via a rezoning process, to create as many as five additional parcels. In areas with limited services, un-maintained roadways, challenging terrain, excessive depth to groundwater, or poor well yields, and other factors which keep typical

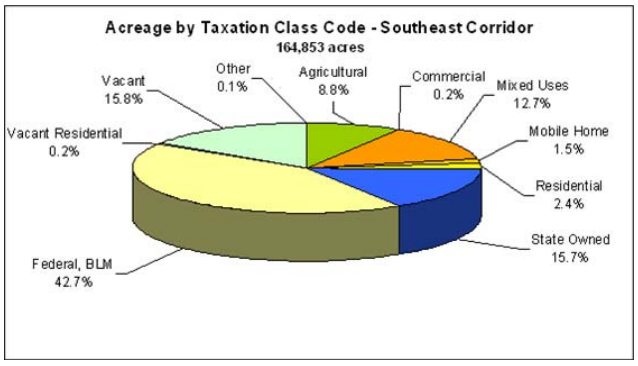
residential development from occurring, creation of additional parcels should only occur when it is a benefit to the buyer's welfare and safety and not when it furthers the legacy of creating a substandard product. This division of land into small parcels for residential purposes is uniquely a part of the development of the United States and enables most to own land rather than rent. The division of land into multiple parcels is one of the most permanent and irreversible actions in our society. The type of land pattern that is established today will affect the rate and direction of growth and nature of land development along the Corridor for decades to come. When the County approves the parcelization of a property it is recording new potential home sites and, in effect, assuring the purchasers that what is shown on the recorded parcel map is true, and fit for normal use regardless of other State assurances or disclaimers.

Existing Development and Property Uses

The built environment of the planning area is most readily described in its land uses and how these uses are placed on individual sites. As noted above, topography, access to roadways, utilities and water, and the desires of the individual owner determine what types of uses are constructed on each site. Even though the planning straddles the highway, the land is mostly undeveloped, vacant land. Within the Northwest Corridor, there are 487 owner occupied homes and 20 rental homes. Only 14 parcels, comprising 49 acres, have commercial improvements. The 91 percent majority (5,410 parcels) is classified as agricultural/vacant by the County Assessor (March, 2009). Further analysis shows that only four percent of the land has some type of residential or commercial improvements. These are typically manufactured homes of various vintage and small commercial businesses fronting directly onto the highway and serving both local and transient needs, respectively. Agricultural land comprises about one and a half percent of the acreage. Vacant private land accounts for just over one fourth of the planning area with State and BLM holdings making up over two thirds of the land area.



For the Southeast Corridor, 469 parcels have residential structure of which a dozen are for rental purposes. Commercial businesses can be found on 25 parcels. These land uses, although similar in number to the Northwest Corridor, comprise a larger percentage of the planning area with only 80 percent of the parcels classified agricultural/vacant by the County Assessor (March, 2009). Residential and commercial uses comprise four percent of the land area with homes being a mix of traditional site built structures and manufactured homes. Commercial business fronts along the highway; however, many are



located around traffic interchanges including travel centers and truck stops. These businesses serve both local needs and those of highway travelers. Over one-fifth of the acreage is used for agricultural and mixed uses that combine residential and business operations on the same site. This is indicative of sole-proprietors who live on-site. Vacant private land (16%), State Trust (16%) and BLM (43%) properties make up the balance of the planning area.

Development Area and Land Use Definitions

The following development area and land use definitions, selected from the General Plan, are provided to familiarize the reader with land terms used in the following pages of the document and represent all land uses which are contained within the planning or are shown adjacent to the planning area on the land use diagrams.

Rural Development Area (RDA) - This is an area where residents presently enjoy a rural lifestyle, wide-open spaces and few neighbors. Generally, properties in these areas are at least five (5) acres in size and many are much larger than this.

Uses include:

Rural Residential (RR): All RDAs are designated Rural Residential, permitting single-family development on lots of five (5) or more acres. Larger lot sizes may be appropriate to accommodate environmental concerns such as steep slopes and washes. The existing rural/agricultural character of these areas should be maintained. Residents in these areas are able to keep their own livestock. Land uses may be served by septic systems, private wells and other services planned at rural levels such as native material roadways.

Non-residential uses may be permitted in Rural Residential areas through the rezoning process. These include Public Parks, Public Lands used for open space and Rural Industrial.

Public Parks (PP): Local, State and National Parks that are publicly owned and managed for the benefit of the general public are included in this category.

Public Lands (PL): This category is used to indicate land in rural areas that is owned by a public agency, but is not primarily devoted to parks and recreational use. Lands owned by the BLM, Bureau of Reclamation and Arizona State Land Department are included in this category.

Rural Industrial (RI): This land use category provides for industrial activities in rural areas. Sand and gravel mining, timber harvesting and renewable energy projects would be considered Rural Industrial activities.

Depending on the location and proximity to improved roadways, other infrastructure, natural features and surrounding land uses, other non-residential land use categories which may be consistent with this planning area include, Neighborhood Commercial,

Commercial Recreation, Light Industrial, Heavy Industrial, Airport Industrial, and Public Facilities/Institutions.

Suburban Development Area (SDA) - This is an area intended for development of lower density residential neighborhoods, but with many of the amenities of urban areas. Suburban lot sizes range from one to five acres in size with a typical lot size of 2.5 acres. Neighborhood commercial uses will be permitted at appropriate locations where they are compatible with adjacent uses and infrastructure.

Uses Include:

Suburban Estates (SE): This suburban land use is characterized by single-family lots ranging from two (2) to five (5) acres in size. Non-residential land uses are not the primary uses in a Suburban Estate area. Septic systems will be the primary means of wastewater disposal. Many lots will use well water, but this will vary based on groundwater conditions and proximity to existing organized water systems.

Suburban Residential (SR): This is the highest density, non-urban land use category, with densities ranging from less than one-half dwelling unit per acre to a maximum density of one dwelling unit per acre. These densities result in lot sizes of one (1) to two (2) acres. While Suburban Residential areas will be mostly single-family, some neighborhood commercial development will be permitted as part of a planned development. Suburban service requirements generally will be lower than in urban areas, but will vary as dictated by site conditions. Septic tanks will generally be permitted, but soil conditions, groundwater quality concerns, proximity to existing utilities and other factors may create the need for urban sewer systems. Minimum road or water system improvement requirements may also vary from one site to the next.

Non-residential uses may be permitted in SDAs through the rezoning process. These include Public Parks, Public Lands used for open space and Public Facilities/Institutions (see below).

Public Facilities (PF): This category includes such public and quasi-public institutional uses such as schools, colleges, fire stations, libraries, government buildings and hospitals.

Depending on the location and proximity to improved roadways, other infrastructure, natural features and surrounding land uses, other non-residential land use categories which may be consistent with this planning area include, Neighborhood Commercial, Commercial Recreation, Light Industrial, Heavy Industrial, and Airport Industrial.

Urban Development Area (UDA) - This area is intended to provide for more intense residential and non-residential development near cities and in outlying communities. While residential densities typically will range from two (2) to five (5) dwellings per acre, high density development of up to 25 units per acre may be permitted. Urban services and facilities will be required for both residential and non-residential development in this area.

Residential Uses Include:

Low Density Residential (LR): This is the lowest density residential development planned within urban areas. It is designed to reflect development between one (1) and five (5) units per acre. This category is used only in UDAs. Since the lot sizes are less than one acre, community sewer or ADEQ approved on-site sewage disposal and water systems are needed, as are other urban services. Low density residential areas will be developed exclusively with single family homes, except where planned developments permitting neighborhood commercial uses are approved.

Medium Density Residential (MR): This urban land use category is used to show areas with five (5) or more dwellings per acre, but less than twelve (12) dwellings per acre. Typical residential uses in these areas are patio and zero-lot-line homes, mobile home parks, mobile home subdivisions, duplexes, some multi-family projects, and, where specifically approved as part of a planned development, neighborhood commercial development. Full urban services are required for medium density residential development.

High Density Residential (HR): This urban residential category is used to show the highest density planned in Mohave County. Development could range from twelve (12) to a maximum of twenty-five (25) dwelling units per acre. Higher density areas provide opportunities to develop uses such as town homes, apartments or condominiums. Mixed use developments incorporating office and retail space may be approved in High Density Residential areas through the planned development process. High Density Residential uses can serve as an effective buffer between non-residential development and lower density residential neighborhoods. Full urban services are required for High Density Residential development.

Non-Residential Uses Include:

Neighborhood Commercial (NC): Neighborhood Commercial uses are those that meet the needs of residents in the adjacent neighborhood. Small-scale retail and service establishments, as well as small office buildings, will be permitted in this land use category.

General Commercial (GC): This land use category is used to indicate locations for retail, service and office uses that serve an entire community or region. Major retail centers,

fast food restaurants, service stations, multi-story office buildings and other intensive commercial uses should be located in areas designated for general commercial uses.

Commercial Recreation (CR): This land use category encompasses a broad range of privately owned or leased facilities for active recreation, where the primary activity occurs outside of buildings. Uses include golf courses, equestrian centers, small and large-scale amusement parks, as well as recreational vehicle parks and campgrounds providing sites for temporary habitation.

Light Industrial (LI): This land use category is intended for a variety of lighter industrial uses. These uses typically involve fewer impacts on the surrounding areas, in terms of noise, fumes, nuisances and hazards, than do the uses described under Heavy Industrial. This category includes uses such as warehousing, wholesale sales and distribution, and light manufacturing. Some related office uses also occur in this category. Most activities associated with uses in this category take place within buildings.

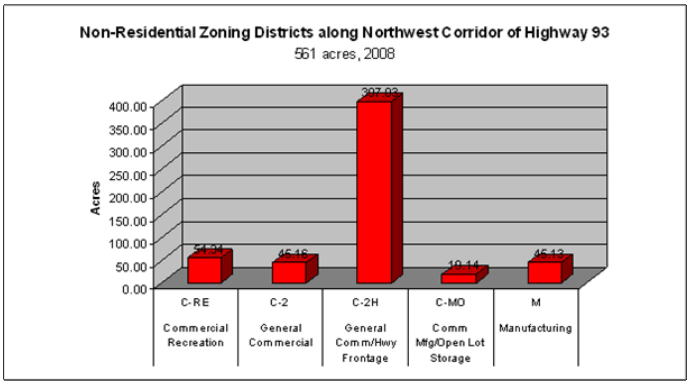
Heavy Industrial (HI): This land use category allows for a relatively wide range of industrial uses, including heavy manufacturing, construction yards and support retail commercial. These uses may have safety, nuisance or environmental effects which make them undesirable neighbors to residential areas. They should be located near or adjacent to major transportation facilities (such as rail lines, airports or freeways). Design standards focus on minimizing the effects of these uses on surrounding development. This land use is generally confined to the I-40 Industrial Corridor, south of the planning area.

Depending on the location, natural features and surrounding land uses, other residential land use categories which may be consistent with this planning area, depending on the location, natural features and surrounding land uses include, Rural Residential, Suburban Estates, and Suburban Residential.

General Plan Land Use Inventories

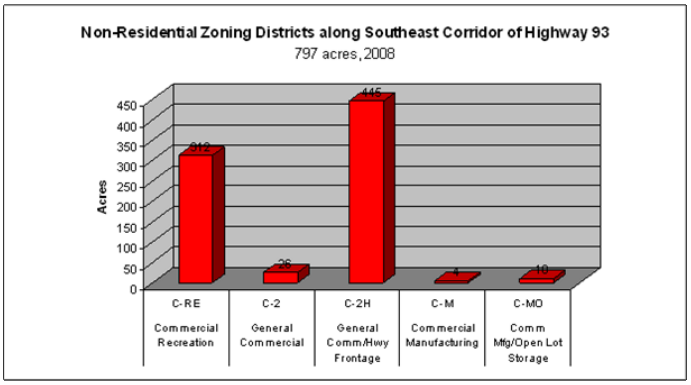
Commercial & Industrial

Northwest Corridor: As mentioned above, the existing 49 acres of commercial development is arrayed along both sides of the highway, typically clustered at the major intersections. The General Plan currently designates 866 acres for General Commercial land uses located at various points along the highway between White Hills Road and Mineral Park Road, the most recent entitlement being over 500 acres designated for a distribution warehouse in and around the legacy subdivision Santa Claus (see land use diagram). A review of commercial zoning districts shows that over 440 acres have commercial zoning (C-2 or C-2H) along the highway. With only one tenth of the commercially designated land developed for a commercial use, there remains a considerable supply for future growth.

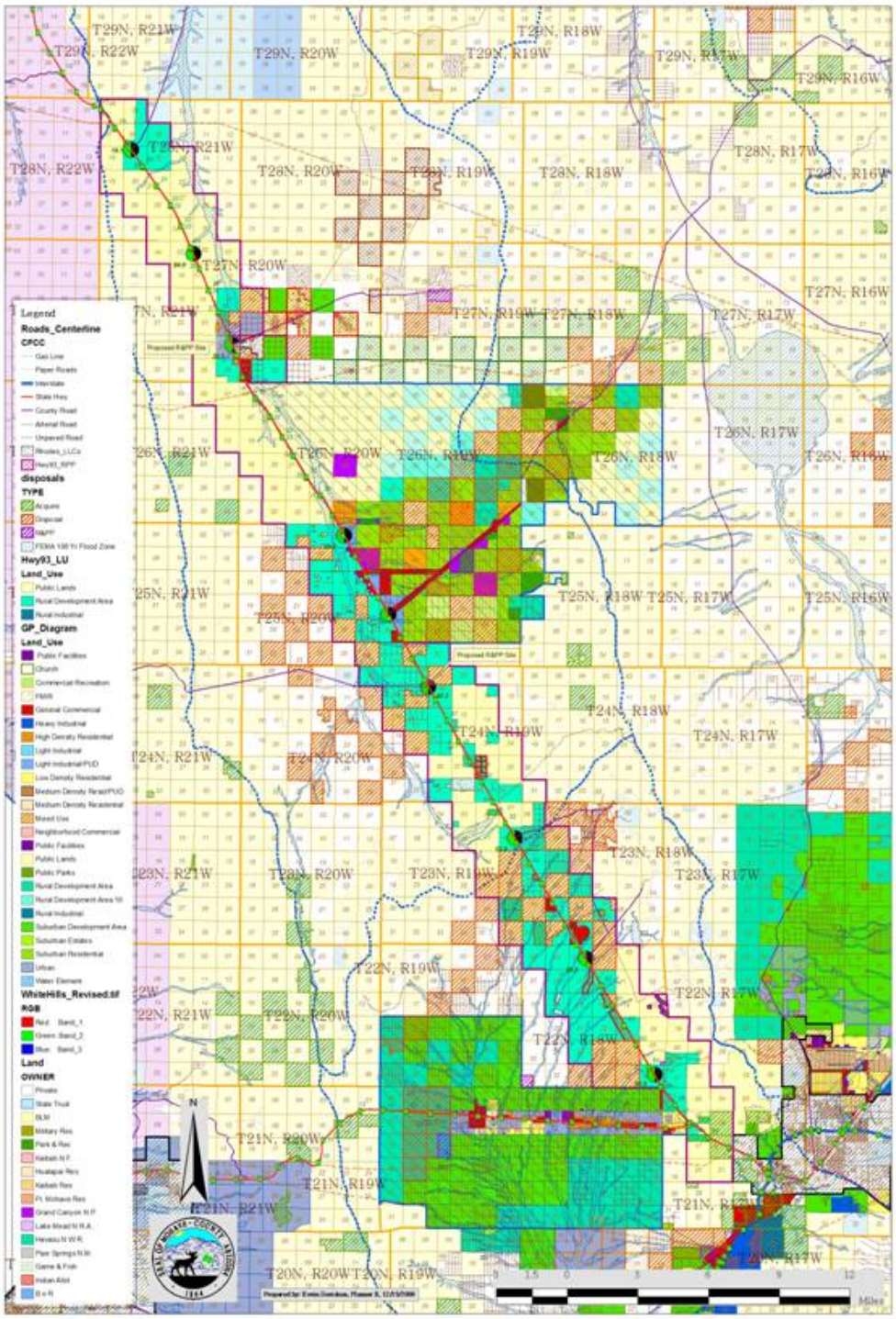


Light Industrial land uses account for a mere two 92) acres within the planning area; however, some 65 acres have Commercial Manufacturing or General Manufacturing zoning. These land uses and zoning districts have been allowed in Urban Development Areas which account for 1,625 acres. These properties are mainly located at the intersection of the highway and White Hills Road. The latter allows for more intense uses that may take place beyond the confines of a building.

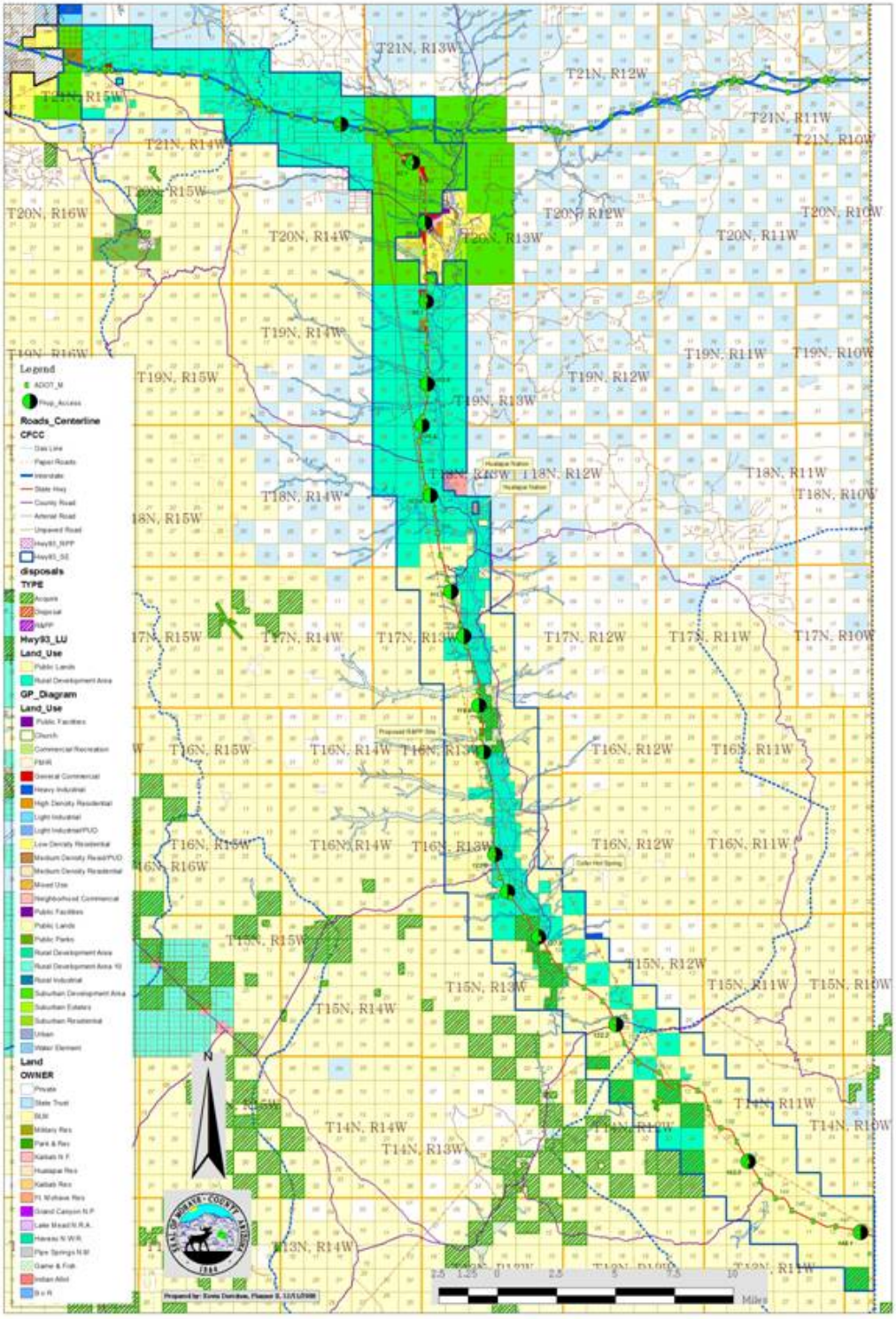
Southeast Corridor: Of the 310 acres designated for General Commercial land use, only those parcels located at the DW Ranch interchange have been developed with a commercial use (see land use diagram). Other significant commercial developments not having a commercial land use designation, due to their being established prior to the adoption of the updated General Plan land use diagram in 1995, but having a commercial zoning district, include the highway serving commercial businesses at Blake Ranch Road and the various businesses in Wikieup and vicinity, many of which predate the establishment of the County's Zoning Ordinance in 1965. Wikieup is considered an "Outlying Community" which allows zoning activity to occur if the proposed land use is compatible and is a logical extension of the town's current development pattern. In all, 218 acres have commercial improvements and nearly 800 acres of land have a commercial zoning designation. Over 200 acres of General Commercial land uses and nearly 600 acres of commercially zoned land is available for future growth.



Existing General Plan Land Uses within the Hwy 93 Area Plan – Northern Corridor

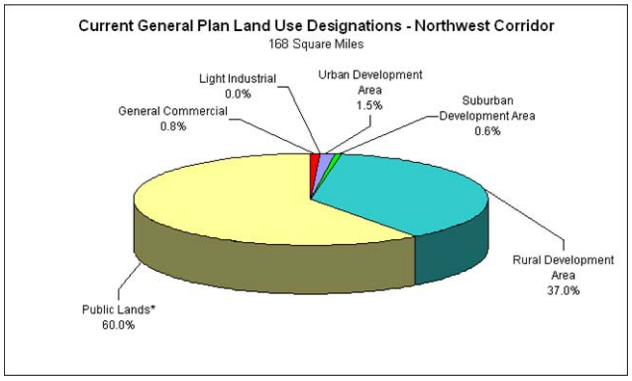


Existing General Plan Land Uses within the Highway 93 Area Plan – Southern Boundary

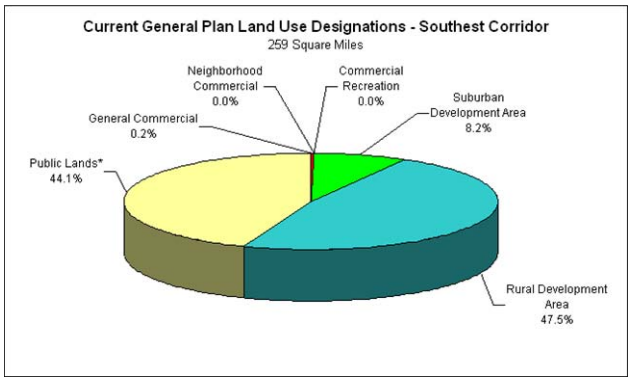


Residential

Northwest Corridor: The Rural Development Area land use designation covers nearly 40,000 acres, the majority of the private lands within the planning area. All of these lands fall within the Rural Residential land use sub-category which covers most all legacy subdivisions regardless of lot size. The Suburban Development Area comprises a mere 640 acres and is located solely in Section 29, T27N, R20W, a section containing the legacy subdivision of Flannery and Allen lying just east of the US Highway 93/White Hills Road intersection. Recorded in 1930, fewer than a dozen of the original 128 five lots have been improved. All Urban Development Area land uses are also located in the vicinity of this intersection and include another 640 acre unit of the Flannery and Allen in Section 19, with half a dozen improvements, and portions of Section 24 and 25, T27N, R21W west of the highway. These lands have seen various levels of improvement but have not maximized their land use or zoning potential, the latter being typically "A," allowing for a general set of land uses ranging from single-family homes to small business ventures, or "AR" that entitles the land owner to pursue agricultural pursuits and homesteads. The residential build out potential ranges between 16,000 and 49,000 dwelling units depending on whether or not the Urban Development Areas seek the highest development density allowed.



Southeast Corridor: Similar to the Northwest Corridor, the Rural Development Area/Rural Residential designation dominates the land uses at 78,623 acres. The Suburban Development Area, covering all of T20N, R13W and the southern eleven Sections in T21N, R13W, excluding Section 24, was created with the 1995 update of the General Plan. Many residential parcels have been created from parent parcels that contain 36-plus acres such as Cedar Mesa Ranches. These large lot developments, exempt from County subdivision regulations requiring developers to build infrastructure up-front, have seen infrastructure improvements only by chance or when the land owners have invested time and money to extend utility lines. These larger parcels are routinely divided, via a rezone (from AR/36A to AR/5A, for example) into smaller lots without improvements because land divisions that create fewer than six (6) lots also do not require improvements from the developer. The General Plan allows for the creation of five-acre minimum lots in Rural Development Areas regardless of how they are developed. This policy has created de-facto subdivisions over time that remain unimproved in many instances. No Urban Development Area designations exist within the bounds of this part of the planning area. The residential build out varies from 22,000 to 29,000 dwellings units.



Public Facilities

Northwest Corridor: Fire stations, Sheriff sub-stations, schools, libraries, and parks do not fall within the boundary of this portion of the planning area. Currently, residents rely upon the Lake Mohave Ranchos Fire Department, the Golden Valley Fire Department and the Chloride division of the Northern Arizona Consolidated Fire District No.1 for fire and other emergency response services. The community of Dolan Springs provides a library, public school and park located three to six miles from the Corridor.

Southeast Corridor: The Cedar Hills School, located east of the Blake Ranch Road intersection on Interstate-40, and the Owens-Whitney School, situated in downtown Wikieup provide education through the eighth grade. The Pinion Pines Fire District, serving the far western part of the planning area in and around DW Ranch Road, does provide limited service along the highway as other demands within the district permit.

State Trust and Public Lands

For both the Northwest and Southeast Corridors, State and federal lands dominate the landscape. As noted by the North River Economic Region (NRER) Economic Development Plan these lands are not presently available for development. The Arizona State Land Department's mission is to "enhance the value and optimize the economic return for the Trust beneficiaries." Under current legislation state trust lands cannot be exchanged with other private or federal lands. Given the mission of the State Land Department, the sale of state trust lands within may not happen for many years until the value is determined "optimal" for a trust land sale. In addition, an abundance of federal lands occur. This public land ownership also makes land assemblage for development particularly difficult, unless the Resource Management Plan designates adjoining parcels for disposal or sale to the public (NRER, p. 71). The NRER plan also asks local planning officials to identify within their general land use plans Bureau of Land Management lands for recreation and public purposes (NRER, p. 73).

Vacant land

Although not a formal land use designation, vacant or undeveloped land is abundant within both portions of the planning area and serves as de-facto open space. Over four-fifths of the planning area consists of unimproved land. These mostly consist of Federal and State Trust lands; however, as noted above, speculative land divisions and marketing plans have dispersed the ownership of myriad privately held lots throughout the country to owners looking for investment or retirement property. Over the decades, these lands have been used for open space, hiking, horse back riding, off-road driving and, unfortunately, wildcat trash dumping. Even so, these vast areas of relatively undisturbed land provide a glimpse into the once undeveloped Southwest and provide some aesthetic value to both residents and visitors alike.

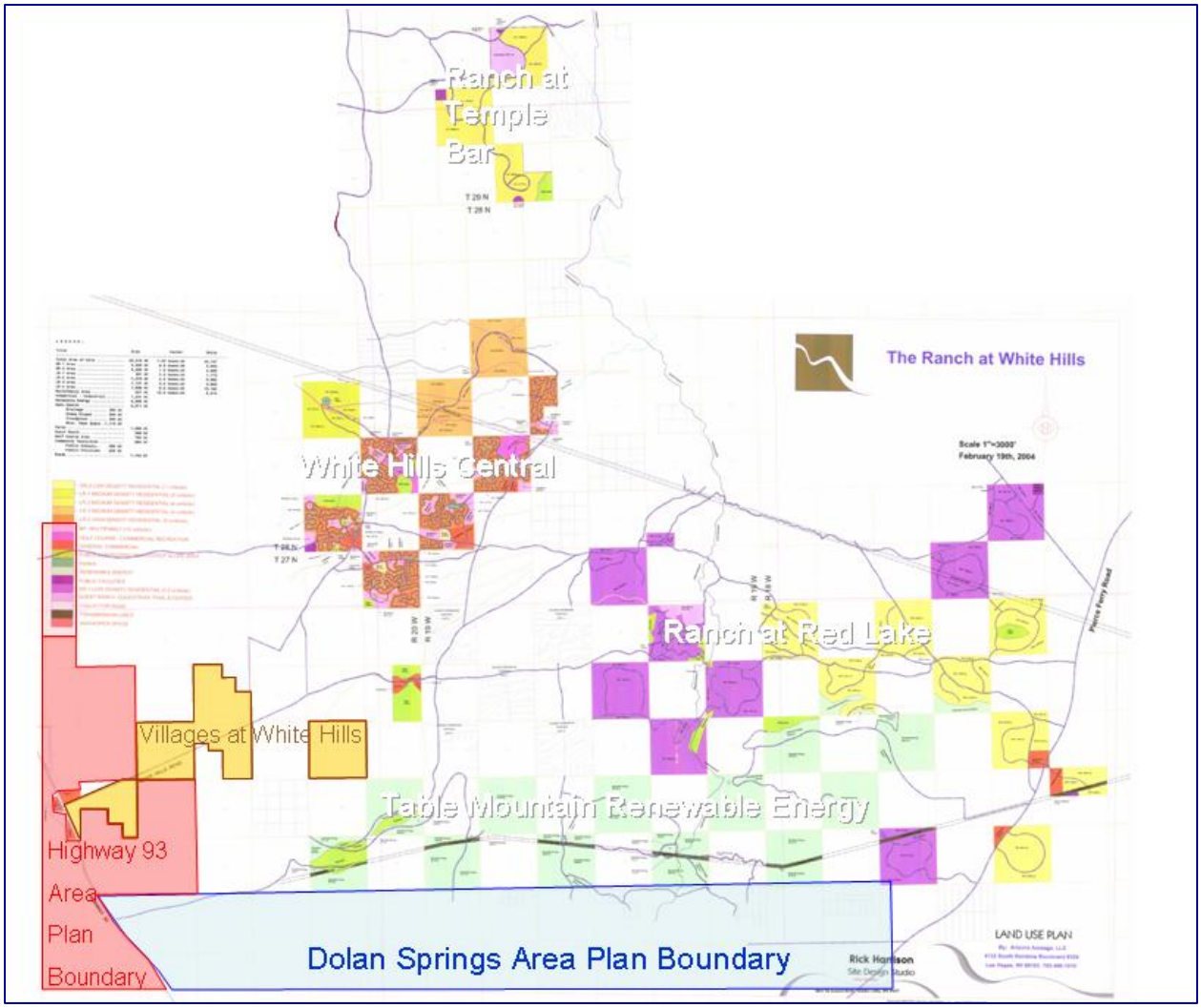
Proximity to New Cities

The Ranch at White Hills Area Plan, adopted in 2004 and later modified and expanded in 2006, encompasses 25,167 acres of privately owned lands in and around the White Hills and northern Dolan Springs area (see diagram).[1] The vast holdings involve over 43 different sections of property located east of U.S. Highway 93 an may contain up to 35,000 dwelling units varying in density from one (1) house per two acres to over ten (10) dwellings per acre (see table). In addition to these sections, the project also identifies 80 acres of proposed commercial development at White Hills Road and Highway 93, and further site-specific commercial development property along Pierce Ferry Road. These Area Plan properties can be accessed directly from U.S. Highway 93 at four (4) major routes including White Hills Road, Pierce Ferry Road, the proposed Mardian Parkway at mile post 24.5, and from Temple Bar Road to the north. The Area Plan is intended to develop in a staged manner, with varying densities, varying development standards, environmentally sensitive recreational and transportation alternatives and opportunities, and responsible natural resource management and use. The long term vision of The Ranch at White Hills will emphasize dynamic quality standards and the development of a "Sense of Community" – a place where people can work near where they live (Ranch at White Hills Area Plan, 2004).

The Area Plan is divided into four (4) distinct sub-areas. The majority of the project density proposed in this area plan is to be located within the White Hills Central region. This sub-area will be urban in nature with plans for required infrastructure, public sites, recreational and commercial opportunities. The second planning area, the Ranch at Temple Bar, includes the northern most Ranch properties and is accessed by Temple Bar Road. The central feature of this planned area includes a 220-acre guest ranch site. The third development area includes the properties within the Ranch at Red Lake plan area. These properties constitute the eastern half of the overall Ranch at White Hills Area Plan, and have additional access directly from Pierce Ferry Road. The plans for the Ranch at Red Lake area include site-specific commercial development along Pierce Ferry Road, which also supports the adjacent Dolan Springs Area Plan service area. Access to the sub-area will be from either White Hills Road or Pierce Ferry Road. The fourth planning area, the Table Mountain sub-area encompasses the entire southern region of The Ranch at White Hills and is intended to be used specifically for renewable energy opportunities. solar, wind, and water recharge opportunities (Ranch at White Hills Area Plan, 2004).

[1] Major General Amendments and Area Plans adopted per BOS Resolution Nos. 2004-536 & 2004-537 and 2006-648 & 2006-649.

The Ranch at White Hills



The Ranch ar White Hills - 2004					
Land Use Designation	**Description**	**Acreage**	***Percent***	**Dwellings**	**Dwellings/Acre**
Open Space	Natural areas and preserves	2,511	*10.0%*	NA	NA
Parks	Neighborhood and community parks and trails	1,008	*4.0%*	NA	NA
Commercial Recreation	Guest ranches and golf courses	552	*2.2%*	NA	NA
Public Facilities	Schools, police & fire, stations, utility facilities, civic buildings and churches	680	*2.7%*	NA	NA
Suburban Estate	Suburban style lots of 2 acres	4,090	*16.3%*	2,045	0.5 units per acre
Suburban Residential	Suburban style lots of 1 acre	4,060	*16.1%*	4,060	1 unit per acre
Low Density Residential	Single family homes	2,290	*9.0%*	7,353	1-5 units per acre
Medium Density Residential	Single family, patio homes, manor homes and town homes.	2,496	*10.0%*	15,799	5-10 units per acre
High Density Residential	Condominiums and apartments.	547	*2.2%*	5,470	10+ units per acre
Neighborhood/General Commercial & Industrial	Retail, services and offices oriented to meeting the local/sub-regional neighborhood needs.	1,201	*4.7%*	NA	NA
Renewable Energy	Wind, solar, water recharge	4,584	*18.2%*	NA	NA
Roads	Rights-of-way	1,148	*4.6%*	NA	NA
Total		**25,167**		**34,727**	**2.58 per acre**

The Villages at White Hills Area Plan, approved by Mohave County in 2005, is designed to serve as Arizona's residential and commercial gateway to the Las Vegas metropolitan area.[2] The site encompasses the area east of U.S. Highway 93 on either side of White Hills Road, including Sections 20, and 23, and portions of Sections 16, 21, and 30, for a total of 2,727 acres (see land use diagram). The site is designed to be a self-contained community providing affordable homes for commuters to the Las Vegas metropolitan area. This community will serve the housing needs of residents who work in Las Vegas by providing up to 20,042 dwelling units of various densities (see table). A commercial area is planned at the entrance of The Villages at White Hills along U.S. Highway 93. This commercial area, which could include retail establishments such as outlet malls, will draw not only residents of The Villages of White Hills but also travelers between Phoenix and Las Vegas.

Both residential and commercial developments along U.S. Highway 93 will benefit from the scheduled completion of the Hoover Dam Bypass, which is expected to reduce commuting times from the Las Vegas Valley to White Hills from an hour to about 45 minutes. In addition, the U.S. Highway 93 Corridor will serve international trade. Commercial areas along the corridor are expected to benefit as logistics and trade centers arise.

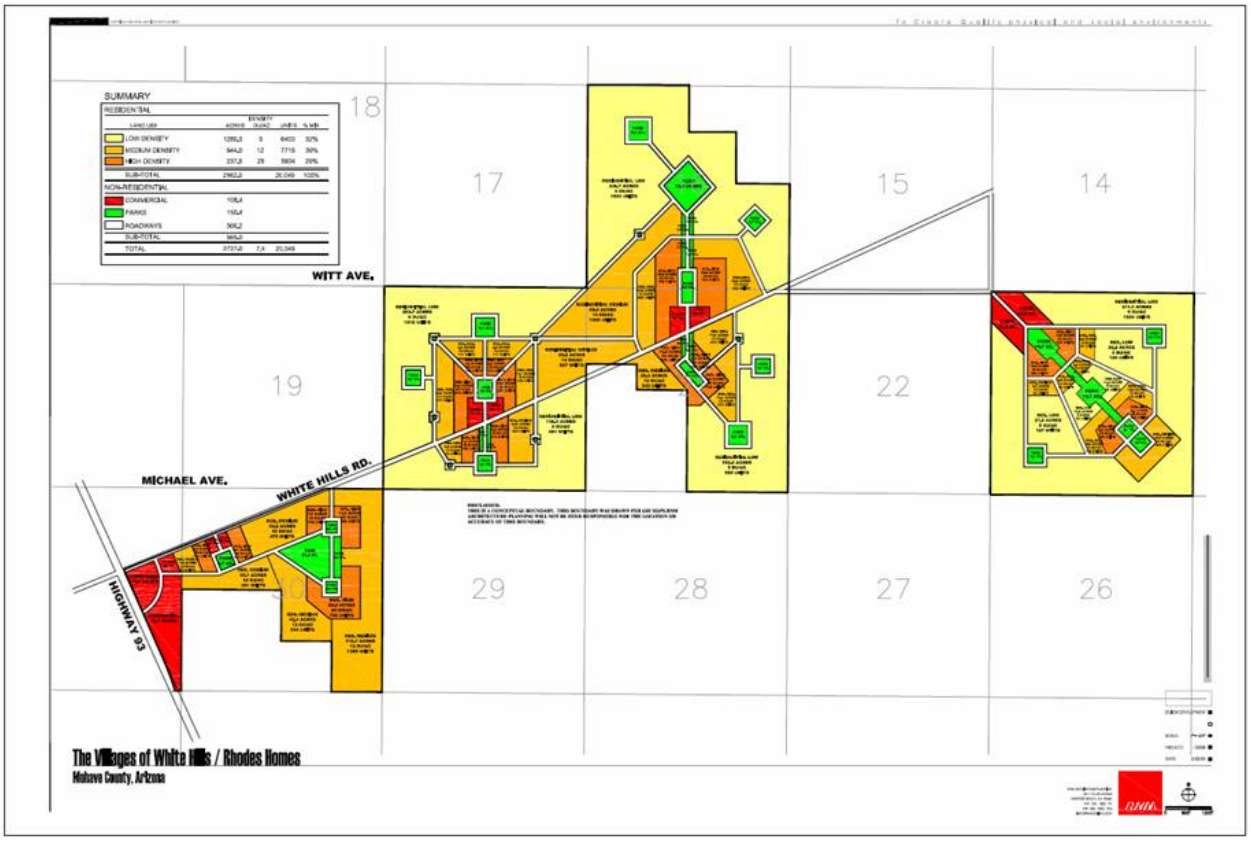
The growth of The Villages of White Hills assumes that large numbers of families, working single people and retirees will choose a location that places them within close proximity to the vibrant Las Vegas metropolitan area, but allows them to live a more rural lifestyle in homes they can afford. Eventually, The Villages at White Hills will investigate incorporating as a city under applicable state law, as population growth justifies incorporation.

Silverado, the last new city approved by Mohave County in 2006, is planned to be a gateway to the eastern part of the County and the first major city encountered for those traveling from the Phoenix metro area.[3] The Area Plan includes approximately ten (10) square miles in T20N, R13W, situated around the intersection of U.S. Highway 93 and Old Highway 93, south of Interstate-40 (see diagram). The Area Plan designates over 3,000 acres for low, medium and high density residential development (see table). In addition, 113 Suburban Estate lots are planned on 284 acres. Commercial uses will utilize 390 acres and parks and open space will comprise 386 acres. Silverado will offer affordable housing and amenities for those wishing to retire to the Southwest and for those who wish to commute to the Kingman area.

Current status of the Silverado Area Plan (pending after 6/10/2009 Planning and Zoning Commission meeting).[4]

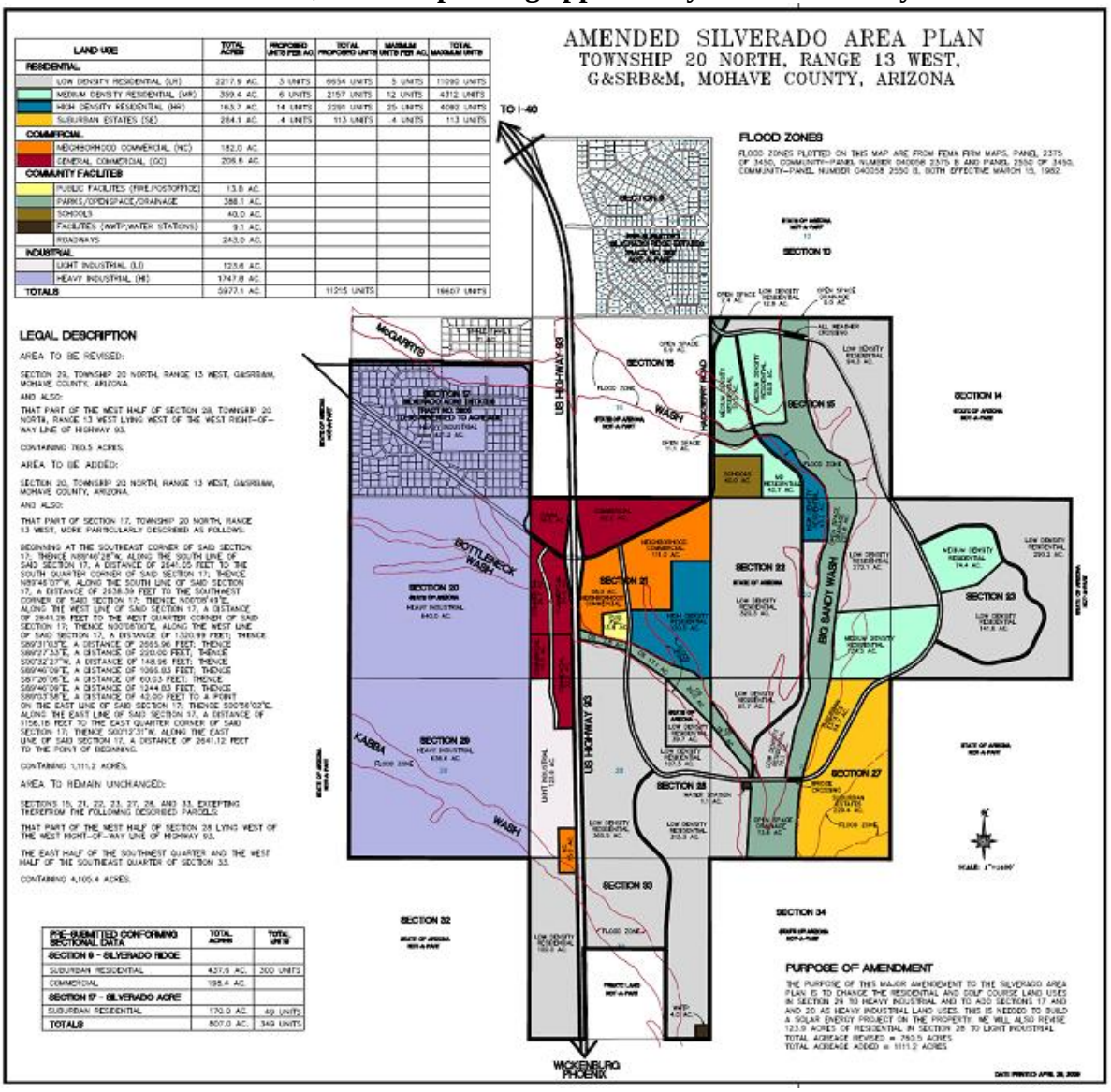
[2] Major General Amendment and Area Plan adopted per BOS Resolution Nos. 2005-607 & 2005-608.
[3] Major General Amendment and Area Plan adopted per BOS Resolution Nos. 2006-650A & 2006-651A
[4] On May 1, 2009, the original applicant requested the Silverado Area Plan be expanded to add Section 20 and approximately 480 acres of Section 17 to the Area Plan. In addition, the applicant would also remove the golf course and adjoining residential uses in Section 29. The additions and modifications are necessary to accommodate a 200 megawatt concentrating solar parabolic trough power plant. A new light industrial land use on 124 acres in Section 28 will also replace the remaining part of the golf course. With the reduction of residential dwellings from 12,048 to 11,215 and the removal of the golf course, over 1,000 acre-feet of water could then be allocated to the solar power plant.

The Villages at White Hills



The Villages at White Hills - 2005					
Land Use Designation	**Description**	**Acreage**	***Percent***	**Dwellings**	**Dwellings/Acre**
Low Density Residential	Single Family detached homes	1,281	*47.0%*	6,400	1 - 5 per acre
Medium Density Residential	Townhomes and Garden Apartments	643	*23.6%*	7,708	5 - 12 per acre
High Density Residential	Apartments and Condominiums	238	*8.7%*	5,934	12 - 25 per acre
Commercial	Serving neighborhoods and the region	104	*3.8%*	NA	NA
Parks	Organized Open Space	150	*5.5%*	NA	NA
Wastewater Treatment	Mechanical Plant	5	*0.2%*	NA	NA
Roadways	Rights-of-Way	306	*11.2%*	NA	NA
Total		**2,727**		**20,042**	**9.27 per acre**

Silverado, revision pending approval by Mohave County



Silverado - 2006, revised 2009					
Land Use Designation	**Description**	**Acreage**	***Percent***	**Dwellings**	**Dwellings/Acre**
Parks & Open Space	Natural areas, Neighborhood and community parks and trails	386		NA	NA
Public Facilities	Schools, police and fire, stations, utility facilities, civic buildings and churches	63		NA	NA
Suburban Estate	Suburban style lots of 2 acres	284		113	0.4 units per acre
Low Density Residential	Single family homes	2,218		6,654	1-5 units per acre
Medium Density Residential	Single family, patio homes, manor homes and town homes.	359		2,157	5-10 units per acre
High Density Residential	Condominiums and apartments.	164		2,291	10+ units per acre
Neighborhood/General Commercial	Retail, services and offices oriented to meeting the local/sub-regional neighborhood needs	389		NA	NA
Light Industrial	Light manufacturing performed within a building	124		NA	NA
Heavy Industrial	Concentrating solar parabolic trough power plant	1,748		NA	NA
Roads	Rights-of-way	243		NA	NA
Total		**5,977**		**11,215**	**3.71 per acre**

Relationship to Other Area Plans

The *Dolan Springs Area Plan*, adopted in 2003, is unique in that it was initiated, written and facilitated by the Dolan Springs Area Plan Committee, ad-hoc group of local residents.[5] The 126 square mile planning area covers all lands east of U.S. Highway 93, flanked by First Street to the south and Twenty Third Street to the north with small portions of land west of the highway near Seventh Street designated for General Commercial uses. The Plan is designed to allow for the orderly development of Dolan Springs to prevent the over-extension of County services into rural areas and to comply with new Growing Smarter Plus legislation. To achieve this purpose, elements for Water Resources, Public Safety, Circulation, Land Use and Economic Development elements were developed. To conform to the existing residential lot sizes, mostly the result of legacy subdivisions, appropriate land use designations including Rural Residential, Suburban Estate and Suburban Residential were assigned to conform to the existing lot sizes. However, even with the residential low-densities shown on the Area Plan land use diagram, buildout projections range as high as 40,000 dwelling units. General Commercial and Light Industrial land uses have been designated along the highway between First Street and Seventh Street. Additional commercial uses extend along Pierce Ferry Road and cover the existing business operations.

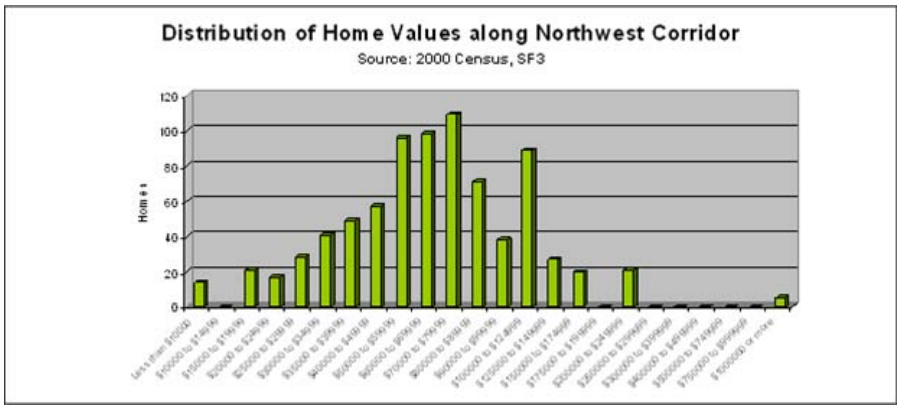
The *Golden Valley Area Plan*, updated in 2002, encompasses an 84 square mile area bounded by Shinarump Drive, Bapchule Road, Chinle Drive, Teddy Roosevelt Road, Agua Fria Drive, U.S. Highway 93 and Tooman Road.[6] The Plan allows for the orderly development of Golden Valley and prevents the over-extension of County services into rural areas. To achieve this purpose, elements for Water Resources, Public Safety, Circulation and Land Use were developed. To promote a more centralized and a less sprawl-like development pattern, 22 sections of land changed from an Urban Development Area to Suburban Development Areas beyond the Highway 68 corridor. This redistribution of land uses, by reserving higher density development to the central part of the Planning Area and reducing leap-frog development, is in accord with good planning practice as embodied in Arizona's Growing Smarter legislation. The buildout projection ranges between 21,000 and 124,000 dwelling units. The Area Plan abuts U.S. Highway 93 between State Route 68 and Agua Fria Road and then west on Agua Fria Drive a distance of some three miles. Residential uses are prevalent and range from Rural Residential densities along Agua Fria Drive to Low Density Residential at the intersection of the two highways. A small commercial area also exists at the intersection of U.S. Highway 93 and Agua Fria Drive.

[5] Major General Amendment and Area Plan adopted per BOS Resolution Nos. 2003-451 & 2006-452
[6] Major General Amendment and Area Plan adopted per BOS Resolution Nos. 2002-401 & 2002-402

Housing

Up until 2007, the average price of a home was quickly outpacing the affordability range. With the influx of Californians with equity to invest, the price of a home has increased substantially within the planning area. Based on the 2000 Census the median household income for the region was $28,680. In terms of affordability a person making this income could qualify for a $131,548 home (NRER), a home equal in value to approximately 460 percent of the person's annual gross income. However, with the recent bursting of the housing bubble and deflation of prices to approximately 2002 levels, homes are once again becoming affordable. In 2000, the County's median home value was $95,300, with median monthly rent at $560. Rental housing is considered affordable if it does not consume more than 30% of gross annual household income. Most households can afford rental units in Mohave County. Between 1990 and 2000, Mohave County's population increased by nearly 65% from 93,500 persons to an estimated 155,000 persons, one of the fastest growth rates in the State. The Department of Economic Security (DES) estimates that Mohave County's population will grow to well over 200,000 by 2010. The County's population is somewhat older than the State's average with 46% of the population 45 years of age or older.

Affordability by Type of Dwelling

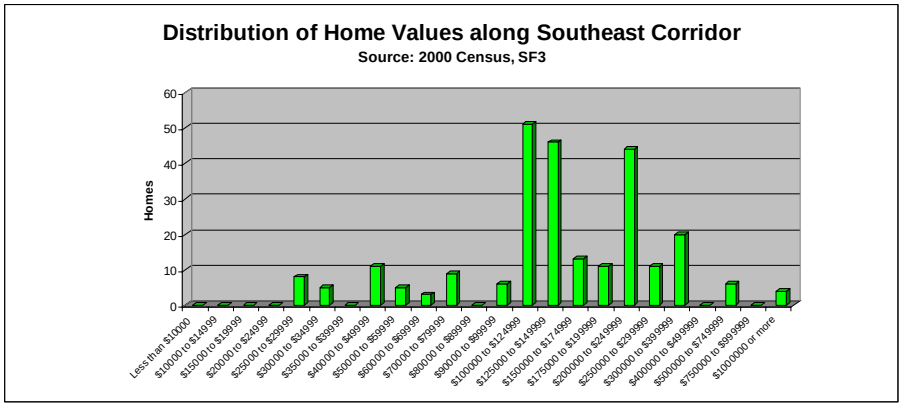


In the Northwest Corridor, median household income for the four block groups in 2000, including lands outside of the planning area, ranged from $17,358 in Dolan Springs/White Hills (Block Group 9504-02) to $31,875 in northern Golden Valley (Block Group 9506-01). The block groups contained 324 households and 423 dwelling units. A review of home values shows a cluster of homes priced between $50,000 and $90,000 providing an opportunity for the average household to purchase the median priced home of $65,000.

Parcels by Improvement Type within Northwest Corridor, March 2009	Acreage	Units	Avg Parcel Size	Avg FCV$
Owner Occupied Residential - Site Built Home	901	308	2.93	$87,192
Owner Occupied Residential - Manufactured Home	491	170	2.89	$61,347
Owner Occupied Residential - Other	1,339	50	26.95	$53,600
Rental Residential - Site Built Home	16	11	1.50	$76,328
Rental Residential - Manufactured Home	11	8	1.43	$48,751
Rental Residential - Other	9	1	8.98	$441,074
Total	2,767	548	5.05	$128,049

In 2009, the number of dwellings within the Northwest portion of the planning area had increased to 548. These homes occur on 2,767 acres with an average parcel size of 5.05 acres. The dominant housing type was the traditional single-family detached dwelling situated on a 2.93 acre site, indicative of the typical legacy lot or split of a larger legacy lot. Most of these site built homes occurred in So-Hi and Chloride. Only 20 homes were classified as rental property. The average full cash value of site built homes was

$87,193, substantially higher than 2000 Census values, showing that continued affordability is contingent upon at least 25 percent increase in median household income over the past nine years.



Median incomes in 2000 for Cedar Hills/Round Valley Area (Block Group 9508-01) and Wikieup/Cane Springs (Block Group 9508-02) was $25,455 and $35,833, respectively. These block groups contained 265 households and 359 dwelling units. Unlike the Northwest Corridor, where a normal distribution curve is found, most homes are valued above $100,000 with median value of $135,000, making these homes less affordable to area households.

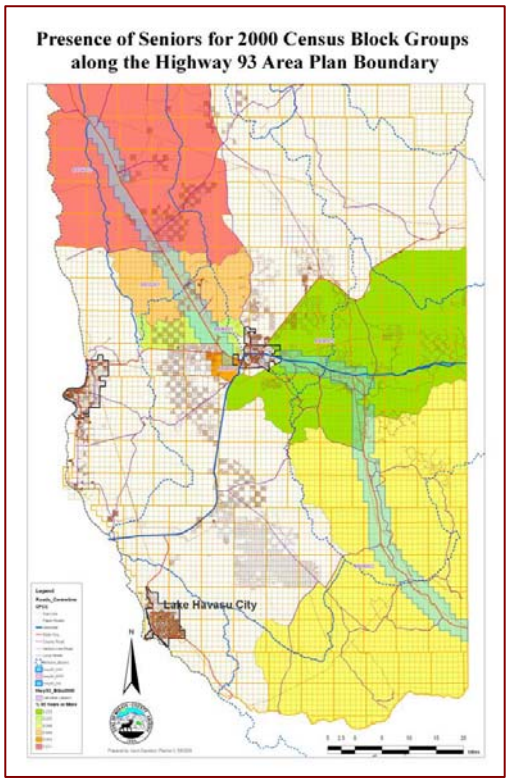
By 2009, the number of dwellings within the Southeast portion of the planning area had increased to 480. These homes occur on over 17,500 acres with an average parcel size of 36.45 acres. The most prevalent housing type was the traditional single-family detached dwelling situated on a 15.75 acre site, reflective of the large number of homes sited on "exempt" developments created by Record of Survey and further divided via a parcel plat. Only a dozen homes were classified as rental property. The average full cash value of site built homes was $107,273, but less than 2000 Census values, showing that housing may be more affordable than in 2000 assuming that household incomes have not decreased.

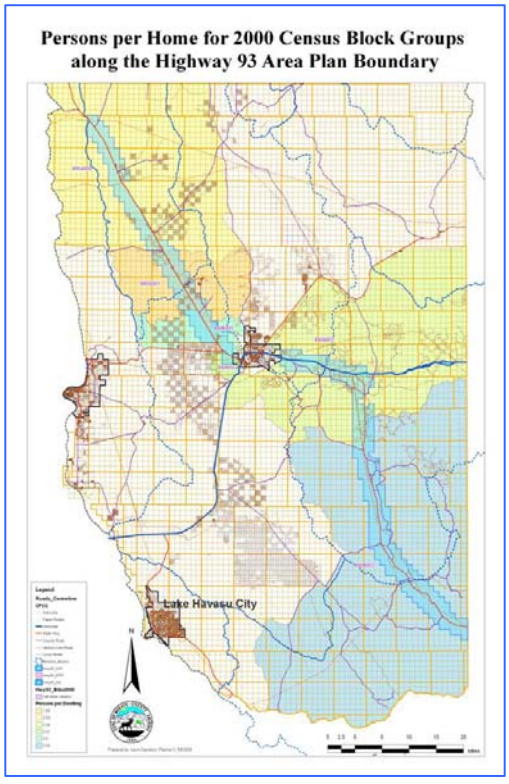
Parcels by Improvement Type within Southeast Corridor, March 2009	Acreage	Units	Avg Parcel Size	Avg FCV$
Owner Occupied Residential - Site Built Home	3,669	233	15.75	$107,273
Owner Occupied Residential - Manufactured Home	2,546	154	16.53	$85,625
Owner Occupied Residential - Other	11,088	81	136.49	$100,530
Rental Residential - Site Built Home	100	7	14.31	$109,106
Rental Residential - Manufactured Home	30	3	9.98	$19,426
Rental Residential - Other	70	2	35.21	$273,273
Total	**17,504**	**480**	**36.45**	**$115,872**

Moving from an urban setting to a rural environment in search of lower home prices may also bring hidden costs. A private well, possibly 700-feet or more deep, an alternate septic system, a new solar powered electric system with backup generator and other country accouterments may make building a home in the countryside as expensive as one constructed on an urban lot. These additional factors in housing affordability caused by living wholly or even partly "off the grid" are not always taken into account by land owners when they purchased the land for future development.

Senior Households

As noted in the introduction, Mohave County has a higher median age than the balance of the State. This is also reflected in the high percentage of seniors living along the Corridor. The highest percentage of seniors reside in the communities of Dolan Springs and White Hills where over half of all households are headed by persons aged 65 or more. Seniors represent at least 40 percent of the households in the Chloride/Grasshopper Junction and eastern Golden Valley. By contrast, senior-headed households in the Cedar Hills/Round Valley area account for less than 25 percent. This block group also has the highest median income and highest median home values. Some of these home sites are remote and may not have supporting infrastructure, including access over challenging terrain, than many seniors are comfortable in negotiating daily. Remote areas also isolate homeowners who, as they age, may want to be connected to a closely knit community that is easily accessible. Housing affordability for seniors on fixed incomes will become an increasing concern as more individuals reaching retirement age relocate to the Southwest.





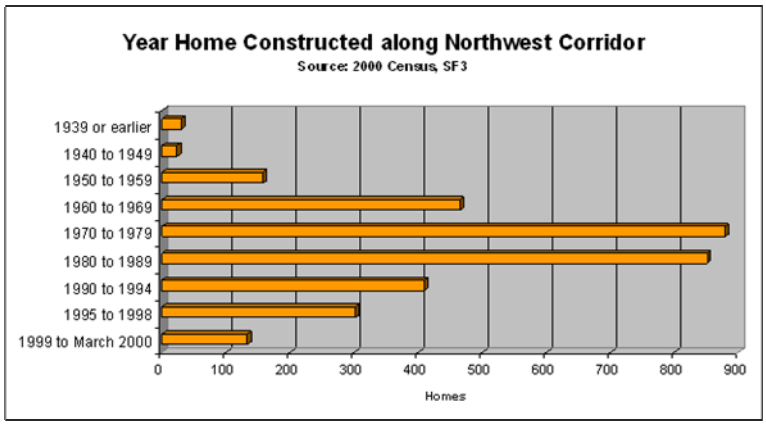
Another indicator of senior households is the number of persons per household. In 2000, the County saw 2.45 persons per household. Only the Cane Springs/Wikieup block, with 2.56 persons per household, exceeded that value. The communities of Dolan Springs and White Hills had 1.99 persons per household with Chloride/Grasshopper Junction having 2.09 persons per household. This indicates that seniors may also be living in single person households, increasing their need for homes in good working order and having good access to services. As the population continues to age, most single occupants will be women.

The Cedar Hills/Round Valley and Golden Valley block groups were slightly under the County average ranging from 2.24 to 2.40 persons per household. As noted above, these block groups have a lower percentage of senior headed households.

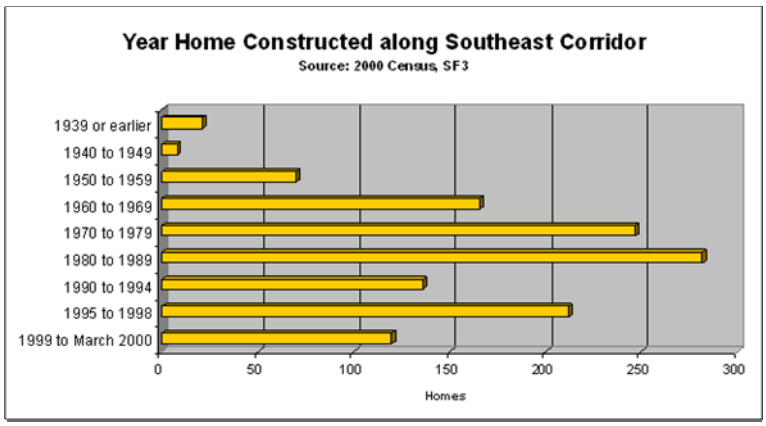
Age and Condition of Structures

The highest value homes occur in the Cedar Hills and Cedar Mesa communities, with lower home values found in the Chloride/Grasshopper Junction vicinity. This may be attributed in part to the age of the housing stock with those homes east of Kingman being constructed or placed on-site, in the case of manufactured homes, at much latter date than the establishment of dwellings in Chloride which date back a century or more.

A distribution of the year the homes were built along the Northwest Corridor shows that the median home was constructed or placed on-site in the late 1970s. Many of the manufactured homes established in this time period have Pre-HUD status in that they were not constructed to a standard accepted by the Department of Housing and Urban Development, causing some concern as to quality and fire safety in some instances.

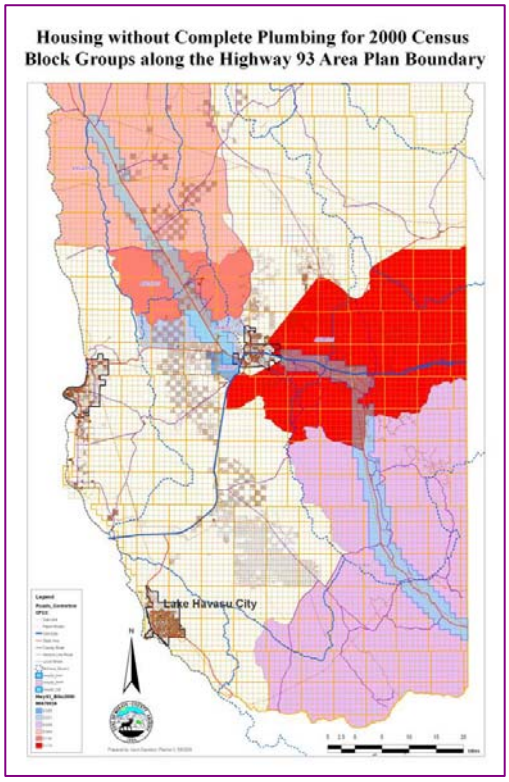


Along the Southeast Corridor, the median age of homes dates from the early 1980, with a large number of new homes being placed just prior to the Census. These two facts increase the probability that manufactured homes are built to a HUD standard and also explain the increased value of homes in part and the popularity of homes being placed in exurban areas, further from established urban centers.



One indicator of the fitness for a house to support its habitants is the presence of complete plumbing facilities. For Mohave County, 1.1 percent (876 of 80,062 dwellings) lacked complete plumbing facilities. In a review of block groups along the Corridor (see map next page) these percentages ranged from zero percent in Eastern Golden Valley to as high as 17.4 percent in Cedar Hills/Round Valley. The percentage of homes lacking complete plumbing facilities in Chloride/Grasshopper Junction was 11.5 percent. This wide variation may be attributed not just to the state of repair or the age of the building, with Chloride having a large number of homes built before the Second World War, but the presence or not of the Urban Building Overlay zone for building code enforcement. Initiated in 1984, the Overlay zone required that all structures be built to current building code standards, including the requirement for indoor plumbing for all

habitable structures. The Overlay zone was recently replaced in 2007 when the County began enforcement of building for codes throughout its jurisdiction. As new buildings are placed along the Corridor, the percentage of homes without plumbing facilities should decline.



Northern Golden Valley, Cane Springs/Wikieup and Dolan Springs/White Hills ranged from 2.1 percent to 5.0 percent, higher than the County. Northern Golden Valley was also covered in most part by the Overlay zone.

Impressions and Conclusion

The desert southwest has seen experimentation in many types of non-conventional housing types almost since its first settlement. These homes typically do not conform to a preset "plan" and are as unique as the people who live in them. Housing should be safe, decent, energy efficient and affordable to help maintain and promote the quality of life that new and existing residents require and make the southwest attractive to residents. To further this, an objective of the North River Economic Region plan is to "ensure that affordable housing is readily available within the region." This can be measured by the increase in homeownership for low and moderate income residents. Strategies include completion of a housing plan for the region, inclusionary zoning, and/or the establishment of a housing trust fund similar to the recently adopted program in Pima County. The Area Plan encourages a diversity of housing types to serve all its residents.

Land owners along the Corridor have expressed a desire for various types of housing, ranging from the conventional site built homes, manufactured home to non-conventional forms of construction. Manufactured housing and homes constructed by owner-builders in legacy subdivisions will most likely be the affordable home of choice for those living in rural parts of the planning area. Single-family housing may be developed on all private property throughout the planning area.

Today, the planning area is facing pressure from an increasing human population that finds the area's scenic desert settings and warm, sunny climate as well as its higher elevations and forests to be a very desirable area to live and to recreate. Indeed, this recreational use has an increasingly dominant impact on the landscape in this ecoregion. Many parts of the planning area, including the adjoining Lake Mead National Recreation Area, receive heavy recreational use from residents of nearby metropolitan areas. The burgeoning retirement communities associated with the mild climate of the area create a population that is able to afford the time and expense to recreate in the outdoors. Human presence on the landscape is significant in all but the most inaccessible areas (CWCS).

Creation of the Land Use Diagram

To implement many of the goals and policies of the Area Plan, the Land Use Diagram has been proposed (see Exhibits following Goals and Policies). The current General Plan land use diagram would allow for at least 38,000 to as many as 78,000 dwellings in the nearly 430 square-mile planning area.

The land use diagram is molded on the vision statement that declares "new residential development proposals will be similar to existing residential densities, shall promote neighborhood stability and protect and sustain existing lifestyles." Also used in formulating land use diagram are the concepts of: 1) economic use of the land; in other words, would someone contest a taking of property value due to excessive government regulation, 2) investment-backed expectations when the property was purchased, for example, what are my neighbors doing with their property and can I do something similar, and 3) furthering a legitimate government interest through regulation. The concerns of individuals in items one and two are balanced against the role of government in item three as defined by the Area Plan Committee as follows:

a. Preserving hillsides, washes, native vegetation.
b. Establishing a transect model of planning which clusters development around nodes to establish vibrant economic centers.
c. Preserving air quality and ground water resources.
d. Following the "current pattern of development" to maintain neighborhood stability and lifestyles.

To help understand what a land buyer might anticipate as part of the "investment-backed expectations," the County's zoning map, overlaid with aerial photography, was consulted to determine the existing development pattern of neighboring parcels. For example, if adjacent lots had seen significant rezoning to a higher density, then the land use density was adjusted to meet the expectations. However, properties located on hillsides, within washes or otherwise encumbered, such as being on bedrock were assigned a lower density land use designation.

Using the concept of maintaining proposed land uses similar to existing residential densities, the land use diagram radiates land use densities from highest to lowest densities and attempts to avoid the juxtaposition of disparate uses.

Bureau of Land Management lands have been designated as Public Lands based upon the General Plan's definition. Recreation and Public Purpose sites are recommended along the highway in the vicinity of White Hills Road, Cottonwood Road and near Tompkins Canyon. Exact locations will be determined with aid of the BLM. For State Trust lands, the policy of the State Land Department is to have a similar land use applied to their holdings as those adjacent and not be solely identified as open space.

Legacy plats have been generally designated Rural Residential, Suburban Estate or Suburban Residential to preserve the integrity of the original development pattern and not overburden the supporting and usually underdeveloped infrastructure.

Commercial areas have been located around existing commercial development and at the traffic interchanges planned at the major crossroads. Sites for Rural Industrial have been located along the highway where terrain is generally level and access to major transmission lines is available.

It should be noted that the land use diagram represents the ultimate development density for the life of the plan – some 10 to 20 years. To achieve the maximum density on the land use diagram, each proposal must meet a series of performance criteria. For example, several sections have been designated for Suburban Residential which allow for lot sizes of one acre. To achieve this density the developer of a new subdivision must provide infrastructure for paved roadways to each lot, including off-site roadway improvements as required by the County Engineer, water service to each lot, fire hydrants, electricity to each lot, and be annexed into a fire district. Parcels that are created via a minor division and companion rezone to allow for smaller lots will be evaluated based on the availability of these services to the site to ensure infrastructure concurrency and prevent the over extension of County services.

Buildout Projections

The buildout potential for the 166 plus square miles in the Northwest Corridor is nearly 58,000 homes, an increase of over 8,500 dwellings as compared to the existing General Plan. This is largely due to the conversion of Rural Development Area land use designations to Suburban Development Area land use designations allowing up to five times the number of homes.

Buildout Potential of Proposed Land Use Diagram for Northwest Corridor	Acres	Square Miles	Percent	Potential Dwellings
General Commercial	1,377	2.152	1.29%	NA
Neighborhood Commercial	0	0.000	0.00%	NA
Commercial Recreation	303	0.473	0.28%	NA
Light Industrial	630	0.984	0.59%	NA
Rural Industrial	3,980	6.219	3.72%	NA
Urban Development Area	1,690	2.641	1.58%	42,250
Low Density Residential	83	0.130	0.08%	415
Suburban Residential	3,027	4.730	2.83%	3,027
Suburban Estate	7,004	10.944	6.54%	3,502
Suburban Development Area	4,805	7.508	4.49%	4,805
Rural Development Area	18,794	29.366	17.55%	3,759
Public Lands	65,365	102.133	61.06%	NA
Total	107,058	167.28	100.00%	57,758

Buildout Potential of Proposed Land Use Diagram for Southeast Corridor	Acres	Square Miles	Percent	Potential Dwellings
General Commercial	716	1.119	0.44%	NA
Neighborhood Commercial	10	0.016	0.01%	NA
Commercial Recreation	272	0.425	0.17%	NA
Light Industrial	2,985	4.664	1.82%	NA
Rural Industrial	0	0.000	0.00%	NA
Urban Development Area	0	0.000	0.00%	0
Low Density Residential	0	0.000	0.00%	0
Suburban Residential	2,942	4.597	1.80%	2,942
Suburban Estate	3,980	6.219	2.43%	1,990
Suburban Development Area	3,413	5.333	2.08%	3,413
Rural Development Area	77,033	120.364	47.01%	15,407
Public Facilities	4	0.006	0.00%	NA
Public Lands	72,504	113.288	44.25%	NA
Total	163,859	256.030	100.00%	23,752

The 255 plus square miles comprising the Southeast Corridor has a buildout potential of 22,627 homes. This represents a reduction of over 5,500 housing units from the current General Plan use designations. This is largely the result of re-designating several sections of the land west and south of the proposed 200 megawatt concentrating solar parabolic trough power plant from a Rural Development Area to a Suburban Development Area to reduce water demand in the area in light of the power plant's expected 2,000 acre feet of annual consumption and to provide a low residential density buffer around the facility (land use is pending County action on the 200 MW solar power plant).

Goal 33 Create commercial centers extending up to one mile along the highway from either end of the Traffic Interchanges and up to one half mile off of the highway fronting along the cross roads (4/23/2009, 5/12/2009 and 5/14/2009).

Policy 33.1 Designate areas for Neighborhood and General Commercial at these locations.

Policy 33.2 Designate areas for Commercial-Recreation and Light Industrial at these locations to act as buffer between General Commercial and residential uses along the perimeter.

Goal 34 Provide for highway-serving as well as general and neighborhood-serving commercial businesses at locations along the Corridor where similar land uses are established and in operation (6/2/2009).

Policy 34.1 Retain the General Plan's existing land use designations for highway serving commercial adjoining the highway, concentrated at major roadway intersections.

Policy 34.2 Encourage the expansion of commercial land use designations only at established business locations and at planned Traffic Interchanges.

Goal 35 Commercial development should have architecture that is aesthetically compatible with the natural environment (approved on 4/23/2009, edited 5/12/2009).

Policy 35.1 Each development’s color scheme should be based on the site’s unique color palette.

Policy 35.2 Structure design should reflect the Southwestern or rustic vernacular.

Goal 36 Establish Renewable Energy projects appropriate to and respectful of the land’s carrying capacity (5/14/2009).

Policy 36.1 Give preference to Renewable Energy projects that do not require mass grading or otherwise scarify the land.

Policy 36.2 Support Renewable Energy projects whose design does not impede wildlife movement.

Policy 36.3 Encourage Renewable Energy projects whose design does not dominate the view from the highway.

Policy 36.4 Give preference to Renewable Energy projects whose use of water will not draw-down adjacent wells or threaten the natural flow of seeps, springs, or streams.

Policy 36.5 Encourage the use of effluent or brackish water in lieu of pristine groundwater for Renewable Energy projects.

Policy 33.6 In areas where the aquifer is being mined, only approve Renewable Energy projects that do not rely upon groundwater as an integral part of their operation.

Goal 37 Create commercial/recreational areas to serve local residents and tourists alike (5/14/2009)**.**

Policy 37.1 Allow commercial/recreational uses on land that has not been assigned a specific land use sub-category, with preference to those proposals which have access to the highway at ADOT designated access points.

Policy 37.2 Develop commercial/recreational uses on flood-prone properties which will set aside these sensitive areas for less intensive uses and/or open-space.

Goal 38 Establish Sufficient Public Facilities to Serve the Community (5/14/2009)**.**

Policy 38.1 Identify locations for Schools when new housing developments are proposed.

Policy 38.2 Establish locations for Fire Stations within new housing developments, as needed.

Policy 38.3 Establish locations for County and State Offices within new housing developments, as needed.

Goal 39 Encourage the use of previously identified 'Disposal Lands' for Recreation and Public Purposes upon disposal from public ownership (6/2/2009)**.**

Policy 39.1 Mohave County will coordinate with the BLM in its planning efforts to identify those lands within the US 93 Mohave County Planning Corridor that are suitable for disposal that could be used for public purposes.

Goal 40 Ensure Infrastructure Concurrency in all Development Areas (5/14/2009)**.**

Policy 40.1 Each new development proposal must have adequate infrastructure, namely, but not limited to improved roadways, either in place or provided by the developer.

Goal 41 Maintain the rural, low-density atmosphere in the planning area (5/14/2009)**.**

Policy 41.1 Retain existing Rural Residential land use designations for properties adjoining other Rural Residential land uses beyond the Area Plan boundary.

Policy 41.2 Discourage the increase in density, the over-extension of County services, and loss of rural atmosphere during development review.

Policy 41.3 Maintain the attractiveness of the rural environment which the landowner bought into by preventing encroachment of dissimilar uses, within or immediately adjacent to Rural Residential areas.

Goal 42 Preserve the integrity of ranches and farms within and adjoining the planning area (5/14/2009)**.**

Policy 42.1 Retain the Rural Residential land use designations adjoining ranches and farms.

Policy 42.2 Discourage the rezoning of land adjacent to ranches and farms that results in higher than Rural Residential density development.

Policy 42.3 Maintain the attractiveness of the rural environment which the landowner bought into by preventing encroachment of dissimilar uses, within or immediately adjacent to ranches and farms areas.

Goal 43 Preserve the Rural to semi-Rural lifestyle for homes on smaller lots and parcels (5/14/2009)**.**

Policy 43.1 Create Suburban Development Areas to preserve integrity of "legacy" subdivisions.

Policy 43.2 Establish Suburban Development Areas as a buffer between Urban and Rural Development Areas.

Policy 43.3 Require a feathering of lot sizes when adjacent to lower density development on the periphery allowing similar lots to front each other while placing smaller lots in the center of the development.

Policy 43.4 Designate Suburban Development Areas only where adequate facilities and infrastructure occur or will be provided.

Policy 43.5 Maintain the attractiveness of the rural and semi-rural environment which the landowner bought into by preventing encroachment of dissimilar uses within or immediately adjacent to areas designated for Suburban Estate or Suburban Residential.

Goal 44 Provide for higher density residential development in areas that are experiencing growth pressure (5/14/2009)**.**

Policy 44.1 Designate Urban Development Area land use designations adjoining new master planned communities.

Policy 44.2 Designate land uses that are a logical extension of the planned or existing development pattern.

Policy 44.3 Designate additional Suburban Development Area land use designations adjacent to legacy subdivisions experiencing build out pressure.

Policy 44.4 Encourage Low Density Residential land uses as a buffer between Suburban Development Areas and proposed Commercial areas.

Goal 45 Create a diversified mix of quality, affordable housing to serve all members of the community (5/14/2009)**.**

Policy 45.1 Encourage a diversified mix of housing types to serve all segments of the housing market.

Policy 45.2 Provide for the housing needs of senior citizens.

Policy 45.3 Encourage the use of environmentally responsible building practices in new housing developments.

Goal 46 Create a Citizen-based development review advisory committee to achieve the goals of the Area Plan (6/2/2009)**.**

Policy 46.1 Notify the advisory committee of all development proposals within or adjoining the area plan boundary that involve a plan amendment, rezone, zoning use permit, or subdivision plat.

Policy 46.2 Coordinate neighborhood meetings with the committee as needed that involve plan amendments, rezones, zoning use permits, or subdivision plats.

Policy 46.3 Include the advisory committee's formal recommendation for each such proposal to the Planning and Zoning Commission and Board of Supervisors.

Implementation Measures for Land Use and Housing:

L1. Individual landowners will apply with the Mohave County Development Services Department for building permits, and rezone/zoning use permits (if needed) to establish residential uses.

L2. The Development Services Department will develop a "policy a procedure" memorandum highlighting the key aspects of the Land Use Element to use when evaluate zoning use permit, minor land division and subdivision proposals.

L3. Individual landowners will coordinate site plan review with the Mohave County Public Works Department in designing the access to their site in accordance with any adopted Access Management Plan.

L4. Public purpose uses are allowed under the current zoning district, hence only an administrative review of the development is required. Each proposal will be reviewed by the County for site design, including drainage, grading, septic disposal, etc. Each structure will also be reviewed by the County in accordance with the Building Codes. The need for these facilities will be determined by the Mohave County Sheriff's Department, the fire district, the Kingman Unified School District and the Mohave County Parks Department, respectively.

L5. Conversion of prime farmland to non-farm uses will be in accordance with Farmland Protection Act, 7 USC 4202 et. seq. seq. (1981).

L6. The Mohave County Building Division shall provide technical assistance to the public for non-conventional housing and provide a trained staff versed in non-conventional building techniques to help owner/builders construct their homes.

L7. Adopt the International Energy Conservation Code. Also, when reviewing large-scale residential developments of 200 or more homes consider the adoption of Water Wise and Energy Star standards with the aim of Leadership in Energy and Environmental Design (LEED) certification for at least 10 percent of the new homes.

L8. Develop project siting criteria in accordance with Section 27.S of the Mohave County Zoning Ordinance that also addresses impacts on surface hydrology, wildlife corridors, cultural resources, visual resources, evaporation ponds and draw down on existing wells located outside of the project boundary.

L9. Amend Section 27.S to apply to projects entitled with a Zoning Use Permit.

L10. The Mohave County Development Services Department will notify, inform and seek advice from the Citizen-based development review advisory committee for plan amendments, rezones, zoning use permits, or subdivision plats that occur with or adjoin the Area Plan boundary.

Detailed Land Use Diagrams

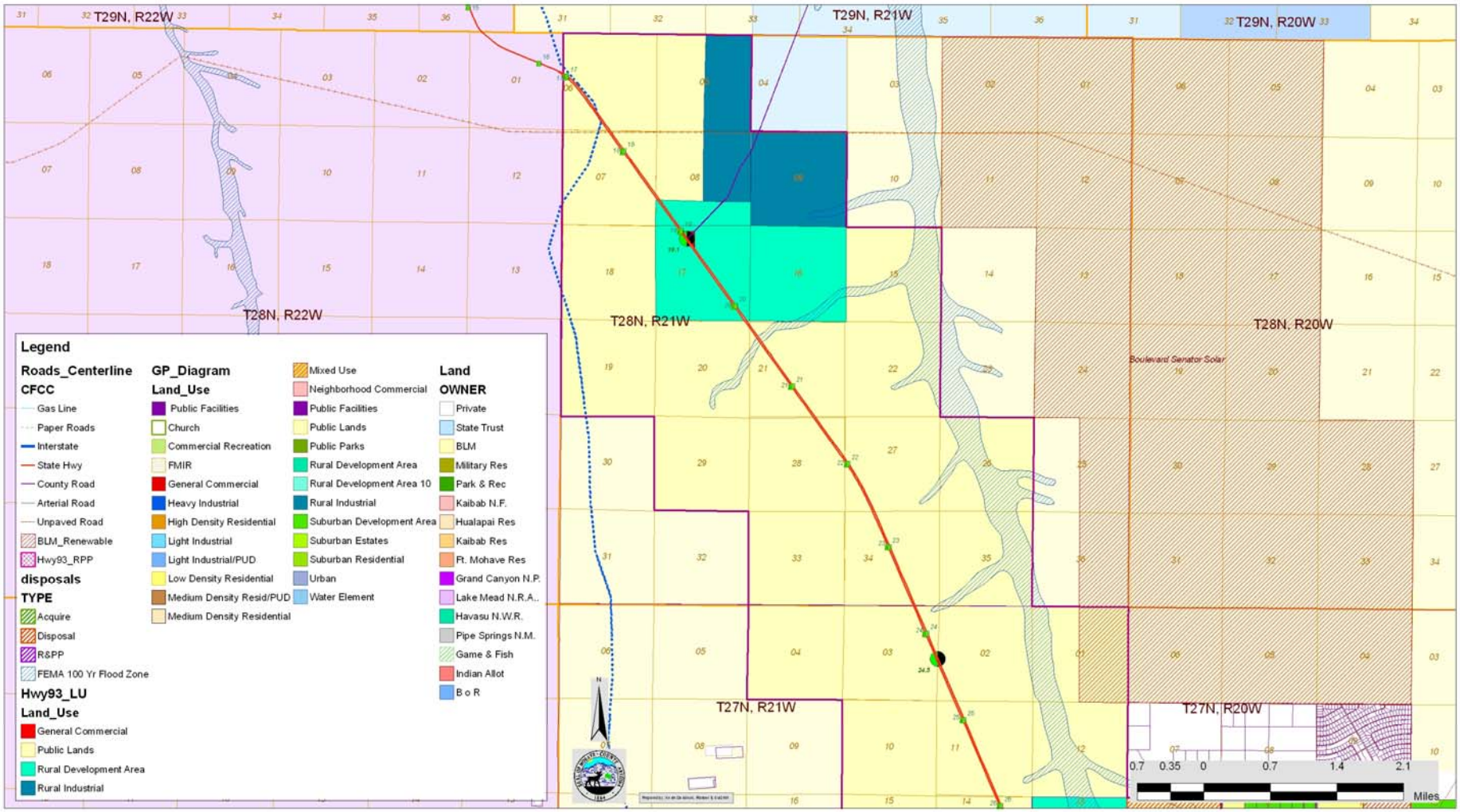
Northwest Corridor

Temple Bar Road
White Hills
Dolan Springs
Cottonwood Road/Chloride
Mineral Park/Golden Valley
So-Hi Detail

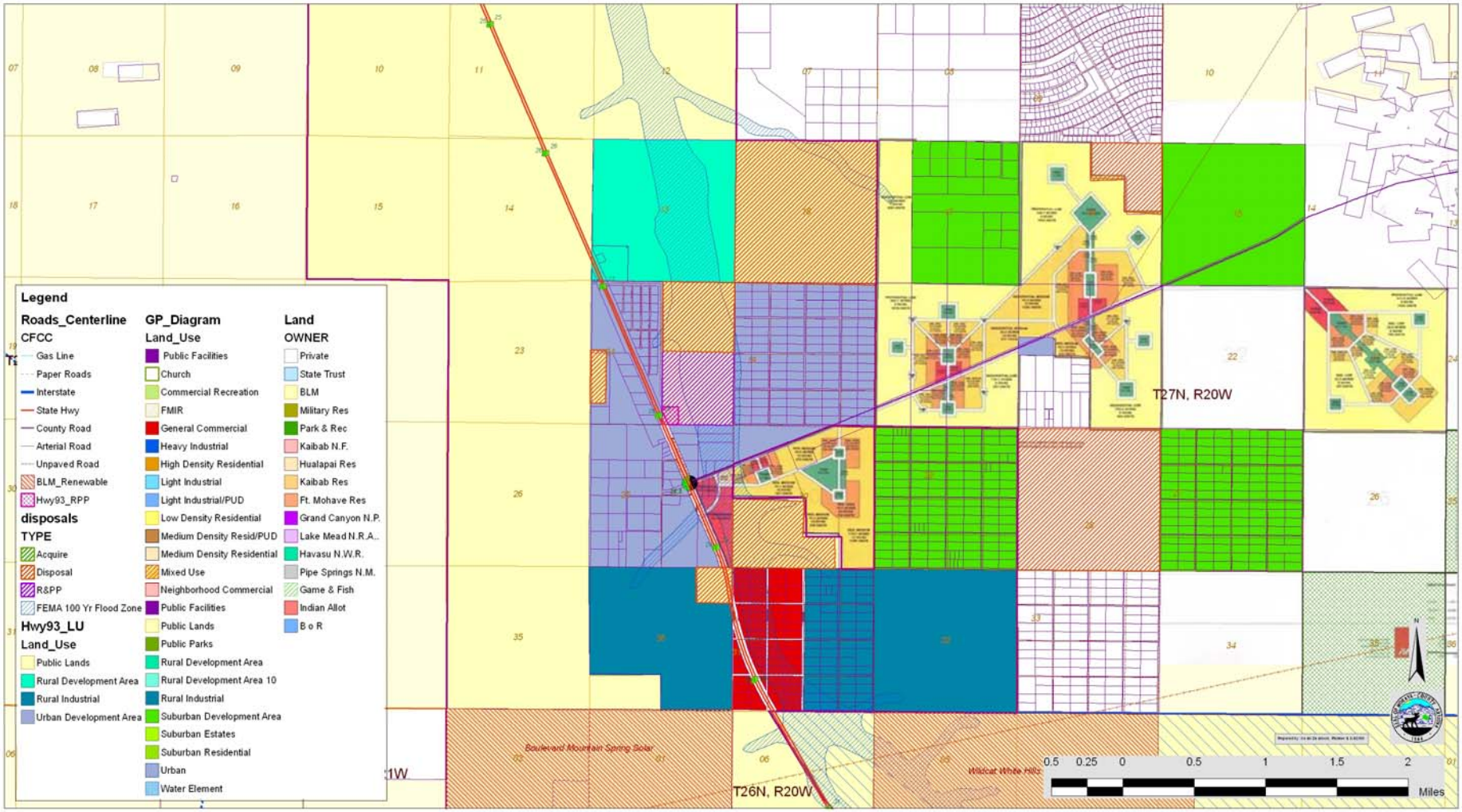
Southeast Corridor

Kingman/Round Valley
Silverado
Cane Springs
Wikieup
Signal/Nothing
Wikieup Detail

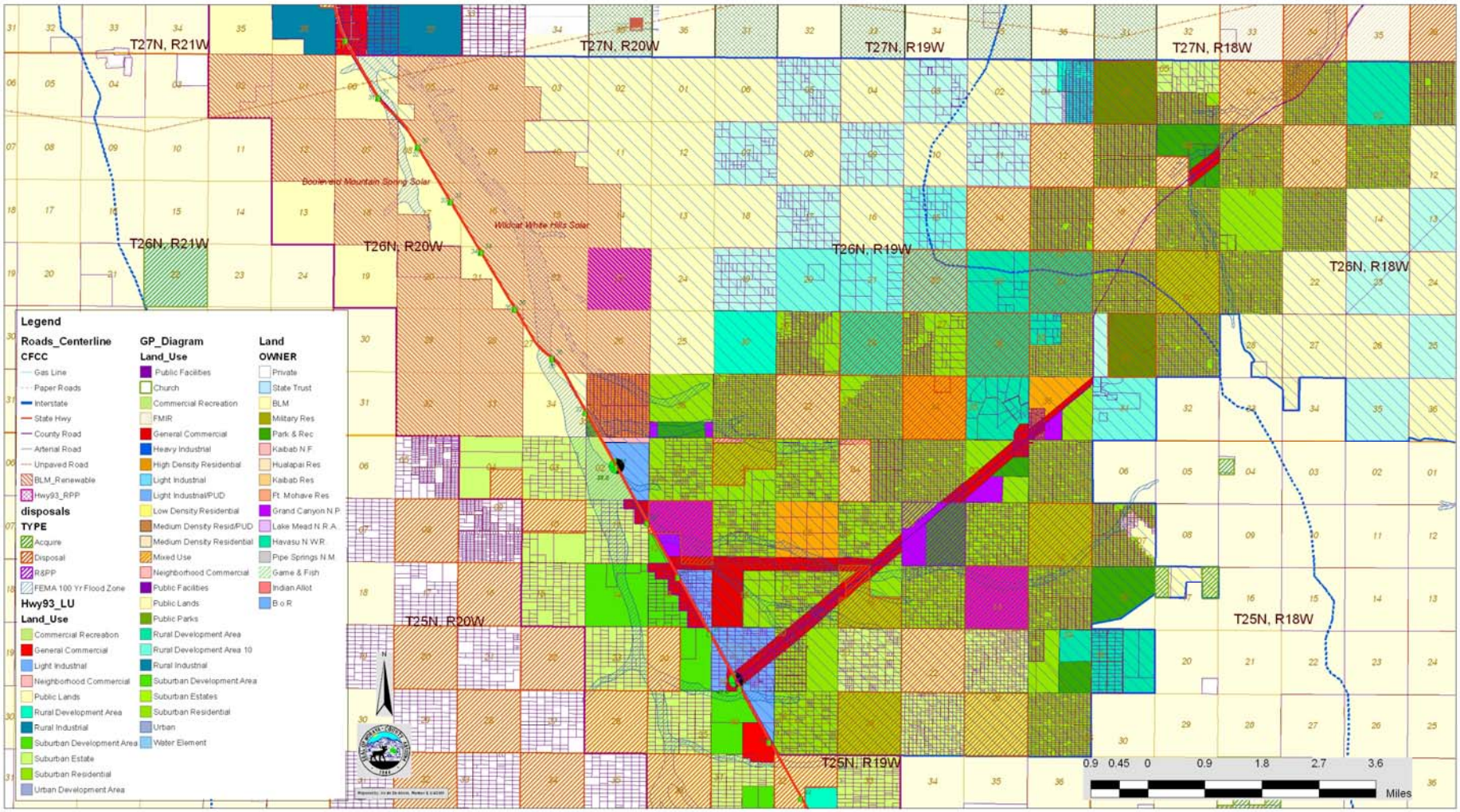
Proposed Hwy 93 Area Plan Land Uses Adjoining Existing General Plan Land Uses at Temple Bar Road



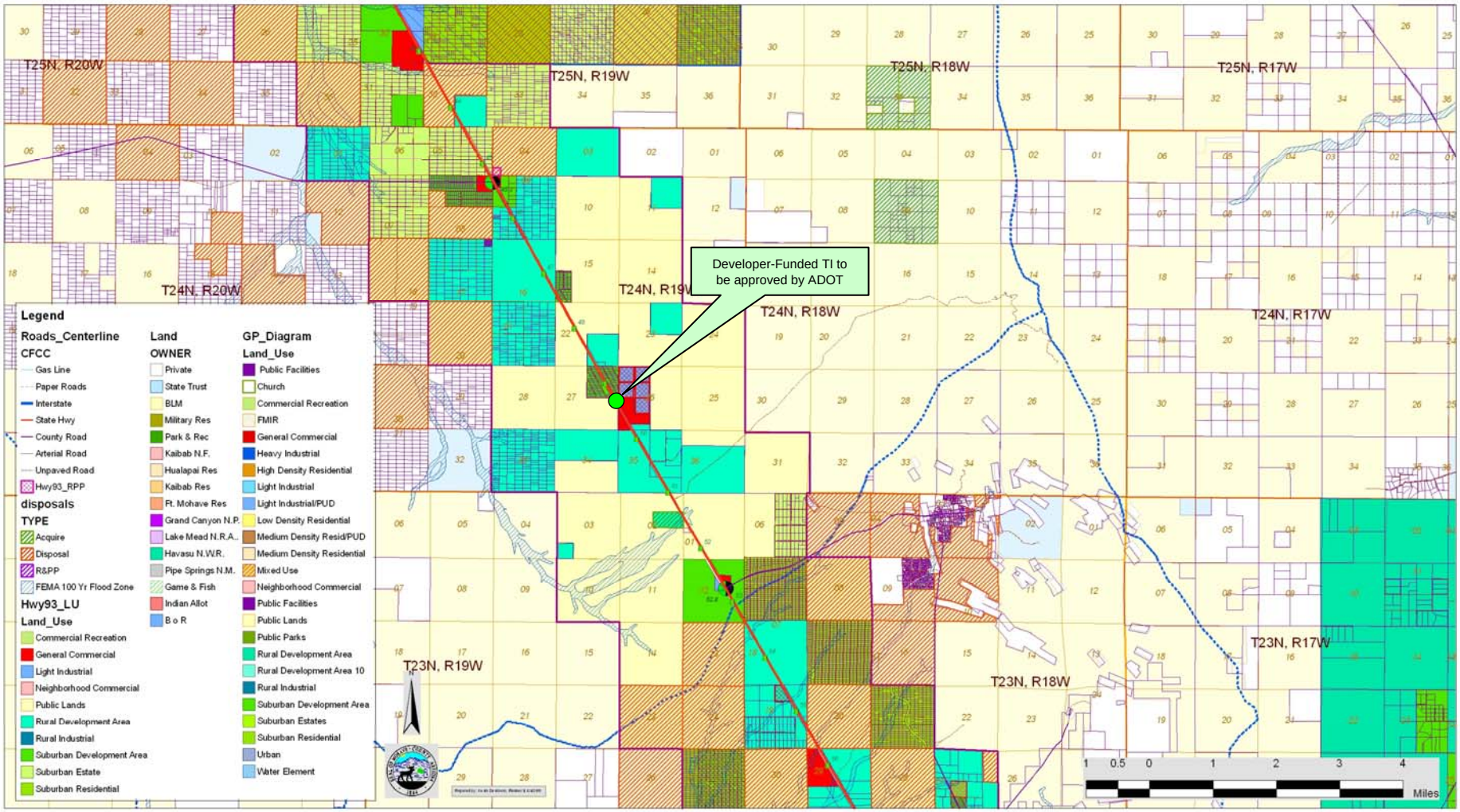
Proposed Hwy 93 Area Plan Land Uses Adjoining Existing General Plan and Villlages at White Hills Land Uses



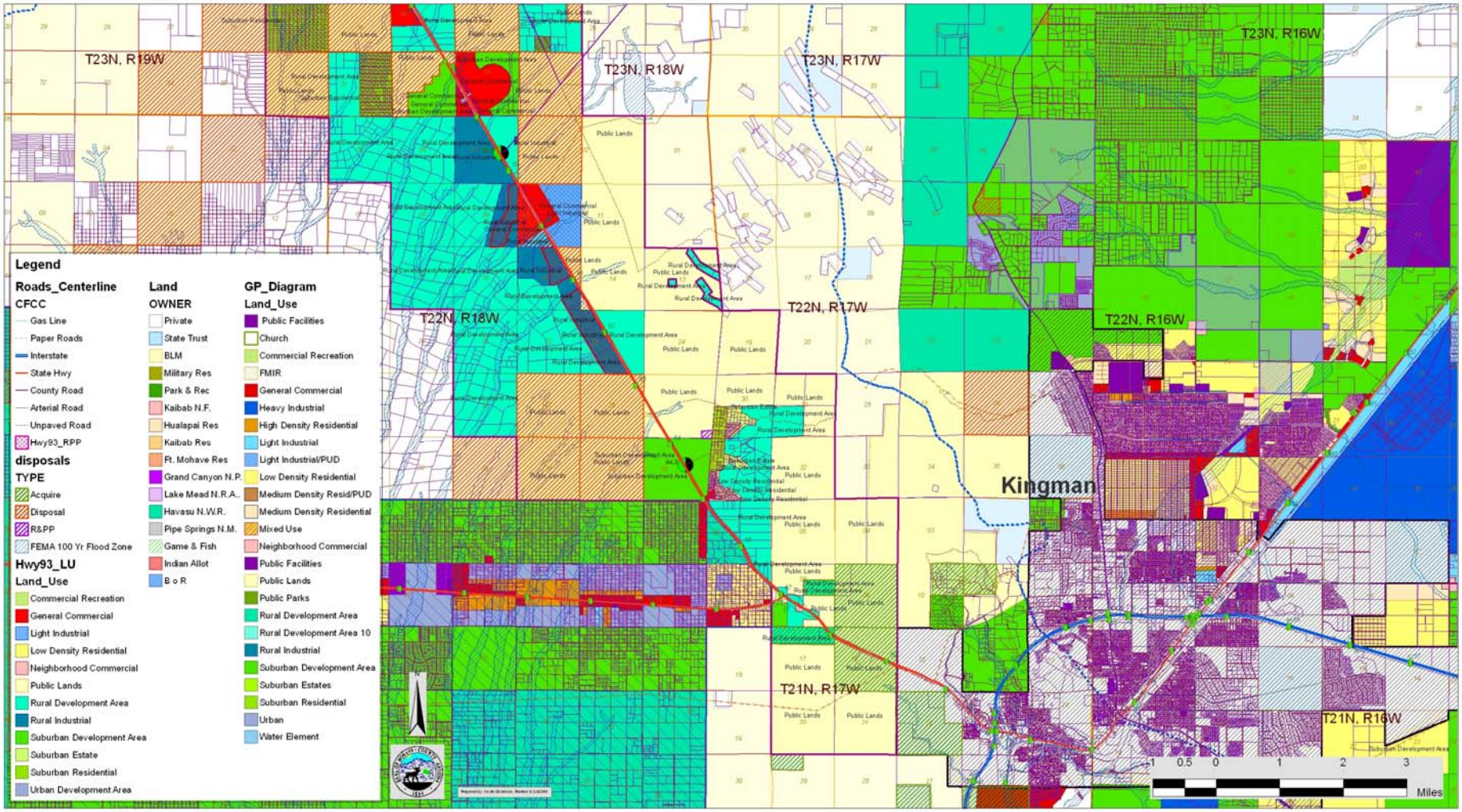
Proposed Hwy 93 Area Plan Land Use Adjoining Existing General Plan and Dolan Springs Area Plan Land Uses



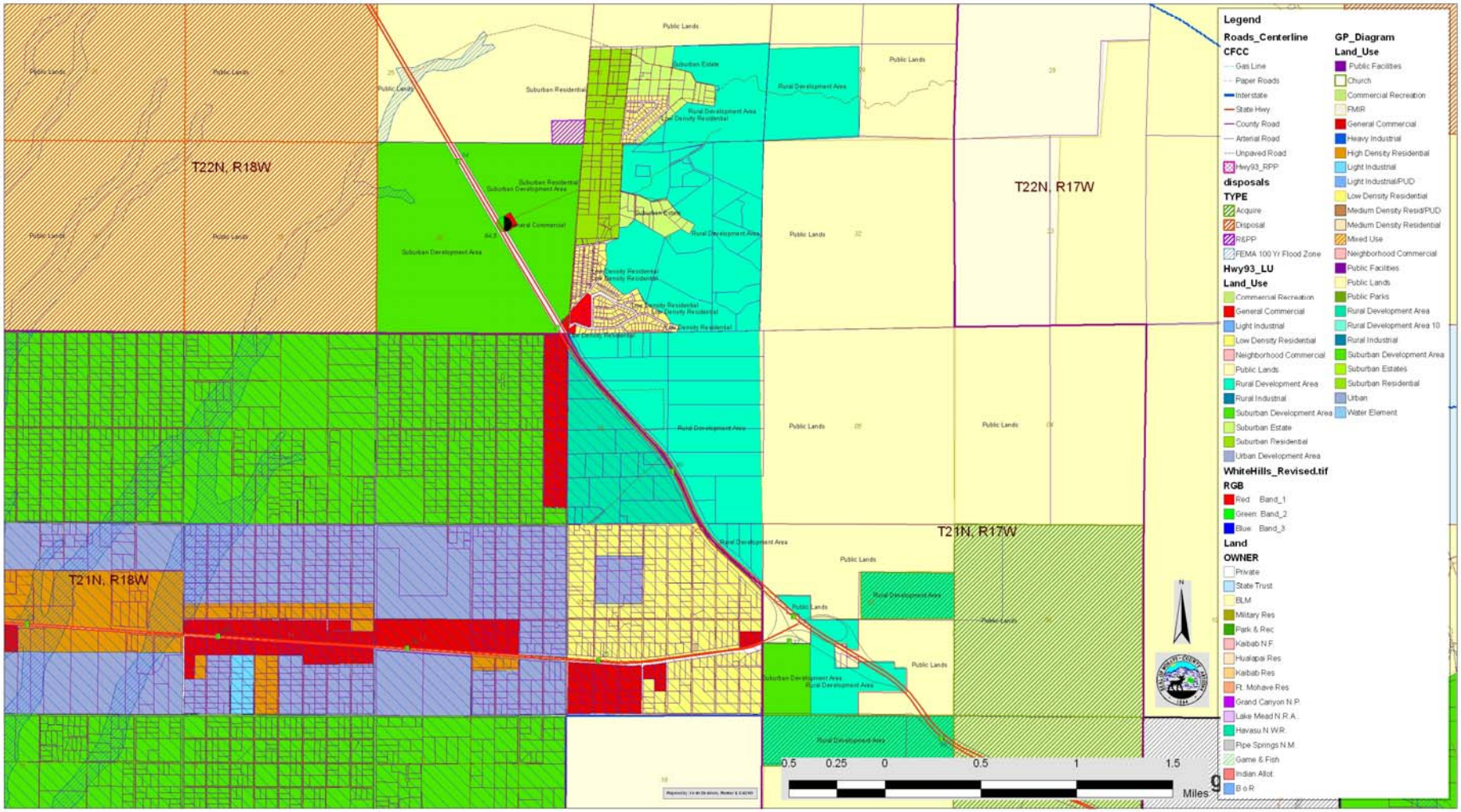
Proposed Hwy 93 Area Plan Land Uses Adjoining Existing General Plan Land Uses between Chloride and Cottonwood Roads



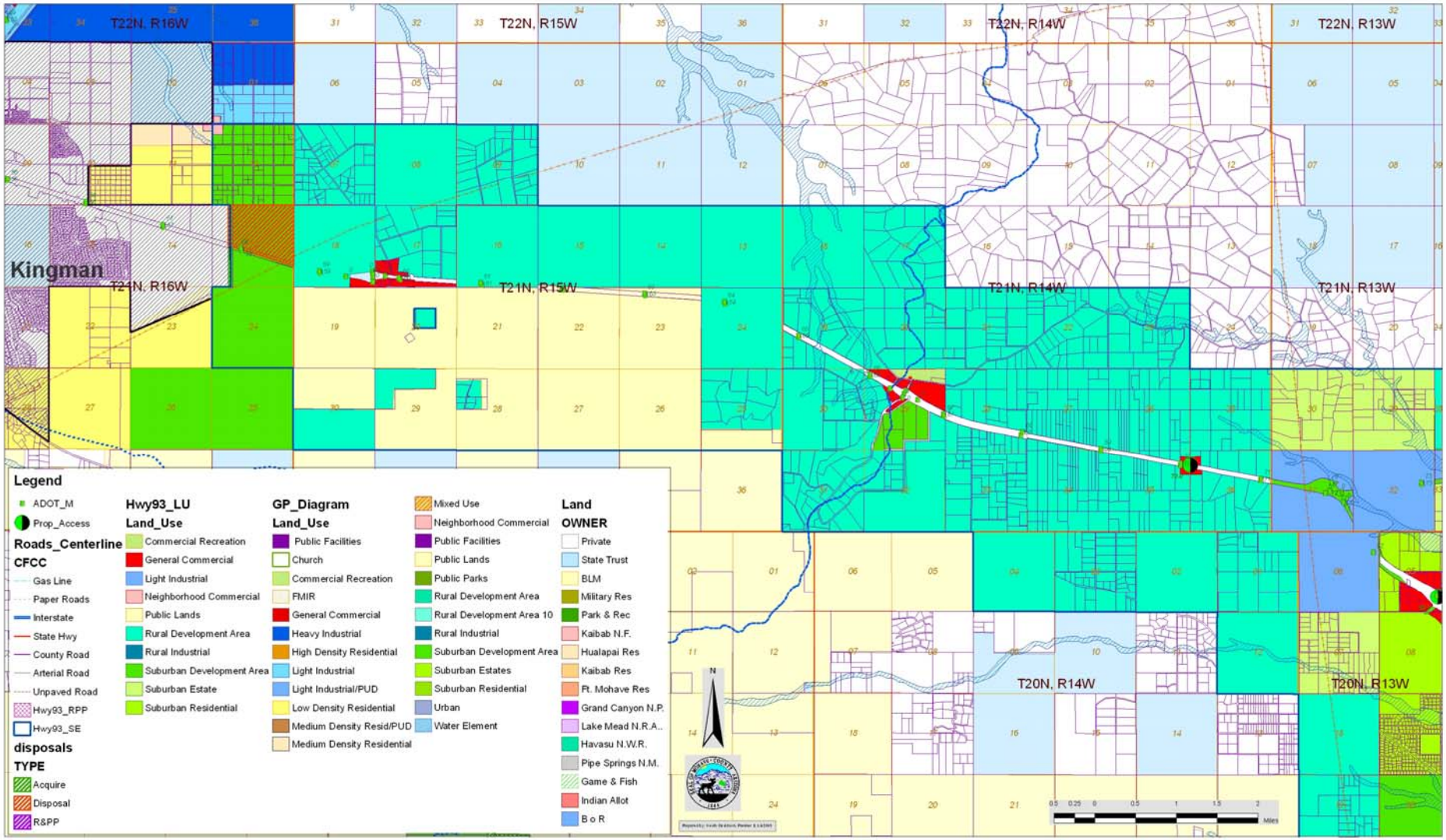
Proposed Hwy 93 Area Plan Land Uses Adjoining Existing General Plan and Golden Valley Area Plan Land Uses



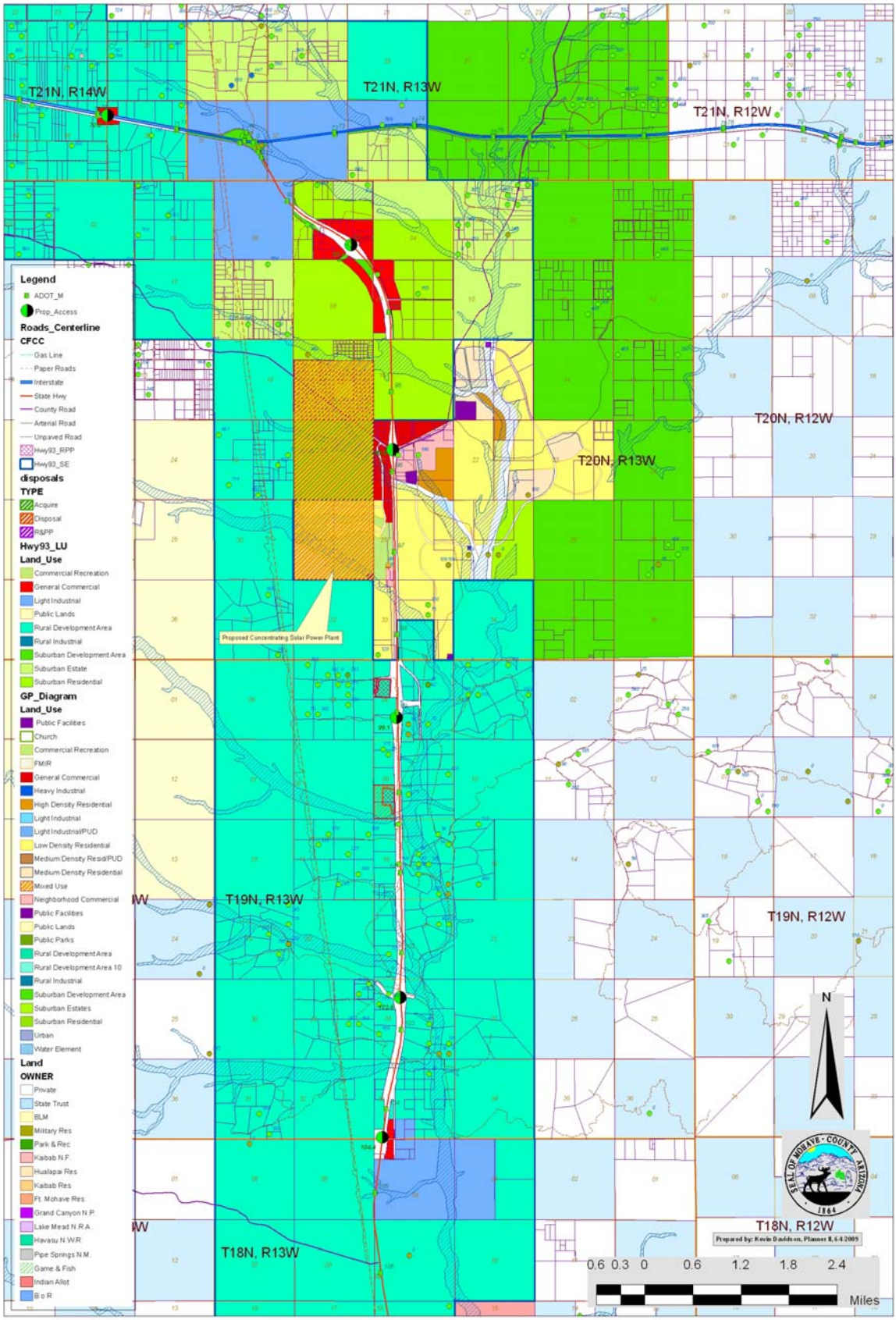
Proposed Hwy 93 Area Plan Land Uses Adjoining Existing General Plan and Golden Valley Area Plan Land Uses in So-Hi



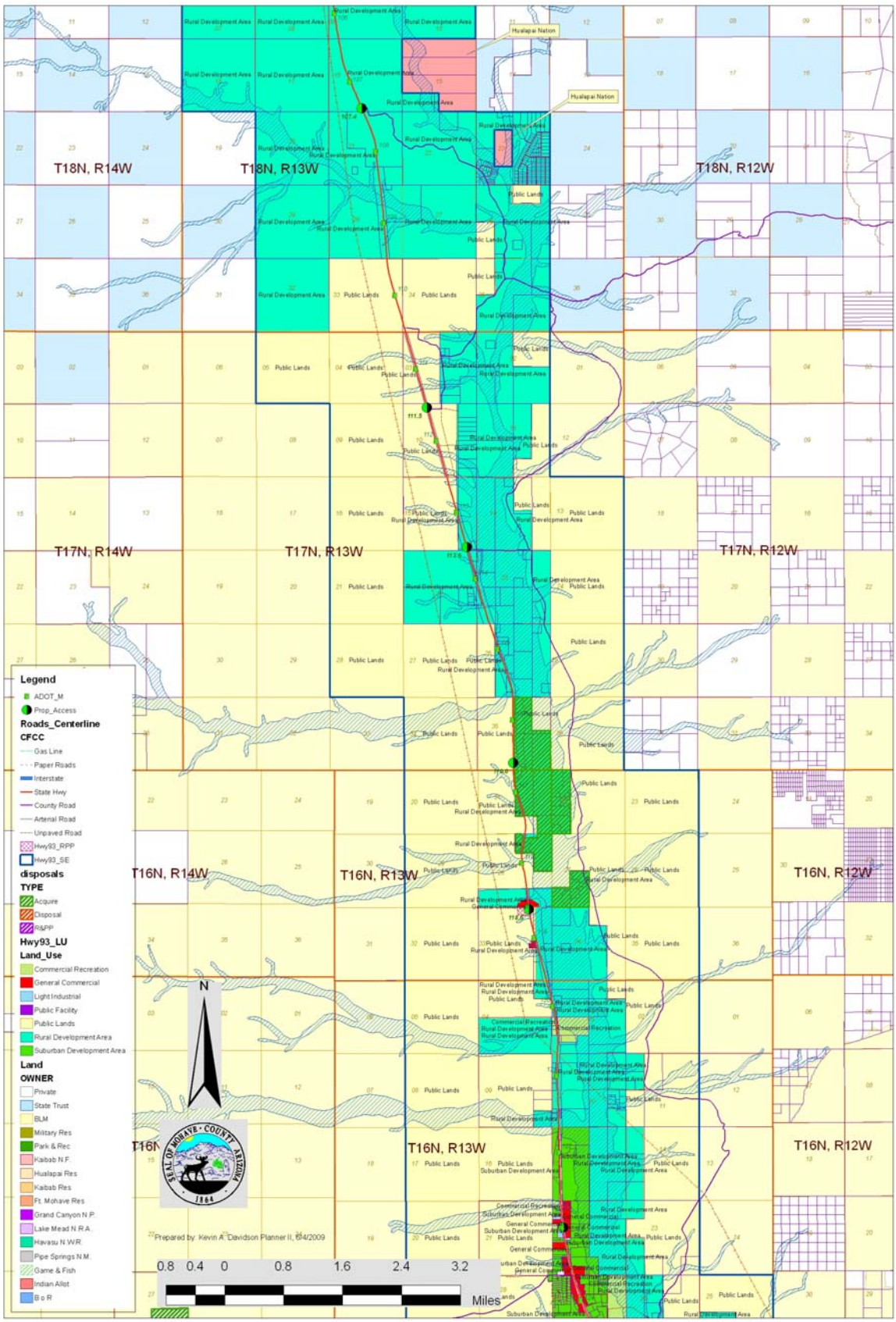
Proposed Highway 93 Area Plan Land Uses Adjoining Existing General Plan Land Uses between Kingman and Round Valley



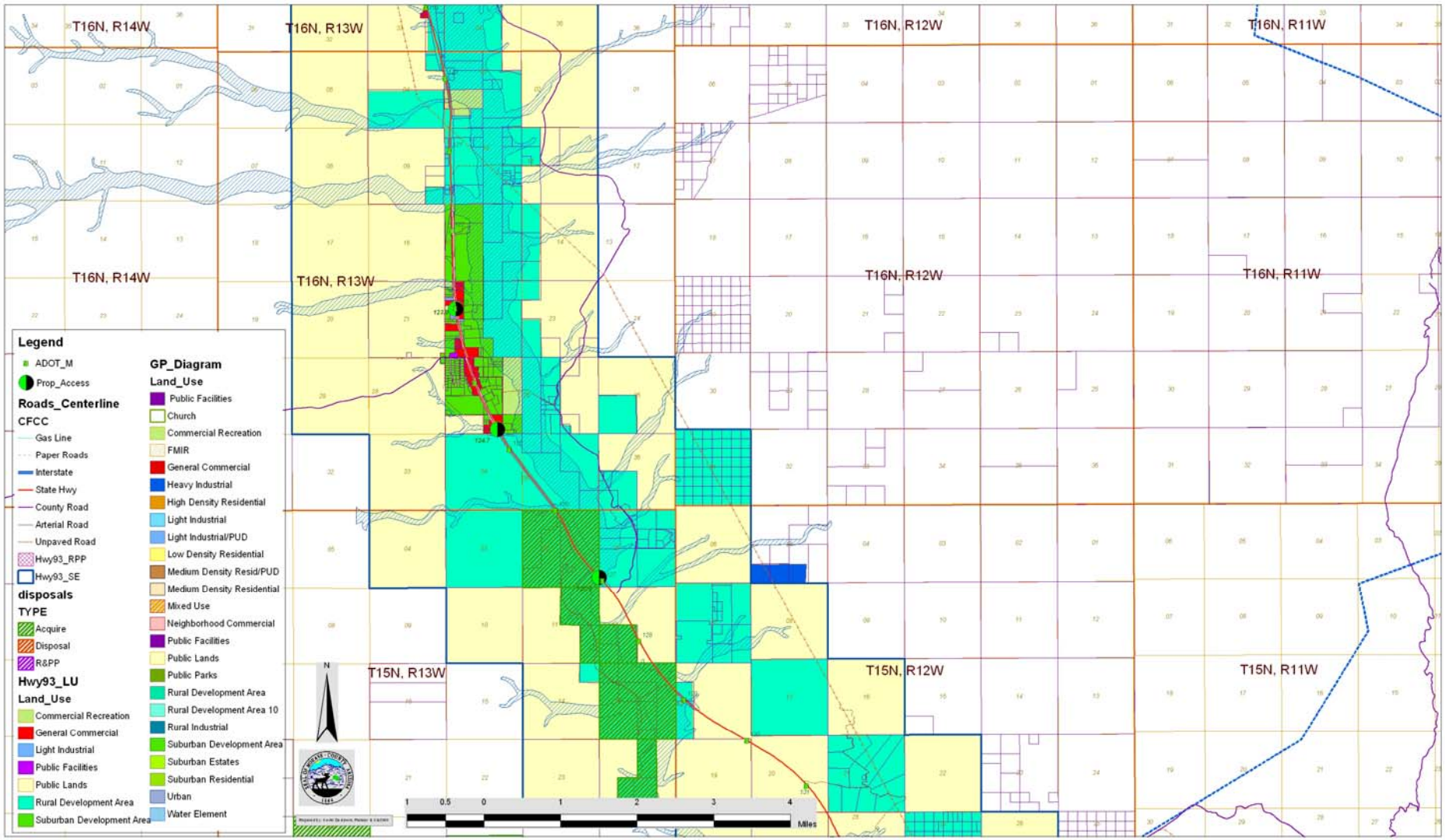
Proposed Highway 93 Area Plan Land Uses Adjoining Existing General Plan and Silverado Area Plan Land Uses



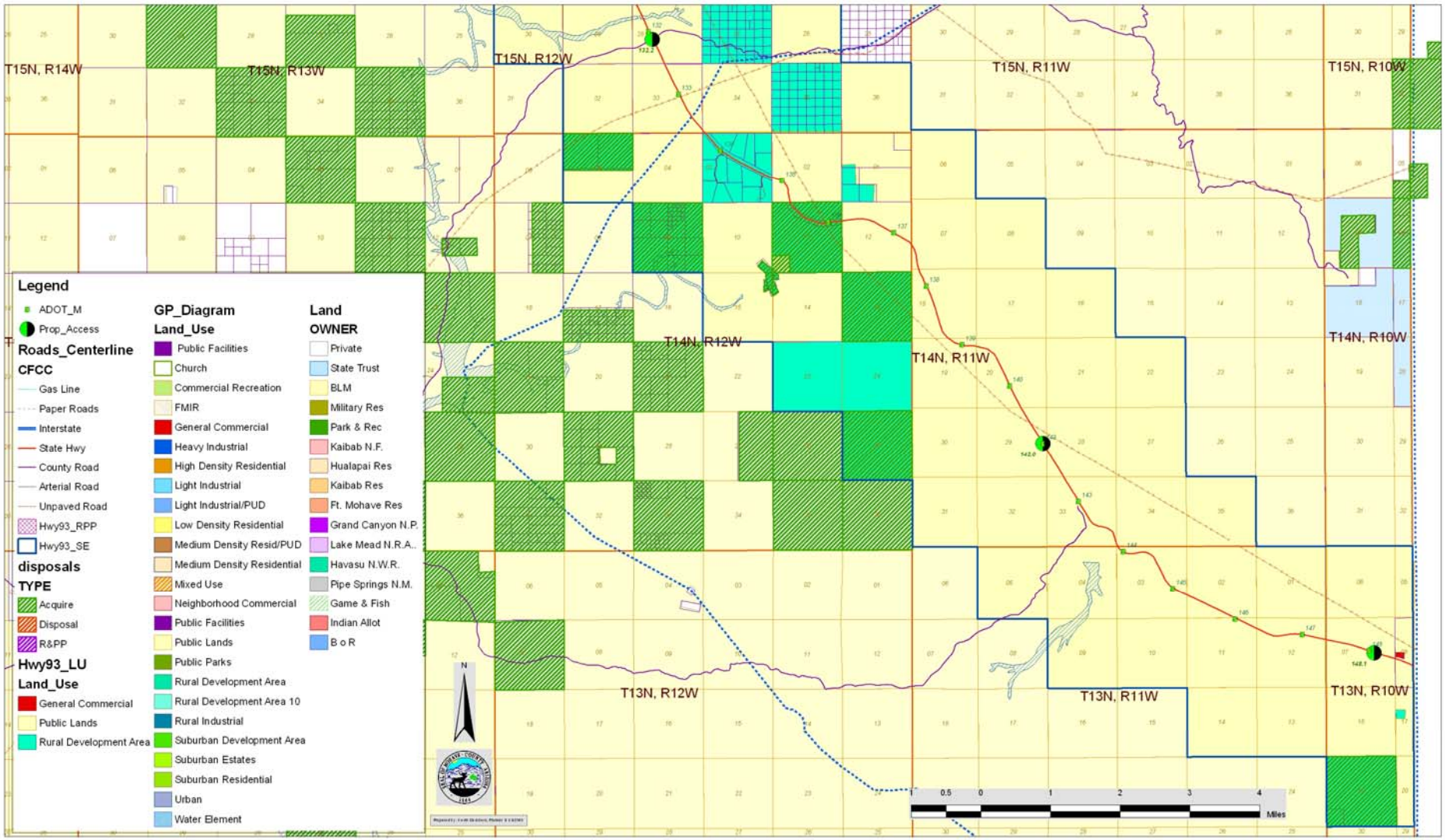
Proposed Highway 93 Area Plan Land Uses Adjoining Existing General Plan Land Uses in the Cane Springs Vicinity



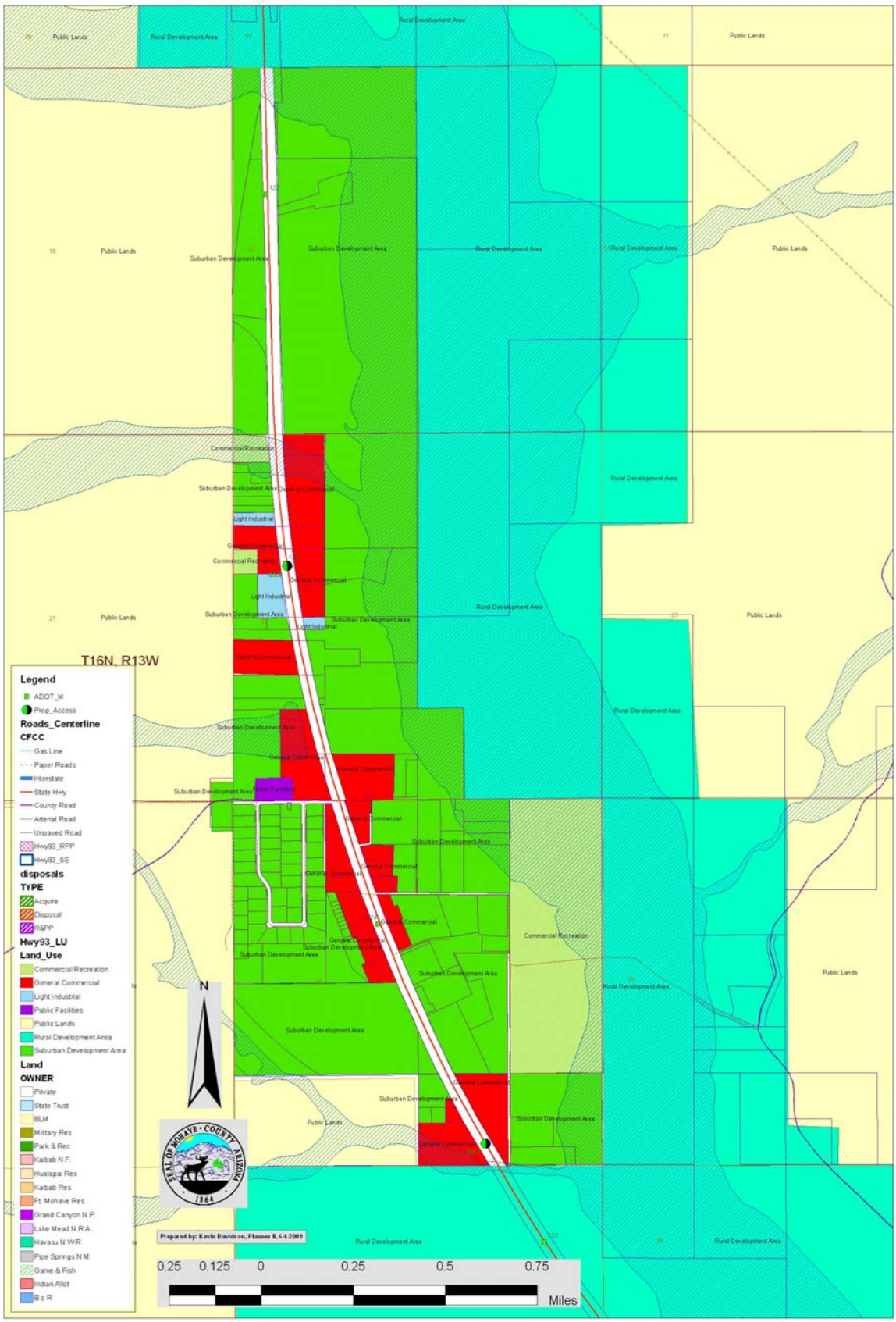
Proposed Highway 93 Area Plan Land Uses Adjoining Existing General Plan Land Uses between Wikieup and Signal Road



Proposed Highway 93 Area Plan Land Uses Adjoining Existing General Plan Land Uses between Signal Road and Nothing



Proposed Highway 93 Area Plan Land Uses Adjoining Existing General Plan Land Uses in Wikieup



Section III

Natural Resources Element		
Goals	**Implementation Technique**	**Responsibility**
1	Building Permit, Rezone, Subdivision Plat, Site Plan & BLM designation	Mohave County Development Services Dept, Mohave County Public Works, Mohave County Flood Control District & BLM
2	Grading Permit, Site Plan, Building Permit, Landscape Ord	Mohave County Development Services Dept, Mohave County Public Works
3	Building Permit, Grading Permit, Site Plan, Rezone	Mohave County Development Services Dept, Mohave County Public Works.
4	Building Permit, Rezone, Subdivision Plat, Site Plan, BLM designation, Landscape Ord	Mohave County Development Services Dept, Mohave County Public Works & BLM
5	Rezone, Site Plan	Mohave County Development Services Dept, & Property Owners
6	Grading Permit, Site Plan, Building Permit, Landscape Ord	Mohave County Development Services Dept & Mohave County Public Works
7	Rezone, Zoning Use Permit, Site Plan, Building Permit, Landscape Ord & Hillside Development Ord	Mohave County Development Services Dept
8	Rezone, Site Plan, Building Permit, Hillside Development Ord & BLM designation	Mohave County Development Services Dept and BLM
9	Dark Sky Ordinance & Building Permit	Mohave County Development Services Dept
10	Dark Sky Ordinance & Building Permit	Mohave County Development Services Dept
11	Rezone, Zoning Use Permit, Site Plan & Building Permit	Mohave County Development Services Dept
12	Rezone, Subdivision Plat & Site Plan	Mohave County Development Services Dept

Water Resources Element		
Goals	**Implementation Technique**	**Responsibility**
13	Rezone, Site Plan & Landscape Ordinance.	Mohave County Development Services Dept.
14	Rezone, Subdivision Plat, Site Plan & Grading Permit	Mohave County Development Services Dept. & Mohave County Public Works
15	Rezone, Subdivision Plat, Site Plan, Building Permit & Landscape Ordinance	Mohave County Development Services Dept, Mohave County Public Works, & Mohave County Environmental Heath Dept.
16	Site Plan, Building Permit & Landscape Ordinance	Mohave County Development Services Dept.

Public Safety Element		
Goals	**Implementation Technique**	**Responsibility**
17	Rezone, Subdivision Plat, Building Permit, Fire District Annexation, General Fund & Landscape Ordinance	Mohave County Development Services Dept., Mohave County Sheriff's Office, Fire Departments, BLM and Land Owners.
18	Rezone, Subdivision Plat, BLM designation & Fire District Annexation.	Mohave County Development Services Dept. & Mohave County Public Works & Fire Departments.
19	Capital Improvement Program and Road Maintenance Fund.	Mohave County Public Works.

Economic Development Element		
Goals	**Implementation Technique**	**Responsibility**
20	Plan Amendment & Rezone	Mohave County Development Services Dept. and Citizen Advisory Committee (see Goal 46)
21	Plan Amendment, Rezone, Active Recruitment, Small Business Development Loan Program	Mohave County Development Services Dept. and Mohave County Community and Economic Development Dept.
22	Plan Amendment & Rezone	Mohave County Development Services Dept. & Mohave County Community and Economic Development Dept.
23	Plan Amendment, Rezone, Site Plan, Building Permit & Landscape Ordinance.	Mohave County Development Services Dept.
24	Rezone, Site Plan and Building Permit.	Mohave County Development Services Dept.
25	Rezone, Site Plan and Building Permit.	Mohave County Development Services Dept.

Transportation Element		
Goals	**Implementation Technique**	**Responsibility**
26	Rezone, Zoning Use Permit, Subdivision Plat & Exactions	Mohave County Development Services Dept., & Mohave County Public Works.
27	Rezone, Subdivision Plat & Capital Improvement Program	Mohave County Development Services Dept., & Mohave County Public Works.
28	Road Maintenance and Capital Improvement Program	Mohave County Public Works
29	Rezone, Subdivision Plat, Site Plan, Exactions & Capital Improvement Program	Mohave County Development Services Dept., Mohave County Public Works & ADOT.
30	Road Maintenance and Capital Improvement Program	Mohave County Public Works & Individual land owners.
31	Rezone, Subdivision Plat & Site Plan	Mohave County Development Services Dept. & Mohave County Public Works and Mohave County Trails Association
32	Zoning Use Permits	Mohave County Development Services Dept. & Individual Employers

Land Use Element		
Goals	**Implementation Technique**	**Responsibility**
33	Land Use Diagram, Plan Amendment & Rezone	Mohave County Development Services Dept.
34	Land Use Diagram, Plan Amendment & Rezone	Mohave County Development Services Dept.
35	Rezone, Zoning Use Permit, Site Plan & Building Permit	Mohave County Development Services Dept.
36	Land Use Diagram, Rezone, Zoning Use Permit & Site Plan	Mohave County Development Services Dept & Mohave County Public Works, School Districts, Fire Districts, & Sheriff's Office.
37	Land Use Diagram, Plan Amendment, Rezone, Site Plan	Mohave County Development Services Dept, & Mohave County Public Works
38	Rezone, Subdivision Plat & Site Plan.	Mohave County Development Services Dept., Mohave County Public Works, School Districts & Fire Districts
39	Land Use Diagram, Plan Amendment & Rezone	Mohave County Development Services Dept. and BLM
40	Rezone, Subdivision Plat, Site Plan and Building Permit	Mohave County Development Services Dept, Mohave County Public Works, ADOT & Utility Service Providers
41	Land Use Diagram, Rezone & Subdivision Plat	Mohave County Development Services Dept.
42	Land Use Diagram, Rezone & Subdivision Plat	Mohave County Development Services Dept.
43	Land Use Diagram, Rezone & Subdivision Plat	Mohave County Development Services Dept.
44	Land Use Diagram, Rezone & Subdivision Plat	Mohave County Development Services Dept.
45	Subdivision Plat, Rezone, Building Permit, Community Development Block Grant	Mohave County Development Services Dept. & Mohave County Community Development Dept.
46	Notification to Committee. Establish organization, possibly as a "Non-Profit" per the Internal Revenue Code: 26 U.S.C. §501(c)	Mohave County Development Services Dept. & Citizens living along the Corridor

Appendix A

Species of Concern

Appendix of Arizona Game and Fish Animals found within the Planning Area

Amphibians, Fish & Invertebrates of Concern	Detrital Wash	13-Mile Trib Wash (So-Hi)	Cane Springs Wash	Tompkins Canyon	Species Specific Stressor
Arizona Toad			X	X	
Canyon Tree Frog			X	X	
Lowland Leopard Frog		X	X	X	
Desert Sucker			X	X	
Longfin Dace			X	X	
Roundtail Chub			X	X	
Sonora Sucker			X		
Speckled Dace			X		
Kingman Springsnail		X			

Source: T. Buhr, Arizona Game & Fish Dept., Region III, December, 2008

Mammals of Concern	Detrital Wash	13-Mile Trib Wash (So-Hi)	Cane Springs Wash	Tompkins Canyon	Species Specific Stressor
Big Free-tailed Bat	X	X	X	X	
California Leaf-nosed Bat	X	X	X	X	
California Myotis (bat)	X	X	X	X	
Greater Western Mastiff Bat	X	X	X	X	Pesticides/Alt Rivers
Mexican Free-tailed Bat	X	X	X	X	
Spotted Bat	X	X	X	X	
Western Pipistrelle (bat)	X	X	X	X	
Western Red Bat			X	X	
Jaguar			X		Livestock/Harvesting
Common Muskrat			X	X	
Hualapai Mexican Vole			X	X	Recreational Sites
Mogollon Vole		X	X	X	
Southwestern River Otter			X	X	
Spotted Ground Squirrel		X	X	X	

Source: T. Buhr, Arizona Game & Fish Dept., Region III, December, 2008

Reptiles of Concern	Detrital Wash	13-Mile Trib Wash (So-Hi)	Cane Springs Wash	Tompkins Canyon	Species Specific Stressor
Hernandez's (Greater) Short-horn Lizard		X	X	X	
Yucca Night Lizard	X	X		X	
Desert Rosy Boa (snake)	X	X	X	X	
Mexican Rosy Boa (snake)	X				
Mojave Shovel-nosed Snake	X	X	X	X	
Smith's Black-headed Snake	X	X	X	X	
Western Black-necked Gartersnake			X	X	
Sonoran Desert Tortoise	X	X	X	X	Transportation/Poach
Sonoyta Mud Turtle			X		
Sonoran Mud Turtle				X	

Source: T. Buhr, Arizona Game & Fish Dept., Region III, December, 2008

Game Species	Detrital Wash	13-Mile Trib Wash (So-Hi)	Cane Springs Wash	Tompkins Canyon	Species Specific Stressor
Mamals					
America Pronghorn			X		
American Beaver		X			
Beaver	X				
Black Bear			X		
Desert Bighorn Sheep	X				
Elk		X	X	X	
Javelina		X	X	X	
Kit Fox	X	X	X	X	
Mountain Lion	X	X	X	X	
Birds					
Gambel's Quail	X	X	X	X	
Turkey			X	X	
Whitewing Dove	X	X	X	X	

Source: T. Buhr, Arizona Game & Fish Dept., Region III, December, 2008

Birds of Concern	Detrital Wash	13-Mile Trib Wash (So-Hi)	Cane Springs Wash	Tompkins Canyon	Species Specific Stressor	Nesting Habit
American Bittern			X	X		Ground
American Peregrine Falcon	X	X	X	X		Cliff
American Pipit	X	X	X	X		Ground
American Wigeon	X	X	X	X		Ground
Bald Eagle	X	X	X	X	Multiple Stresors	Cliff
Belted Kingfisher	X	X	X	X		Ground
Blue-throated Hummingbird	X	X	X	X		Tree
Blue-winged Teal				X		Ground
Canada Goose	X	X	X	X		Ground
Canvasback	X	X	X	X		Ground
Common Black-Hawk			X	X	Livestock/Camping	Tree
Common Merganser	X	X	X	X		Tree
Eared Grebe	X	X	X	X		Water
Ferruginous Hawk	X	X	X	X		Tree
Gilded Flicker	X	X	X	X		Cactus
Golden Eagle	X	X	X	X		Cliff
Golden-crowned Kinglet			X	X		Tree
Great Egret			X	X	Wetland Filling	Tree
Green-tailed Towhee	X	X	X	X		Ground
Indigo Bunting			X	X		Shrub
Le Conte's Thrasher		X				Cactus
Lincoln's Sparrow	X	X	X	X		Ground
Marsh Wren	X	X	X	X		Marsh
Northern Harrier	X	X	X	X		Ground
Northern Pintail	X	X	X	X		Ground
Northern Shoveler	X	X	X	X		Ground
Orange-crowned Warbler	X	X	X	X		Ground
Red-naped Sapsucker	X	X	X	X		Tree
Ruby-crowned Kinglet	X	X	X	X		Tree
Sage Thrasher	X	X	X	X		Shurb
Savannah Sparrow	X	X	X	X		Ground
Southwestern Willow Flycatcher				X		Tree
Western Burrowing Owl	X	X				Ground
Western Grebe				X		Water
Western Yellow-billed Cuckoo			X		Wetland Filling	Tree
White-crowned Sparrow	X	X	X	X		Ground
Wilson's Snipe	X	X	X	X		Ground
Winter Wren			X	X		Ground
Wood Duck	X	X	X	X		Tree

Appendix B

Hydrographs and Water Adequacy Determinations for:

Detrital
Sacramento
Hualapai
Big Sandy
Bill Williams

Table 4.3-6 Groundwater Data for the Detrital Valley Basin

Basin Area, in square miles:	892	
Major Aquifer(s):	**Name and/or Geologic Units**	
	Recent Stream Alluvium	
	Basin Fill	
	Sedimentary Rock (Muddy Creek and Chemehueve Formations)	
Well Yields, in gpm:	Range 10-44 Median 31.5 (6 wells measured)	Measured by ADWR and/or USGS
	Range 35-240 Median 35 (3 wells reported)	Reported on registration forms for large (> 10-inch) diameter wells
	Range 30-100	ADWR (1990)
	Range 0-500	USGS (1994)
Estimated Natural Recharge, in acre-feet/year:	1,000	Freethey and Anderson (1986)
Estimated Water Currently in Storage, in acre-feet:	1,380,000 to 3,680,000[1] (to 1200 ft)	ADWR (2006)
	1,000,000	ADWR (1994)
	1,000,000[2] (to 1200 ft)	Freethey and Anderson (1986)
	7,000,000 (to 1200 ft)	Arizona Water Commission (1975)
Current Number of Index Wells:	4	
Date of Last Well Sweep:	1995 (26 wells measured)	

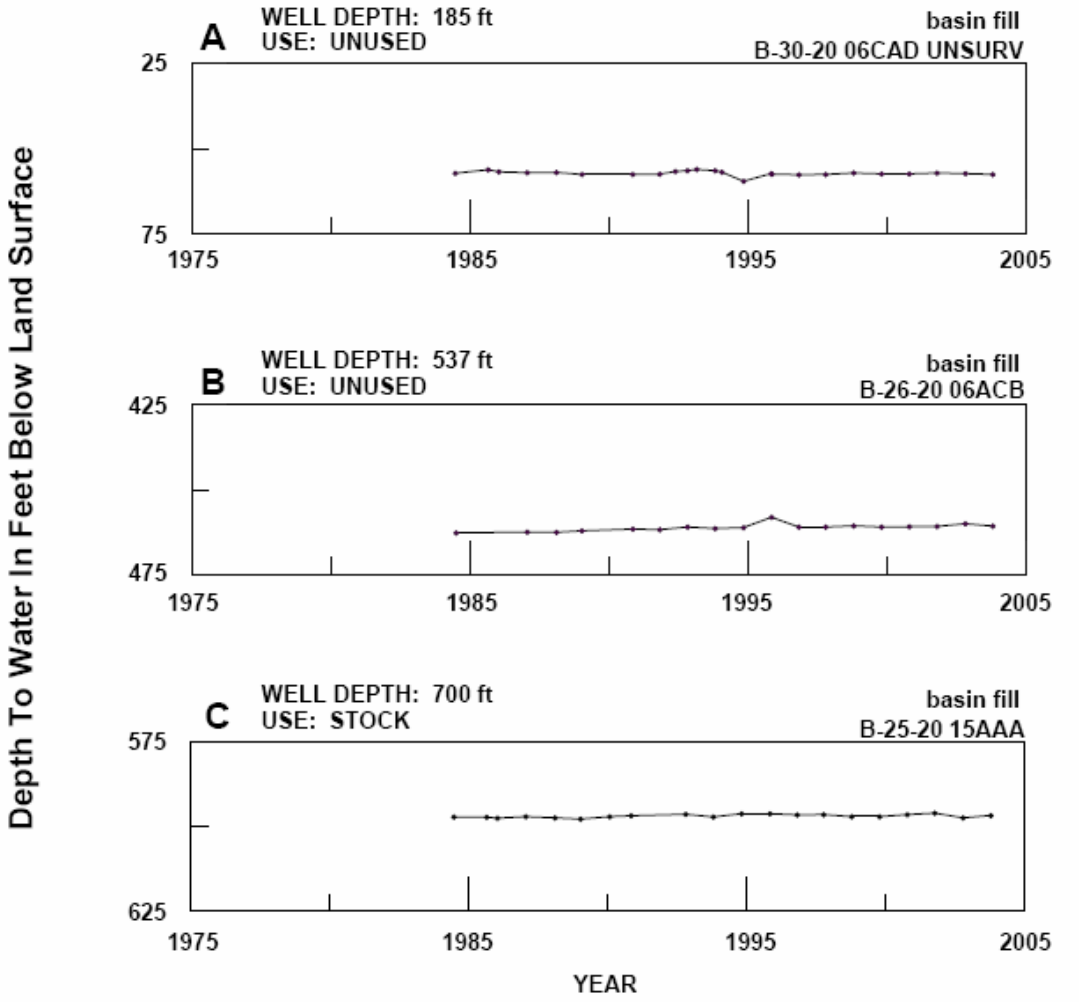
Notes:

[1] Draft estimate, subject to revision. Range based on assumed values for specific yield.

[2] Predevelopment estimate

Appendix – Detrital, Hydrographs

Figure 4.3-7
Detrital Valley Basin
Hydrographs Showing Depth to Water in Selected Wells



Appendix – Detrital, Exceedences

Table 4.3-7 Water Quality Exceedences in the Detrital Valley Basin[1]

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Parameter(s) Exceeding Drinking Water Standard[2]
		Township	Range	Section	
1	Well	31 North	19 West	32	As
2	Well	31 North	19 West	32	As, Rad
3	Well	30 North	20 West	6	As, NO3
4	Well	30 North	22 West	13	Rad
5	Spring	30 North	22 West	13	Rad
6	Well	28 North	21 West	20	As
7	Well	28 North	21 West	23	As, NO3
8	Well	28 North	21 West	26	NO3
9	Spring	27 North	19 West	12	As
10	Well	27 North	21 West	13	As
11	Well	27 North	21 West	24	As
12	Well	27 North	21 West	25	As
13	Spring	25 North	18 West	16	As, Rad
14	Spring	25 North	18 West	17	As
15	Well	25 North	21 West	35	NO3
16	Well	24 North	18 West	20	Rad
17	Well	24 North	18 West	30	Pb
18	Well	24 North	18 West	30	Pb
19	Well	24 North	18 West	30	Rad
20	Well	24 North	18 West	31	As
21	Well	24 North	18 West	32	Pb
22	Well	23 North	18 West	6	TDS
23	Well	23 North	20 West	11	As

B. Lakes and Streams

Map Key	Site Type	Site Name	Length of Impaired Stream Reach (in miles)	Area of Impaired Lake (in acres)	Designated Use Standard	Parameter(s) Exceeding Use Standard
None identified by ADWR at this time						

Notes:

[1] Water quality samples collected between 1975 and 2002.

[2] As = Arsenic
Pb = Lead
NO3 = Nitrate/Nitrite
Rad = One or more of the following radionuclides - Gross Alpha, Gross Beta, Radium, and Uranium
TDS = Total Dissolved Solids

Appendix – Detrital, Cultural Demand

Table 4.3-8 Cultural Water Demands in the Detrital Valley Basin[1]

Year	Recent (Census) and Projected (DES) Population	Number of Registered Water Supply Wells Drilled		Average Annual Demand (in acre-feet)						Data Source
				Well Pumpage			Surface-Water Diversions			
		Q ≤ 35 gpm	Q > 35 gpm	Municipal	Industrial	Irrigation	Municipal	Industrial	Irrigation	
1971		86[2]	8[2]	<500			NR			ADWR (1994)
1972										
1973										
1974										
1975										
1976				<500			NR			
1977										
1978										
1979										
1980	757									
1981	776	0	0	<500			NR			
1982	795									
1983	815									
1984	834									
1985	853									
1986	872	0	0	<500			NR			
1987	891									
1988	911									
1989	930									
1990	949									
1991	991	10	3	<300	NR	NR	<300	NR	NR	USGS (2005) ADWR (2006)
1992	1,034									
1993	1,076									
1994	1,119									
1995	1,161									
1996	1,204	22	0	<300	NR	NR	<300	NR	NR	
1997	1,246									
1998	1,289									
1999	1,331									
2000	1,374									
2001	1,397	16	0	<300	NR	NR	<300	NR	NR	
2002	1,419									
2003	1,442									
2010	1,599									
2020	1,831									
2030	2,003									
2040	2,114									
2050	2,200									
ADDITIONAL WELLS:[3]		8	1							
WELL TOTALS:		142	12							

Notes:
NR = Not reported
[1] Does not include evaporation losses from stockponds and reservoirs.
[2] Includes all wells through 1980.
[3] Other water-supply wells are listed in the ADWR Well Registry for this basin, but they do not have completion dates. These wells are summed here.

Table 4.3-9 Adequacy Determinations in the Detrital Valley Basin[1]

A. Water Adequacy Reports

Map Key	Subdivision Name	County	Location			No. of Lots	ADWR File No.[2]	ADWR Adequacy Determination	Reason(s) for Inadequacy Determination[3]	Date of Determination	Water Provider at the Time of Application
			Township	Range	Section						
1	Equestrian Estates at White Hills, Tract 3816	Mohave	27 North	19 West	5	116	53-700573	Inadequate	A1	10/16/2008	Equestrian Estates White Hills Water Cooperative
2	Flannery & Allen	Mohave	27 North	20 West	31	55	53-400912	Inadequate	A1,A2	04/10/2003	Individual Wells
3	Gateway Acres, Tract One	Mohave	25 North	20 West	5	237	53-700289	Inadequate	A1	04/19/2007	Dry Lot Subdivision
4	Gateway Acres, Tracts, 1,2,7 & 8	Mohave	25 North	20 West	3, 5, 7, 11, 13, 14, 15, 17, 21, 23	352	53-401105	Inadequate	A1,A2	05/07/2004	None
5	Gateway Acres 3&4	Mohave	25 North	19 West	5,9, 7,17,29	205	53-500694	Inadequate	A2,A3	08/29/1985	Dry Lot Subdivision
6	Gateway Acres Tract 05	Mohave	24 North	20 West	23, 25	340	53-500695	Inadequate	A2,A3	08/27/1984	Dry Lot Subdivision
7	Gateway Acres Tract 06	Mohave	24 North	20 West	11	49	53-500696	Inadequate	A1,A2,A3	08/13/1982	Dry Lot Subdivision
8	Gateway Acres Tract 06A	Mohave	24 North	20 West	11		53-500697	Inadequate	A2,A3	03/14/1984	Dry Lot Subdivision
9	Gateway Acres 8	Mohave	25 North	19 West	1, 13	642	53-500692	Inadequate	A2,A3	11/23/1977	Dry Lot Subdivision
10	Gateway Acres 9	Mohave	25 North	19 West	5,7,9,17,19,21,29	NA	NA	Inadequate	A2,A3	11/24/1977	Dry Lot Subdivision
11	Gateway Acres Tract 11	Mohave	24 North	19 West	7	186	53-500698	Inadequate	A2,A3	03/14/1984	Dry Lot Subdivision
12	Gateway Acres Tract 11A	Mohave	24 North	19 West	9	NA	53-500699	Inadequate	A1,A2,A3	06/30/1992	Dry Lot Subdivision
13	Gateway Acres Tract 12	Mohave	24 North	19 West	19, 31	340	53-500700	Inadequate	A2,A3	08/27/1984	Dry Lot Subdivision
14	Gateway Acres 13	Mohave	25 North	20 West	31	NA	53-500693	Inadequate	D	07/29/1993	Dry Lot Subdivision
15	Golden Horseshoe Ranchos #1	Mohave	27 North	20 West	9	98	53-500718	Inadequate	A1	12/31/1992	Dry Lot Subdivision
16	Golden Horseshoe Ranchos #2	Mohave	27 North	19 West	7	540	53-300222	Inadequate	A1,A2	11/07/1996	Dry Lot Subdivision
17	Golden Horseshoe Ranchos Units 3 & 4	Mohave	27 North	19 West	9, 17	192	53-300196	Inadequate	A2	09/26/1996	Dry Lot Subdivision
18	Golden Horseshoe Ranchos Unit #5	Mohave	27 North	19 West	19	375	53-400274	Inadequate	A1,B,C	04/07/2000	White Hills Water Company
19	Golden Horseshoe Ranchos Unit 4 lots 17,27,240,242, 275,276	Mohave	27 North	19 West	17	6	53-700533	Inadequate	A1	06/20/2008	Dry Lot Subdivision
20	Golden Horseshoe Ranchos Unit 5	Mohave	27 North	19 West	19	283	53-401884	Inadequate	A1	10/06/2005	Dry Lot Subdivision
21	Golden Horseshoe Ranchos, Unit 1, Unit 3, Unit 4 and Unit 6	Mohave	27 North	19 West	9, 17, 21	376	53-700285	Inadequate	A1	06/19/2007	Dry Lot Subdivision
21	Golden Horseshoe Ranchos, Unit 1, Unit 3, Unit 4 and Unit 6	Mohave	27 North	20 West	9	376	53-700285	Inadequate	A1	06/19/2007	Dry Lot Subdivision
22	Lake Mohave Ranchos	Mohave	25 North	19 West	1, 11, 23, 27	NA	53-500885	Inadequate	A2,A3	11/23/1977	Dry Lot Subdivision
23	Lake Mohave Ranchos A	Mohave	25 North	18 West	7	NA	53-500884	Inadequate	A2,A3	11/23/1977	Dry Lot Subdivision
24	Lake Mohave Ranchos B&C	Mohave	26 North	20 West	35	642	53-500888	Inadequate	A2,A3	11/23/1977	Dry Lot Subdivision

25	Lake Mohave Ranchos Unit 16	Mohave	25 North	18 West	7	9	53-401802	Inadequate	A1	07/14/2005	Dry Lot Subdivision
26	Sunny Lakes Ranchos Unit 1	Mohave	28 North	20 West	13	546	53-402260	Inadequate	A2	08/25/2006	Dry Lot Subdivision
27	Sunset Vista	Mohave	25 North	19 West	4	10	53-401293	Inadequate	A1,A2	05/07/2004	NA
30	Triangle Air Park	Mohave	27 North	21 West	24	35	53-501581	Inadequate	A1,A2,A3	01/24/1984	Dry Lot Subdivision
31	Western Horizon Estates #2	Mohave	24 North	19 West	27	80	53-501670	Inadequate	A1,A2,A3	07/13/1992	Dry Lot Subdivision

B. Analysis of Adequate Water Supply

Map Key	Subdivision Name	County	Location			No. of Lots	ADWR File No.[2]	Date of Determination	Water Provider at the Time of Application
			Township	Range	Section				
28	The Ranch At White Hills	Mohave	24 North	20 West	13, 33, 35	25,000	43-401774	04/11/2006	Double Diamond Utilties
			25 North	19 West	6, 8, 18, 30				
			25 North	20 West	3, 5, 7, 9, 11-15, 17, 19, 21, 23				
			25 North	21 West	35				
			28 North	19 West	9, 15, 17, 19, 21, 27, 29, 31, 33, 35				
			28 North	20 West	23, 25, 35				
			27 North	19 West	1, 3, 9, 11, 13, 15, 19, 21, 23, 25, 27, 29, 31, 33, 35				
			27 North	20 West	1, 9, 13, 25, 31, 35				
			29 North	19 West	21, 29, 33				
			27 North	21 West	13, 25				
29	The Villages at White Hills	Mohave	27 North	20 West	16, 20, 21, 23, 30	25,953	43-401674	07/18/2007	Undetermined
			27 North	21 West	25				

Notes:

[1]Each determination of the adequacy of water supplies available to a subdivision is based on the information available to ADWR and the standards of review and policies in effect at the time the determination was made. In some cases, ADWR might make a different determination if a similar application were submitted today, based on the hydrologic data and other information currently available, as well as current rules and

[2] Prior to February 1995, ADWR did not assign file numbers to applications for adequacy determination.

[3] A. Physical/Continuous

1) Insufficient Data (applicant chose not to submit necessary information, and/or available hydrologic data insufficient to make determination)
2) Insufficient Supply (existing water supply unreliable or physically unavaible; for groundwater, depth-to-water exceeds criteria)
3) Insufficient Infrastructure (distribution system is insufficient to meet demands or applicant proposed water hauling)

B. Legal (applicant failed to demonstrate a legal right to use the water or failed to demonstrate the provider's legal authority to serve the subdivision)

C. Water Quality

D. Unable to locate records

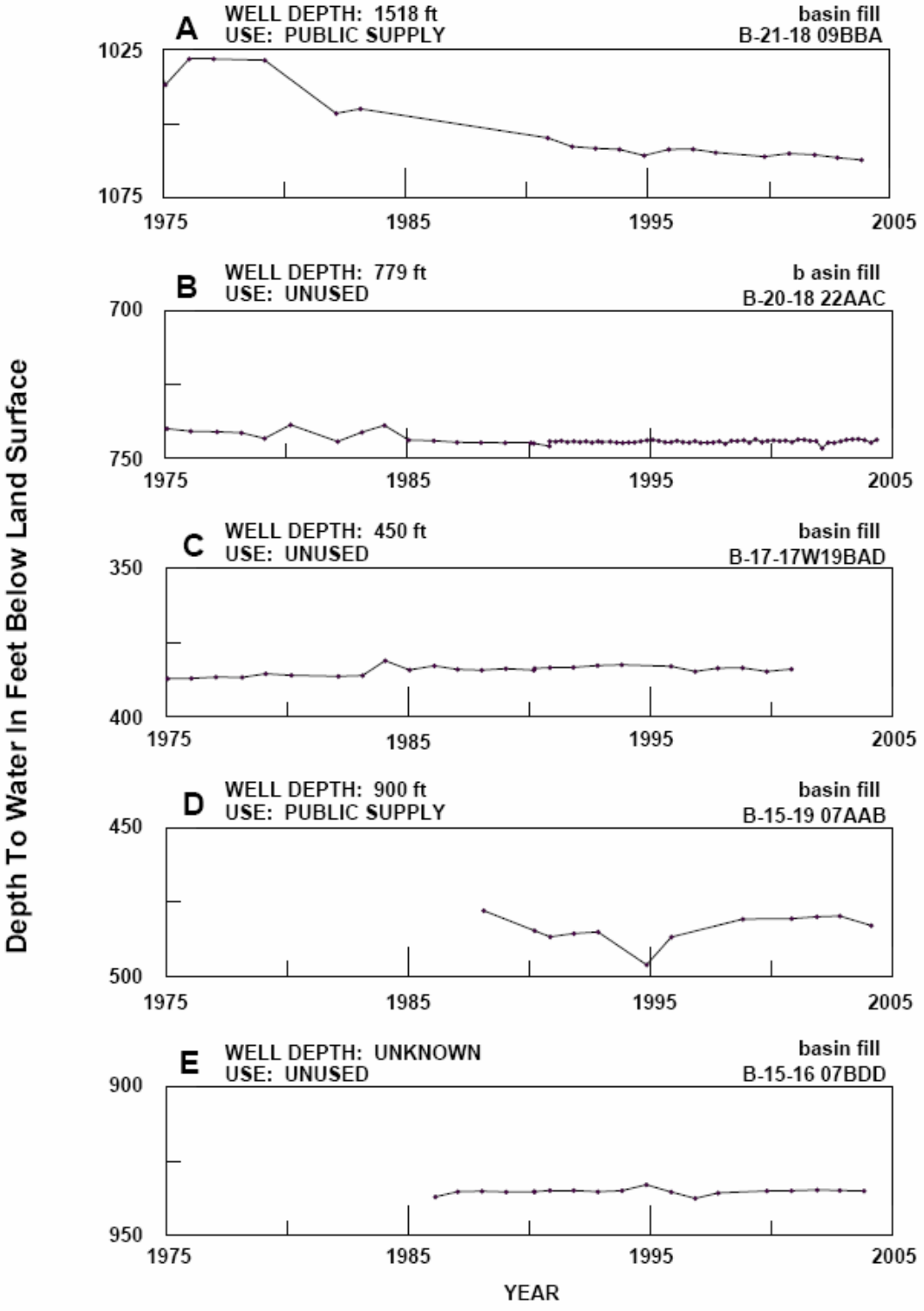
NA = Data not currently available to ADWR

Table 4.9-6 Groundwater Data for the Sacramento Valley Basin

Basin Area, in square miles:	1,587	
Major Aquifer(s):	**Name and/or Geologic Units**	
	Basin Fill	
	Volcanic Rock	
Well Yields, in gal/min:	Range 94-753 Median 167 (9 wells measured)	Measured by ADWR and/or USGS
	Range 5-1,000 Median 100 (36 wells reported)	Reported on registration forms for large (> 10-inch) diameter wells
	Range 30-100	ADWR (1990)
	Range 0-2,500	USGS (1994)
Estimated Natural Recharge, in acre-feet/year:	1,000	ADWR (1991) (HMS 21)
	4,000	Freethey and Anderson (1986)
Estimated Water Currently in Storage, in acre-feet:	7,000,000 - 8,300,000 (to 1,200 ft)	ADWR (1990 and 1994)
	11,000,000[1] (to 1,200 ft)	Freethey and Anderson (1986)
	14,000,000 (to 1,200 ft)	Arizona Water Commission (1975)
	6,500,000 - 13,000,000 (to 1,500 ft)	USGS (1971)
Current Number of Index Wells:	11	
Date of Last Water-level Sweep:	1995 (60 wells measured)	

Notes:
[1]Predevelopment Estimate

Figure 4.9-7
Sacramento Valley Basin
Hydrographs Showing Depth to Water in Selected Wells



Appendix – Sacramento, Exceedences

Table 4.9-7 Water Quality Exceedences in the Sacramento Valley Basin[1]

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Parameter(s) Exceeding Drinking Water Standard[2]
		Township	Range	Section	
1	Well	24 North	18 West	33	Rad
2	Well	24 North	18 West	33	Rad
3	Well	24 North	18 West	34	Pb
4	Well	23 North	18 West	3	As, NO3, Rad
5	Well	23 North	18 West	3	As, Rad
6	Well	23 North	18 West	3	NO3, Rad
7	Well	23 North	18 West	3	NO3, Rad
8	Well	23 North	18 West	3	Rad
9	Well	23 North	18 West	3	As
10	Mine	23 North	18 West	3	As, Cd, Pb, TDS
11	Well	23 North	18 West	3	As, NO3
12	Well	23 North	18 West	3	NO3
13	Mine	23 North	18 West	14	Cd, Cu
14	Spring	22 North	17 West	6	As, Rad
15	Mine	22 North	17 West	6	As
16	Well	22 North	17 West	7	Cd, Be, Pb
17	Spring	22 North	17 West	17	As, Rad
18	Well	22 North	17 West	30	NO3
19	Well	22 North	19 West	11	NO3
20	Well	22 North	20 West	35	NO3
21	Well	21 North	17 West	11	NO3
22	Well	21 North	18 West	5	As
23	Well	21 North	18 West	5	Cr
24	Well	21 North	18 West	9	As
25	Well	21 North	18 West	30	As
26	Well	21 North	18 West	32	Pb
27	Well	21 North	19 West	25	As
28	Spring	20 North	17 West	2	As
29	Spring	20 North	19 West	7	Cd
30	Well	20 North	19 West	9	As
31	Well	19 North	16 West	7	F, Rad
32	Well	19 North	17 West	16	F, NO3, Rad
33	Spring	18 North	16 West	25	As, Rad
34	Well	18 North	16 West	26	F, Rad
35	Well	18 North	17 West	11	F, Rad
36	Spring	17 North	15 West	32	As, Rad
37	Well	17 North	16 West	2	F, Rad
38	Well	17 North	18 West	12	As
39	Well	17 North	18 West	25	As
40	Spring	16 North	15 West	20	Rad
41	Well	16 North	15 West	33	F
42	Well	16 North	15 West	36	As
43	Well	16 North	15 West	36	F, Rad
44	Well	16 North	15 West	36	F
45	Well	16 North	16 West	11	As, Rad
46	Well	16 North	16 West	14	F
47	Well	16 North	16 West	14	F, Rad
48	Well	16 North	20 West	14	F
49	Well	16 North	20.5 West	14	F
50	Well	16 North	21West	35	As, Cd, F
51	Well	16 North	21West	35	As, Cd, F
52	Well	16 North	21West	36	As, F
53	Well	15 North	14 west	8	F

Appendix – Sacramento, Exceedences

Table 4.9-7 Water Quality Exceedences in the Sacramento Valley Basin (cont'd)[1]

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Parameter(s) Exceeding Drinking Water Standard[2]
		Township	Range	Section	
54	Well	15 North	15 West	15	As, F, Rad, TDS
55	Well	15 North	15 West	15	Rad
56	Well	15 North	16 West	1	F, Rad
57	Well	14 North	15 West	2	F, Rad
58	Well	14 North	17 West	2	F
59	Well	14 North	17 West	12	F
60	Well	13 North	15 West	12	NO3, Rad
61	Well	13 North	15 West	14	As
62	Well	13 North	15 West	33	Rad

B. Lakes and Streams

Map Key	Site Type	Site Name	Length of Impaired Stream Reach (in miles)	Area of Impaired Lake (in acres)	Designated Use Standard	Parameter(s) Exceeding Use Standard
None identified by ADWR at this time						

Notes:

[1] Water quality samples collected between 1978 and 2004.

[2] As = Arsenic
Be = Beryllium
Cd = Cadmium
Cu = Copper
Cr = Chromium
F = Fluoride
Pb = Lead
NO3 = Nitrate/Nitrite
TDS = Total Dissolved Solids
Rad = One or more of the following radionuclides - Gross Alpha, Gross Beta, Radium, and Uranium

Appendix – Sacramento, Cultural Demand

Table 4.9-8 Cultural Water Demands in the Sacramento Valley Basin[1]

Year	Recent (Census) and Projected (DES) Population	Number of Registered Water Supply Wells Drilled		Average Annual Demand (in acre-feet)[2]						Data Source
				Well Pumpage			Surface-Water Diversions			
		Q ≤ 35 gpm	Q > 35 gpm	Municipal[3]	Industrial	Irrigation	Municipal	Industrial	Irrigation	
1971		332[4]	37[4]		6,000			NR[5]		ADWR (1994)
1972										
1973										
1974										
1975										
1976					7,000			NR		
1977										
1978										
1979										
1980	7,245									
1981	7,578	63	2		3,000			NR		
1982	7,911									
1983	8,244									
1984	8,577									
1985	8,910									
1986	9,243	61	4		2,000			NR		
1987	9,576									
1988	9,909									
1989	10,242									
1990	10,575									
1991	11,145	133	11	1,500	<300	NR		NR		USGS (2005)
1992	11,715									
1993	12,285									
1994	12,855									
1995	13,425									
1996	13,995	168	5	1,800	200	NR		NR		
1997	14,565									
1998	15,136									
1999	15,706									
2000	16,276									
2001	16,598	66	0	2,000	1,700	NR		NR		
2002	16,920									
2003	17,243									
2010	19,498									
2020	22,774									
2030	25,234									
2040	26,798									
2050	28,031									
ADDITIONAL WELLS:[6]		82	2							
WELL TOTALS:		905	61							

Notes:
NR = Not reported
[1] Does not include evaporation losses from stockponds and reservoirs.
[2] Includes pumpage and diversion of Colorado River Contract Water.
[3] The majority of the water for the City of Kingman comes from well fields in the Hualapai Valley Basin
[4] Includes all wells through 1980.
[5] The 1994 ADWR Arizona Water Resources Assessment included surface water diversions for this basin for the Havasu National Wildlife Refuge.
[6] Other water-supply wells are listed in the ADWR Well Registry for this basin, but they do not have completion dates. These wells are summed here.

Table 4.9-10 Adequacy Determinations in the Sacramento Valley Basin[1]

A. Water Adequacy Reports

Map Key	Subdivision Name	County	Location			No. of Lots	ADWR File No.[2]	ADWR Adequacy Determination	Reason(s) for Inadequacy Determination[3]	Date of Determination	Water Provider at the Time of Application
			Township	Range	Section						
1	AZ Gateway	Mohave	16 North	20 West	13	51	53-400703	Adequate		06/11/2002	Arizona American Water Company (Citizens)
2	Black Hills Ranchos Tract 3301	Mohave	21 North	19 West	14	23	53-500340	Adequate		03/15/1995	Golden Valley County Improvement District #1
3	Desert Shadows Ranchos	Mohave	17 North	17 West	9, 15, 25	947	53-500582	Inadequate	A1,A3	05/20/1988	Dry Lot Subdivision
4	Desert Shadows Ranchos of Az #02	Mohave	17 North	17 West	31	12	53-500584	Adequate		08/23/1991	Dry Lot Subdivision
5	Friendly Golden Valley #1	Mohave	21 North	18 West	17	63	53-500688	Adequate		09/14/1993	Valley Pioneer Water Company
7	Golden Valley Ranchos	Mohave	20 North	19 West	23, 35	61	53-500005	Inadequate	A1	02/13/2007	Dry Lot Subdivision
10	Holiday Shores #7	Mohave	20 North	18 West	18	92	53-500801	Adequate		07/29/1977	Oasis Utility Company
11	Lake Havasu Estates #08	Mohave	17 North	17 West	35	NA	53-500873	Inadequate	A1	10/14/1993	Dry Lot Subdivision
12	Lake Havasu Estates Unit 9	Mohave	17 North	17 West	25	120	53-400425	Inadequate	A1	11/21/2000	Dry Lot Subdivision
13	Lake Havasu Estates Unit 9	Mohave	17 North	17 West	25	27	53-401941	Inadequate	A1	12/13/2005	Dry Lot Subdivision
14	Lake Havasu Estates Unit 13	Mohave	17 North	16 West	31	184	53-400427	Inadequate	A1	11/21/2000	Dry Lot Subdivision
15	Lake Havasu Estates Unit 14	Mohave	17 North	16 West	29	372	53-400428	Inadequate	A1	11/21/2000	Dry Lot Subdivision
16	Lake Havasu Estates #15	Mohave	17 North	16 West	17	NA	53-500874	Inadequate	A1	10/21/1993	Dry Lot Subdivision
17	Lake Havasu Heights	Mohave	15 North	19 West	7	21	53-400745	Inadequate	A2, B, C	08/16/2002	Havasu Heights Domestic Water ID
18	Lake Mohave Heights Estates	Mohave	23 North	19 West	25	83	53-700265	Inadequate	A1	03/19/2007	Dry Lot Subdivision
19	Lake Mohave Knoll Estates	Mohave	23 North	18 West	21	127	53-401592	Inadequate	D	12/07/2004	Dry Lot Subdivision
20	Last Lap Subdivision	Mohave	15 North	17 West	31	23	53-400014	Inadequate	A1	02/22/1999	Dry Lot Subdivision
21	Paradise(Units)/Sun West(Unit 3)Acres	Mohave	20 North	18 West	19, 21, 27, 29, 31, 33, 35	862	53-300149	Inadequate	A1, A2	06/25/1996	Dry Lot Subdivision
22	Pioneer Valley	Mohave	18 North	18 West	35	64	53-401383	Adequate		08/02/2004	Dry Lot Subdivision
23	Pioneer Valley and Paradise Trail's Tr. 3802	Mohave	18 North	18 West	25, 35	232	53-401816	Adequate		08/15/2005	Double R Water Distributors, Inc.
25	Rancho Verde Estates	Mohave	21 North	18 West	17	60	53-501273	Adequate		08/11/1986	Valley Pioneer Water Company
26	Rancho Verde Estates #2	Mohave	21 North	18 West	17	263	53-501274	Adequate		02/05/1988	Valley Pioneer Water Company
27	Ranchos Havasu Tract 3705	Mohave	15 North	19 West	5	188	53-700429	Adequate		11/09/2007	Ranhos Havasu DWID
29	Sagebrush Trails Estates	Mohave	14 North	17 West	3	97	53-401821	Adequate		10/06/2005	Sagebrush Trails Domestic Water ID
30	Santa Claus Acres #2	Mohave	23 North	18 West	19	64	53-501369	Inadequate	A2, A3	09/10/1992	Dry Lot Subdivision
31	Sawmill Creek Tract 3049	Mohave	20 North	16 West	2	13	53-300039	Inadequate	A1	08/04/1995	Dry Lot Subdivision
33	Walnut Creek Estates #1	Mohave	20 North	17 West	7	42	53-501662	Inadequate	A1	02/22/1985	Unformed Water Company
34	Walnut Creek Estates #2	Mohave	20 North	17 West	7	109	NA	Inadequate	A1	03/14/1988	Walnut Creek Water Co.
35	Walnut Creek Estates Unit 3 Tract 3043-B	Mohave	20 North	17 West	7	44	53-400258	Inadequate	A1	03/28/2000	Walnut Creek Water Co.
36	Walnut Creek Subdivision	Mohave	20 North	17 West	7	73	53-400727	Inadequate	D	05/29/2002	Walnut Creek Water Co.
37	Walnut Creek Unit 2, Tract 3043-A	Mohave	20 North	17 West	7	43	53-501661	Inadequate	A1	11/30/1994	Walnut Creek Water Co.
38	Yucca Vista #2	Mohave	16 North	19 West	11	55	53-501709	Adequate		02/21/1992	Dry Lot Subdivision

B. Analysis of Adequate Water Supply

Map Key	Subdivision Name	County	Location			No. of Lots	ADWR File No.	Date of Determination	Water Provider at the Time of Application
			Township	Range	Section				
6	Golden Valley 5800	Mohave	20 North	18 West	2, 3, 4, 8, 9, 10, 11, 14, 16	32000	43-401823	10/19/2005	NA
			21 North	18 West	34				
8	Golden Valley South	Mohave	20 North	18 West	3, 4, 8, 9, 10, 16	26433	43-402190	08/14/2006	Undetermined
9	Golden Valley South 2	Mohave	20 North	18 West	6, 13, 22, 24, 26, 28	17544	43-700253	10/10/2007	NA
			20 North	19 West	26, 33				
			21 North	18 West	22, 23, 24, 26, 27, 33, 34, 36				
24	Rancho Havasu	Mohave	15 North	19 West	5	189	43-700286	05/25/2007	NA
28	Sacramento Centre & Apache Centre	Mohave	19 North	18 West	4	640	43-700514	07/10/2008	NA
			20 North	18 West	25				
32	Sterling Arizona Villages I, II, III and IV	Mohave	16 North	19 West	18	33500	43-300230	11/08/2006	Sterling Water Company

C. Designated Adequate Water Supply

Map Key	Water Provider Name	County	Designation No.	Projected or Annual Estimated Demand *(af/yr)*	Date Application Received	Date Application Issued	Year of Projected or Annual Demand
a	Cerbat Water Company	Mohave	40-300106.0000	882	NA	06/14/1998	NA
b	Golden Valley Water Improvement District	Mohave	41-500088.0000	5332	10/14/2006	01/22/2008	2017
c	City of Kingman	Mohave	40-900007.0000	No amount designated	NA	05/17/1973	No data, hydrologic study needed
d	Valley Pioneer Water Company	Mohave	40-900015.0000	844	NA	02/01/1995	NA
e	Walnut Creek Water Company	Mohave	40-401425.0000	376.86	07/24/2004	06/27/2005	2015

Notes:

[1]Each determination of the adequacy of water supplies available to a subdivision is based on the information available to ADWR and the standards of review and policies in effect at the time the determination was made. In some cases, ADWR might make a different determination if a similar application were submitted today, based on the hydrologic data and other information currently available, as well as current rules and policies.

[2] Prior to February 1995, ADWR did not assign file numbers to applications for adequacy determination.

[3] A. Physical/Continuous
1) Insufficient Data (applicant chose not to submit necessary information, and/or available hydrologic data insufficient to make determination)
2) Insufficient Supply (existing water supply unreliable or physically unavaible; for groundwater, depth-to-water exceeds criteria)
3) Insufficient Infrastructure (distribution system is insufficient to meet demands or applicant proposed water hauling)

B. Legal (applicant failed to demonstrate a legal right to use the water or failed to demonstrate the provider's legal authority to serve the subdivision)
C. Water Quality
D. Unable to locate records

NA= Data not currently available to ADWR

Appendix – Hualapai, Groundwater

Table 4.4-6 Groundwater Data for the Hualapai Valley Basin

Basin Area, in square miles:	1,212	
Major Aquifer(s):	**Name and/or Geologic Units**	
	Basin Fill	
	Sedimentary Rock (Muddy Creek and Chemehueve Formations)	
Well Yields, in gal/min:	Range 20-2,128 Median 966.5 (10 wells measured)	Measured by ADWR and/or USGS
	Range 5-6,000 Median 900 (33 reported)	Reported on registration forms for large (> 10-inch) diameter wells
	Range 30-1,500	ADWR (1990 and 1994)
	Range 0-2,500	USGS (1994)
Estimated Natural Recharge, in acre-feet/year:	3,000	Freethey and Anderson (1986)
	2,000 - 2,500	ADWR (1981) (HMS 4)
Estimated Water Currently in Storage, in acre-feet:	5,000,000 - 5,300,000 (to 1,200 ft)	ADWR (1990 and 1994)
	5,000,000[1] (to 1,200 ft)	Freethey and Anderson (1986)
	3,000,000 (to 1,200 ft)	Arizona Water Commission (1975)
	10,500,00 - 21,000,000 (to 1,500 ft)	USGS (1971)
Current Number of Index Wells:	7	
Date of Last Water-level Sweep:	1995 (79 wells measured)	

Notes:

[1] Predevelopment Estimate

Figure 4.4-7
Hualapai Valley Basin
Hydrographs Showing Depth to Water in Selected Wells

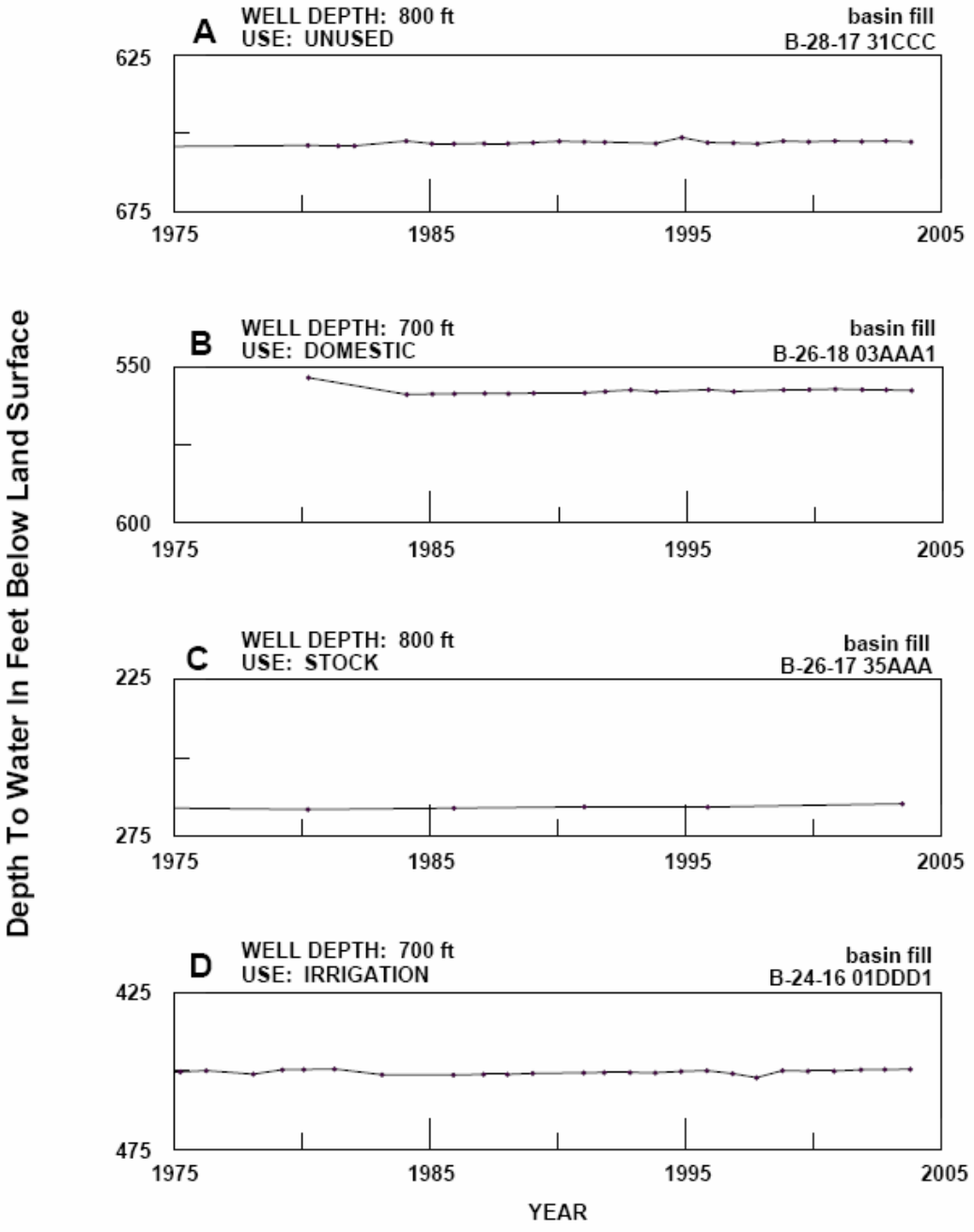
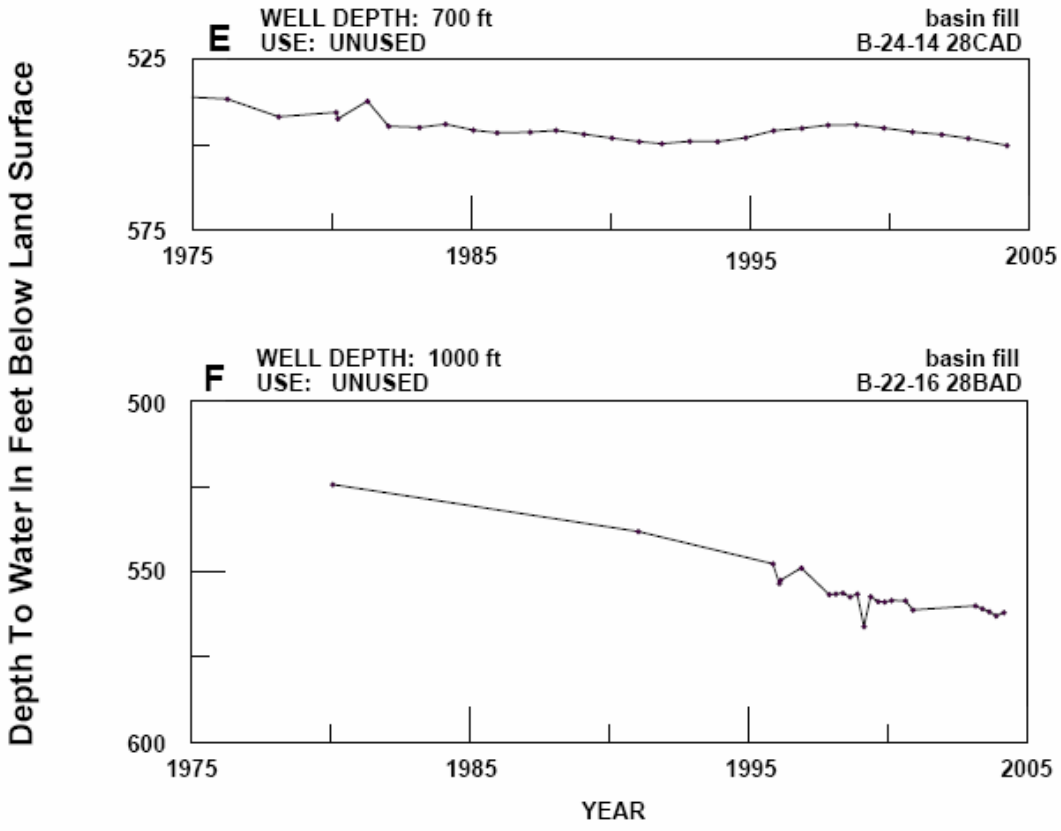


Figure 4.4-7 (Con't)
Hualapai Valley Basin
Hydrographs Showing Depth to Water in Selected Wells



Appendix – Hualapai, Exceedences

Table 4.4-7 Water Quality Exceedences in the Hualapai Valley Basin[1]

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Parameter(s) Exceeding Drinking Water Standard[2]
		Township	Range	Section	
1	Spring	30 North	17 West	7	F
2	Well	28 North	16 West	34	Rad
3	Well	28 North	16 West	34	Rad
4	Spring	28 North	17 West	24	F
5	Spring	27 North	15 West	17	F
6	Well	26 North	14 West	30	F
7	Well	26 North	16 West	29	F
8	Well	26 North	17 West	19	NO3
9	Well	26 North	17 West	35	Be
10	Well	25 North	14 West	9	Sb, As, Rad
11	Well	24 North	14 West	19	F
12	Well	24 North	16 West	1	As
13	Spring	24 North	17 West	33	Rad
14	Spring	23 North	14 West	27	Rad
15	Well	23 North	15 West	4	F
16	Well	23 North	16 West	7	NO3
17	Well	23 North	16 West	19	NO3
18	Well	23 North	16 West	29	NO3
19	Spring	23 North	17 West	9	As, Rad
20	Spring	23 North	17 West	11	As, Rad
21	Spring	23 North	17 West	26	As
22	Well	23 North	17 West	35	F
23	Well	22 North	14 West	19	Rad
24	Well	22 North	15 West	13	As
25	Well	22 North	16 West	27	Cr, Pb
26	Well	22 North	16 West	28	Pb
27	Well	22 North	16 West	33	Pb
28	Well	22 North	16 West	33	Pb
29	Well	22 North	16 West	34	Pb
30	Well	21 North	16 West	24	Rad
31	Well	20 North	15 West	6	Rad

B. Lakes and Streams

Map Key	Site Type	Site Name	Length of Impaired Stream Reach (in miles)	Area of Impaired Lake (in acres)	Designated Use Standard	Parameter(s) Exceeding Use Standard
None identified by ADWR at this time						

Notes:

[1] Water quality samples collected between 1976 and 2000.

[2] Sb = Antimony
As = Arsenic
Cr = Chromium
F = Fluoride
Pb = Lead
NO3 = Nitrate/Nitrite
Rad = One or more of the following radionuclides - Gross Alpha, Gross Beta, Radium, and Uranium

Appendix – Hualapai, Cultural Demand

Table 4.4-8 Cultural Water Demands in the Hualapai Valley Basin[1]

Year	Recent (Census) and Projected (DES) Population	Number of Registered Water Supply Wells Drilled		Average Annual Demand (in acre-feet)						Data Source
				Well Pumpage			Surface-Water Diversions			
		Q ≤ 35 gpm	Q > 35 gpm	Municipal[2]	Industrial	Irrigation	Municipal	Industrial	Irrigation	
1971		177[3]	31[3]	3,850			NR			ADWR (1994)
1972										
1973										
1974										
1975										
1976				4,850			NR			
1977										
1978										
1979										
1980	11,361									
1981	12,221	52	5	4,850			NR			
1982	13,081									
1983	13,941									
1984	14,800									
1985	15,660									
1986	16,520	49	2	4,850			NR			
1987	17,380									
1988	18,240									
1989	19,100									
1990	19,960									
1991	21,118	110	1	5,500	<300	NR	NR			USGS (2005)
1992	22,276									
1993	23,435									
1994	24,593									
1995	25,751									
1996	26,910	156	1	7,300	<300	NR	NR			
1997	28,068									
1998	29,227									
1999	30,385									
2000	31,543									
2001	32,758	90	1	8,300	<300	NR	NR			
2002	33,972									
2003	35,187									
2010	43,688									
2020	52,993									
2030	60,465									
2040	65,725									
2050	70,425									
ADDITIONAL WELLS:[4]		91	0							
WELL TOTALS:		725	41							

Notes:
NR = Not reported
[1] Does not include evaporation losses from stockponds and reservoirs.
[2] The City of Kingman in the Sacramento Valley Basin obtains most of its water from well fields in this basin.
[3] Includes all wells through 1980.
[4] Other water-supply wells are listed in the ADWR Well Registry for this basin, but they do not have completion dates. These wells are summed here.

Table 4.4-10 Adequacy Determinations in the Hualapai Valley Basin[1]

A. Water Adequacy Reports

Map Key	Subdivision Name	County	Location			No. of Lots	ADWR File No.[2]	ADWR Adequacy Determination	Reason(s) for Inadequacy Determination[3]	Date of Determination	Water Provider at the Time of Application
			Township	Range	Section						
1	Amatista Acres, Sunward Ho! Rn	Mohave	23 North	16 West	29	17	53-500264	Inadequate	A1	09/19/1991	Dry Lot Subdivsion
2	Arizona West Tract 1112	Mohave	23 North	15 West	11	256	53-500295	Inadequate	A1	09/17/1987	Truxton Canyon Water Company
3	Cedar Ridge Estates	Mohave	22 North	17 West	11, 14	38	53-300512	Inadequate	A2	09/04/1998	Dry Lot Subdivision
4	Cerbat Ranches Unit 1	Mohave	22 North	17 West	12	125	53-500434	Adequate		11/14/1980	Cerbat Water Company, Inc.
5	Esmeralda Acres/Sunward Ho!	Mohave	23 North	16 West	31	19	53-500619	Inadequate	A1	09/19/1991	Dry Lot Subdivision
6	Fountain Hills Estates	Mohave	22 North	17 West	13	66	53-300087	Adequate		09/26/1996	Cerbat Water Company, Inc.
7	Greater Kingman Industrial Park	Mohave	22 North	15 West	5, 17	200	53-500728	Adequate		07/27/1973	Dry Lot Subdivision
8	Greater Kingman Industrial Park B	Mohave	22 North	15 West	5, 17	19	53-300156	Inadequate	A2	06/14/1996	Dry Lot Subdivision
10	Hillview Ranches	Mohave	23 North	16 West	7	9	53-400741	Inadequate	A1, A2	07/02/2002	Dry Lot Subdivision
11	Hualapai Vista Estates, Tract 3811	Mohave	22 North	16 West	12, 13	41	53-400832	Inadequate	A1, A2	10/17/2002	Dry Lot Subdivision
12	Joshua Park Unit #1	Mohave	28 North	17 West	9	48	53-300558	Inadequate	A2	10/29/1998	Dry Lot Subdivision
13	Joshua Park Unit 1	Mohave	28 North	17 West	9	141	53-402005	Inadequate	A1	01/26/2006	Dry Lot Subdivision
14	Joshua Park Unit No. 1	Mohave	28 North	17 West	9	80	53-500019	Inadequate	A1	06/11/2007	Dry Lot Subdivision
15	Lake Juniper	Mohave	22 North	17 West	11,14	16	53-400872	Inadequate	A1,A2	01/31/2003	Lake Juniper HOA & Mohave County
16	Lake Juniper Estates	Mohave	22 North	17 West	11, 14	197	53-500876	Adequate		02/22/1991	Lake Juniper Water Company
17	Lake Mead Rancheros	Mohave	25 North	15 West	3	259	53-500036	Inadequate	A1	11/30/2006	Dry Lot Subdivision
18	Lake Mead Rancheros	Mohave	25 South	15 East	21	324	53-500061	Inadequate	A1	03/12/2007	Dry Lot Subdivision
			25 North	15 West	19						
19	Lake Mead Rancheros #1-12	Mohave	25 North	15 West	27, 29, 31	1,606	53-500880	Inadequate	A1, A2	02/13/1986	Dry Lot Subdivision
20	Lake Mead Rancheros, Unit 1	Mohave	25 North	15 West	13	121	53-700390	Inadequate	A1	08/09/2007	Dry Lot Subdivision
21	Lake Mead Rancheros, Units 3, 8, 14, 16	Mohave	25 North	15 West	5, 9, 17, 27	332	53-700401	Inadequate	A1	10/03/2007	Dry Lot Subdivision
22	Lake Mead Ranchos Unit 2	Mohave	28 North	18 West	13	95	53-700458	Inadequate	A1	12/31/2007	Dry Lot Subdivision
23	Lake Mead Ranchos Unit 3	Mohave	28 North	18 West	11	592	53-300328	Inadequate	A1	07/23/1997	Dry Lot Subdivision
24	Lake Mead Ranchos Unit 4	Mohave	28 North	18 West	1	491	53-500020	Inadequate	A1	03/14/2007	Dry Lot Subdivision

25	Lake Mead Ranchos Unit 5	Mohave	29 North	18 West	25	541	53-400713	Inadequate	A1, A2	05/21/2002	Dry Lot Subdivision
26	Lake Mead Ranchos, Unit 6	Mohave	29 North	18 West	27	402	53-402006	Inadequate	A1	01/26/2006	Dry Lot Subdivision
27	Lake Mead Ranchos Unit 7	Mohave	29 North	18 West	23	567	53-400714	Inadequate	A1,A2	05/21/2002	Dry Lot Subdivision
28	Lake Mead Ranchos Unit 7	Mohave	29 North	18 West	23	569	53-402007	Inadequate	A1	01/26/2006	Dry Lot Subdivision
29	Lake Mead Rancheros Unit 10	Mohave	25 North	15 West	31	39	53-700278	Inadequate	A1	04/18/2007	Dry Lot Subdivision
30	Lake Mohave Ranchos D	Mohave	26 North	18 West	1, 3, 5, 7, 9, 11, 13, 15	NA	53-500886	Inadequate	A2,A3	11/23/1977	Dry Lot Subdivision
31	Lake Mohave Ranchos, Unit 6	Mohave	26 North	19 West	25	6	53-401294	Inadequate	D	04/26/2004	NA
32	Mead-O-Rama	Mohave	29 North	18 West	35	421	53-401651	Adequate		03/04/2005	Dry Lot Subdivision
33	Mead-O-Rama #2	Mohave	29 North	19 West	27	221	53-500942	Inadequate	A2,A3	08/31/1984	Dry Lot Subdivision
34	Mead-O-Rama #3	Mohave	29 North	18 West	35	141	53-500943	Inadequate	A2,A3	08/31/1984	Dry Lot Subdivision
35	Mead-O-Rama #4	Mohave	29 North	17 West	31	441	53-500944	Inadequate	A2,A3	08/31/1984	Dry Lot Subdivision
39	Pinion Pines Estates #2	Mohave	20 North	15 West	6	21	53-501174	Inadequate	A2,A3	03/01/1977	Dry Lot Subdivision
40	Quail Valley Estates	Mohave	22 North	17 West	12	32	53-501241	Adequate		11/24/1981	Cerbat Water Company, Inc.
41	Realsite Arizona Ranchettes Units 1,3,4,6,7,8, and 9	Mohave	25 North	16 West	1, 11, 23, 25, 35	252	53-700403	Inadequate	A1	10/18/2007	Dry Lot Subdivision
			26 North	15 West	19, 31						
43	Red Wing Canyon Estates	Mohave	23 North	17 West	23	30	53-501292	Inadequate	A1	05/04/1989	Dry Lot Subdivision
44	Shadow Mountain Acres Unit Two & Three	Mohave	24 North	14 West	27, 35	93	53-400424	Inadequate	A1,A2	11/29/2000	Dry Lot Subdivision
45	Sunny Highlands Estates, Tract 1132, Phase 1-20 Lots	Mohave	23 North	14 West	3	20	53-700505	Inadequate	A1	04/14/2008	Dry Lot Subdivision
46	Sunnyvale Acres, Sunward Ho! Ranches #2	Mohave	23 North	16 West	9	22	53-300075	Inadequate	A1,A2	11/12/1995	Dry Lot Subdivsion
47	Sunrise Mountain Estates	Mohave	23 North	16 West	33	35	53-501511	Inadequate	A1,A2,A3	01/14/1992	Dry Lot Subdivsion
48	Sunward Ho! Ranches	Mohave	23 North	16 West	19, 30, 31, 33	430	53-300439	Inadequate	A1	04/03/1998	Dry Lot Subdivsion
49	Sunward Ho! Ranches Turquesa Acres	Mohave	23 North	16 West	30	35	53-501527	Inadequate	A1	09/19/1991	Dry Lot Subdivsion
51	Toro Acres, Sunward Ho! #2	Mohave	23 North	16 West	18, 19	31	53-501567	Inadequate	A1	09/19/1991	Dry Lot Subdivsion
52	Valle Vista	Mohave	23 North	15 West	34	1,200	53-501596	Adequate		06/07/1973	Truxton Canyon Water Company
53	Valle Vista #1A,3A	Mohave	23 North	15 West	10, 15	8,728	53-501597	Adequate		03/19/1975	Truxton Canyon Water Company
54	Valle Vista Unit 3- Tract 1204	Mohave	24 North	16 West	34	10	53-400514	Inadequate	A1	07/10/2001	Truxton Canyon Water Company
55	Valle Vista Unit 2 Tract 1200, Lots 860, 861, 999, 1078,1709, 1631, and 1907	Mohave	23 North	15 West	3	7	53-500096	Inadequate	A1	01/24/2007	Truxton Canyon Water Company
56	Zafiro Acres-Sunward Ho Ranches	Mohave	22 North	16 West	5	7	53-400065	Inadequate	A1	05/11/1999	Dry Lot Subdivision

B. Analysis of Adequate Water Supply

Map Key	Subdivision Name	County	Location			No. of Lots	ADWR File No.	Date of Determination	Water Provider at the Time of Application
			Township	Range	Section				
9	Hafley Ranch	Mohave	24 North	15 West	19, 30, 31	13,993	43-402284	08/17/2007	Undetermined
36	Nugent Ranch	Mohave	24 North	16 West	3, 5, 9	19,328	43-402288	08/17/2007	Undetermined
			25 North	16 West	4				
37	Peacock Highlands	Mohave	22 North	14 West	19, 21, 29-31	39,397	43-402287	08/17/2007	Undetermined
			22 North	15 West	1, 19, 21, 25, 27, 29, 31, 33, 35				
38	Peacock Vistas	Mohave	23 North	14 West	7	9,012	43-402286	08/18/2007	Undetermined
			23 North	15 West	1, 11, 13, 14				
42	Red Lake	Mohave	25 North	17 West	1, 3, 5, 7, 9, 15, 17-19, 21, 28-31	155,236	43-402285	11/02/2007	Undetermined
			26 North	17 West	3, 5, 7, 9, 13-17, 19, 21, 23-27, 29, 31, 33, 35				
			26 North	18 West	13, 23, 25, 35				
			26 North	16 West	5, 7, 17-20, 28- 31				
			27 North	16 West	31				
			27 North	17 West	1, 3, 13, 15, 17, 19, 21, 23, 25, 29, 31, 35				
			28 North	17 West	23, 25, 27, 35				
50	The Mardian Ranch	Mohave	27 North	18 West	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 29, 31, 33, 35	23,000	43-402028	01/08/2007	Undetermined
			28 North	18 West	13, 23, 25, 31, 33, 35				
			28 North	17 West	7, 19, 21, 29, 31, 33				
			27 North	19 West	1, 13, 25, 35				

Notes:

[1]Each determination of the adequacy of water supplies available to a subdivision is based on the information available to ADWR and the standards of review and policies in effect at the time the determination was made. In some cases, ADWR might make a different determination if a similar application were submitted today, based on the hydrologic data and other information currently available, as well as current rules and policies

[2] Prior to February 1995, ADWR did not assign file numbers to applications for adequacy determination.

[3] A. Physical/Continuous
1) Insufficient Data (applicant chose not to submit necessary information, and/or available hydrologic data insufficient to make determination)
2) Insufficient Supply (existing water supply unreliable or physically unavaible; for groundwater, depth-to-water exceeds criteria)
3) Insufficient Infrastructure (distribution system is insufficient to meet demands or applicant proposed water hauling)

B. Legal (applicant failed to demonstrate a legal right to use the water or failed to demonstrate the provider's legal authority to serve the subdivision)

C. Water Quality

D. Unable to locate records

NA= not currently available to ADWR

Table 4.1-2 Streamflow Data for the Big Sandy Basin

Station Number	USGS Station Name	Drainage Area (in mi^2)	Mean Basin Elevation (in feet)	Period of Record	Average Seasonal Flow (% of annual flow)				Annual Flow/Year (in acre-feet)				Years of Record
					Winter	Spring	Summer	Fall	Minimum	Median	Mean	Maximum	
9404343	Truxton Wash near Valentine	380.3	4,630	3/1993-current	26	8	61	5	22 (2002)	543	875	2,527 (1995)	9
9424200	Cottonwood Wash No. 1 near Kingman	143.0	5,350	2/1964-9/1978 (discontinued)	37	7	44	12	601 (1975)	2,867	3,026	8,326 (1976)	13

Sources: USGS NWIS, USGS 1998 and USGS 2003.

Notes:
Statistics based on Calendar Year
Annual Flow statistics based on monthly values
Summation of Average Annual Flows may not equal 100 due to rounding.
Period of record may not equal Year of Record used for annual Flow/Year statistics due to only using years with a 12 month record

Table 4.1-5 Springs in the Big Sandy Basin

A. Major Springs (10 gpm or greater):

Map Key	Name	Location		Discharge (in gpm)[1]	Date Discharge Measured
		Latitude	Longitude		
1	Unnamed[2]	345407	1133724	1,600	8/21/1980
2	Unnamed[2]	344002	1133513	400	8/20/1980
3	Valentine[2]	352325	1133920	400	10/1/1943
4	Unnamed[2]	352505	1133830	330	During or prior to 1943
5	Cofer Hot	344144	1133423	200	During or prior to 1982
6	Unnamed[2]	352159	1133713	10	During or prior to 1964

B. Minor Springs (1 to 10 gpm):

Name	Location		Discharge (in gpm)[1]	Date Discharge Measured
	Latitude	Longitude		
Unnamed[2]	352350	1134039	5	1/1965
Unnamed	352340	1134034	5	1/1965
Unnamed	352420	1133930	3	1/1965
Unnamed	352013	1134342	3	1/1965
Unnamed	352354	1133814	3	1/1965
Unnamed	352232	1134101	3	1/1965
Unnamed	352230	1134159	3	1/1965
Unnamed	352301	1133740	2	1/1965
Unnamed	352827	1134217	2	During or prior to 1965
Cane	345524	1133950	1	6/1/1980
Unnamed	352311	1133955	1	2/1965

C. Total number of springs, regardless of discharge, identified by USGS (see ALRIS, 2005 and USGS, 2006): 165 to 179

Notes:

[1]Most recent measurement identified by ADWR

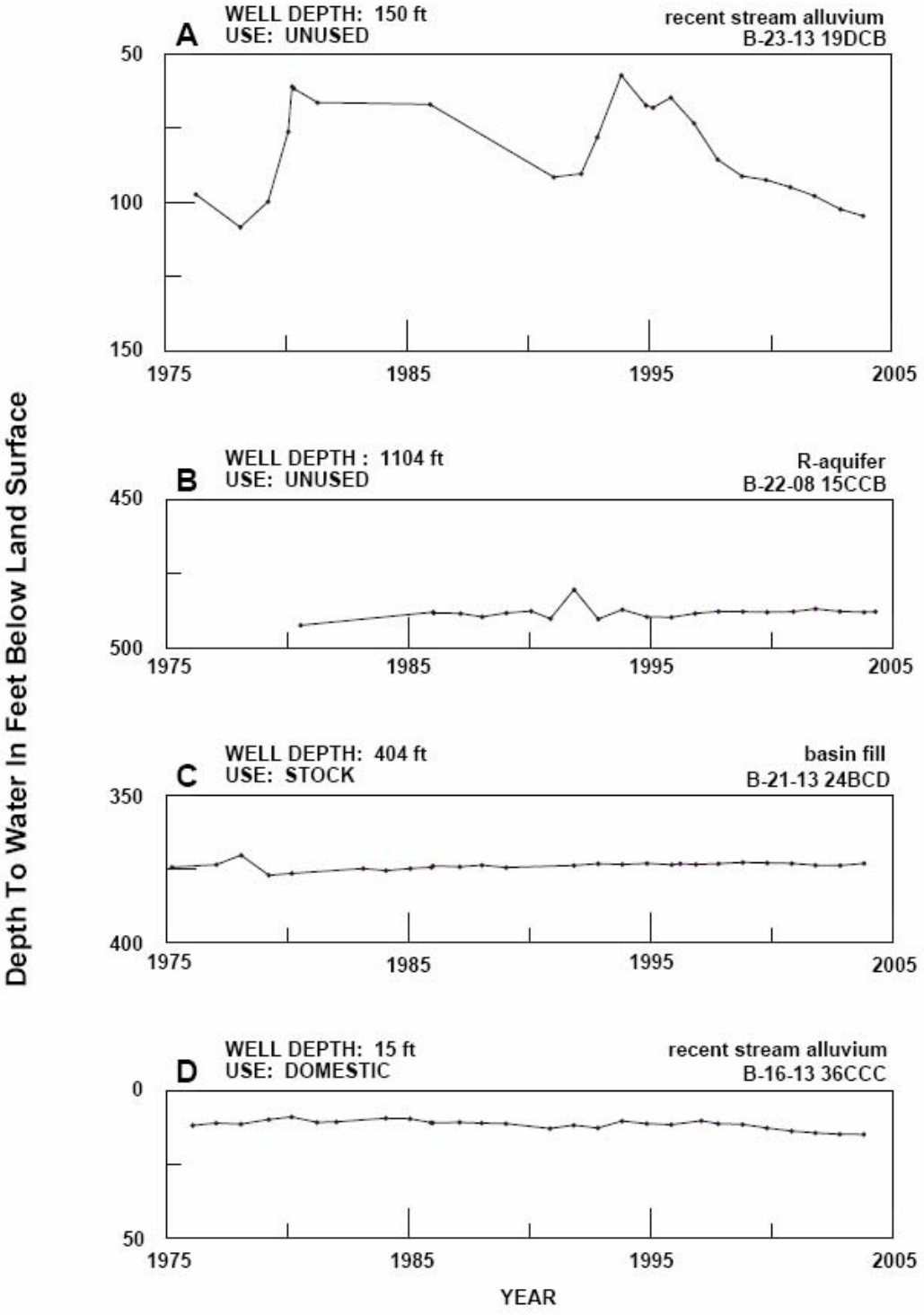
[2]Spring is not displayed on current USGS topo maps

Table 4.1-6 Groundwater Data for the Big Sandy Basin

Basin Area, in square miles:	1,988	
Major Aquifer(s):	**Name and/or Geologic Units**	
	Recent Stream Alluvium	
	Basin Fill	
	Sedimentary Rock (R Aquifer)	
Well Yields, in gal/min:	6.6 (1 well measured)	Measured by ADWR and/or USGS
	Range 1-2,250 Median 300 (87 wells reported)	Reported on registration forms for large (> 10-inch) diameter wells
	Range 30-1,000	ADWR (1990 and 1994)
	Range 0-500	USGS (1994)
Estimated Natural Recharge, in acre-feet/year:	22,000	Freethey and Anderson (1986)
Estimated Water Currently in Storage, in acre-feet:	9,500,000 (to 1,200 ft)	ADWR (1990)
	10,000,000[1] (to 1,200 ft)	Freethey and Anderson (1986)
	21,000,000 (to 1,200 ft)	Arizona Water Commission (1975)
Current Number of Index Wells:	8	
Date of Last Water-level Sweep:	1995 (126 wells measured)	

Notes:
[1]Predevelopment Estimate

Figure 4.1-7
Big Sandy Basin
Hydrographs Showing Depth to Water in Selected Wells



Appendix – Big Sandy, Exceedences

Table 4.1-7 Water Quality Exceedences in the Big Sandy Basin[1]

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Parameter(s) Exceeding Drinking Water Standard[2]
		Township	Range	Section	
1	Spring	24 North	13 West	5	Rad
2	Spring	24 North	13 West	5	Rad
3	Well	23 North	13 West	19	As
4	Well	23 North	13 West	20	As, Pb
5	Well	23 North	13 West	29	As
6	Well	23 North	14 West	35	Pb
7	Well	22 North	13 West	34	As
8	Well	21 North	13 West	30	F
9	Well	21 North	14 West	15	F
10	Well	21 North	14 West	24	As, F
11	Well	21 North	14 West	29	F, Pb
12	Well	21 North	14 West	29	As, F
13	Well	21 North	14 West	29	As, F
14	Well	21 North	14 West	29	As
15	Spring	20 North	11 West	18	Rad
16	Well	20 North	12 West	13	Rad
17	Well	20 North	12 West	28	Rad
18	Spring	20 North	12 West	32	Rad
19	Well	20 North	12 West	34	Rad
20	Spring	20 North	12 West	35	Rad
21	Well	20 North	13 West	25	Rad
22	Well	20 North	14 West	1	Sb, As, F, Rad
23	Well	20 North	14 West	17	Rad
24	Well	20 North	14 West	19	Be, Cd, F
25	Spring	20 North	15 West	35	Rad
26	Spring	19 North	12 West	9	Rad
27	Well	19 North	13 West	8	Rad
28	Well	19 North	13 West	16	Rad
29	Well	19 North	14 West	10	F
30	Spring	19 North	15 West	14	Rad
31	Well	19 North	15 West	23	F
32	Well	18 North	9 West	9	Cd
33	Well	18 North	11 West	3	As
34	Well	18 North	11 West	27	As
35	Well	18 North	12 West	2	F
36	Well	18 North	12 West	25	Rad
37	Well	18 North	12 West	25	As
38	Spring	18 North	12 West	30	F
39	Well	18 North	14 West	11	F
40	Spring	18 North	14 West	25	As
41	Spring	18 North	14 West	31	As, Rad
42	Well	17 North	13 West	2	As, Pb
43	Well	17 North	13 West	14	As, Pb
44	Well	17 North	13 West	22	F
45	Well	17 North	13 West	23	Pb
46	Well	17 North	13 West	26	Pb
47	Well	17 North	13 West	31	As
48	Well	16.5 North	13 West	22	Pb
49	Well	16.5 North	13 West	22	Pb
50	Well	16.5 North	13 West	27	Pb
51	Well	16.5 North	13 West	27	Pb
52	Well	16.5 North	13 West	34	Pb
53	Spring	16.5 North	15 West	25	As
54	Well	16 North	13 West	3	Pb
55	Well	16 North	13 West	3	Pb
56	Well	16 North	13 West	9	Rad
57	Well	16 North	13 West	10	F
58	Well	16 North	13 West	10	Pb
59	Well	16 North	13 West	22	As
60	Spring	16 North	13 West	25	As, F
61	Well	16 North	13 West	27	As
62	Well	16 North	13 West	27	As
63	Well	16 North	13 West	36	F
64	Well	16 North	13 West	36	As, F

Appendix – Big Sandy, Exceedences

WATER QUALITY EXCEEDENCES IN THE BIG SANDY BASIN (cont'd)[1]

B. Lakes and Streams

Map Key	Site Type	Site Name	Length of Impaired Stream Reach (in miles)	Area of Impaired Lake (in acres)	Designated Use Standard	Parameter(s) Exceeding Use Standard
None identified by ADWR at this time						

Notes:

[1] Most water quality samples collected between 1980 and 2004.

[2] Sb = Antimony
As = Arsenic
Be = Beryllium
Cd = Cadmium
F= Fluoride
Pb = Lead
Rad = One or more of the following radionuclides - Gross Alpha, Gross Beta, Radium, and Uranium

Appendix – Big Sandy, Cultural Demand

Table 4.1-8 Cultural Water Demands in the Big Sandy Basin[1]

Year	Recent (Census) and Projected (DES) Population	Number of Registered Water Supply Wells Drilled		Average Annual Demand (in acre-feet)						Data Source
				Well Pumpage			Surface-Water Diversions			
		Q ≤ 35 gpm	Q > 35 gpm	Municipal	Industrial[3]	Irrigation	Municipal	Industrial	Irrigation	
1971		464[2]	129[2]	2,500			NR			ADWR (1994) ADWR (2007)
1972										
1973										
1974										
1975										
1976				7,000			NR			
1977										
1978										
1979										
1980	434									
1981	445	93	3	10,000			NR			
1982	456									
1983	467									
1984	479									
1985	490									
1986	501	85	3	14,400			NR			
1987	512									
1988	523									
1989	534									
1990	546									
1991	609	100	2	<300	16,200	<300[4]	NR			USGS (2005) ADWR (2007)
1992	672									
1993	735									
1994	799									
1995	862									
1996	925	223	0	<300	16,800	<300	NR			
1997	988									
1998	1,052									
1999	1,115									
2000	1,178									
2001	1,315	116	0	<300	15,600	<300	NR			
2002	1,451									
2003	1,588									
2010	2,543									
2020	3,235									
2030	3,798									
2040	4,288									
2050	4,687									
ADDITIONAL WELLS:[5]		64								
WELL TOTALS:		1,145	137							

Table 4.1-10 Adequacy Determinations in the Big Sandy Basin[1]

Map Key	Subdivision Name	County	Location			No. of Lots	ADWR File No.[2]	ADWR Adequacy Determination	Reason(s) for Inadequacy Determination[3]	Date of Determination	Water Provider at the Time of Application
			Township	Range	Section						
1	Greenwood Village # 1	Mohave	22 North	12 West	29, 30, 31, 32	214.0	22-300043	Inadequate	A1	08/23/95	Dry Lot Subdivision
2	Mountain Shadow Estates Tract 3806	Mohave	20 North	14 West	8	54.0	22-400466	Inadequate	A1	02/20/01	Subdivision wells
3	Orchards, The Tract 3800	Mohave	16 North	13 West	27	NA		Adequate		08/31/92	Dry Lot Subdivision
4	Silverado Acre Estates Unit 1, Tract 3805	Mohave	20 North	13 West	17	340.0	22-300264	Inadequate	A1	02/13/97	Dry Lot Subdivision

Notes:

[1]Each determination of the adequacy of water supplies available to a subdivision is based on the information available to ADWR and the standards of review and policies in effect at the time the determination was r
In some cases, ADWR might make a different determination if a similar application were submitted today, based on the hydrologic data and other information currently available, as well as current rules and p

[2] Prior to February 1995, ADWR did not assign file numbers to applications for adequacy determination.

[3] A. Physical/Continuous
1) Insufficient Data (applicant chose not to submit necessary information, and/or available hydrologic data insufficient to make determination)
2) Insufficient Supply (existing water supply unreliable or physically unavaible; for groundwater, depth-to-water exceeds criteria)
3) Insufficient Infrastructure (distribution system is insufficient to meet demands or applicant proposed water hauling)
B. Legal (applicant failed to demonstrate a legal right to use the water or failed to demonstrate the provider's legal authority to serve the subdivision)
C. Water Quality
D. Unable to locate records

NA= Data not currently available to ADWR

Table 4.2-2 Streamflow Data for the Bill Williams Basin

Station Number	USGS Station Name	Drainage Area (in mi^2)	Mean Basin Elevation (in feet)	Period of Record	Average Seasonal Flow (% of annual flow)				Annual Flow/Year (in acre-feet)				Years of Record
					Winter	Spring	Summer	Fall	Minimum	Median	Mean	Maximum	
9424432	Francis Creek near Bagdad	134.0	NA	12/1984-9/1993 (discontinued)	90	4	4	3	1,571 (1989)	6,918	7,145	13,176 (1992)	4
9424447	Burro Creek at Old US 93 Bridge near Bagdad	601.0	NA	7/1980-current	80	3	7	11	3,410 (1989)	47,638	49,750	155,655 (1993)	12
9424450	Big Sandy River near Wikieup	2,731.9	4,490	3/1966-current	80	5	4	10	2,448 (2002)	27,011	58,901	421,461 (1993)	36
9424470	Kirkland Creek near Kirkland	109.0	4,665	4/1973-3/1983 (discontinued)	68	8	9	15	1,614 (1975)	6,451	7,961	20,489 (1980)	9
9424900	Santa Maria River near Bagdad	1,129.0	4,010	4/1966-current	74	6	5	15	0 (1996, 2002)	15,063	40,551	168,005 (1980)	32
9425000	Date Creek near Congress	127.0	NA	10/1939-9/1943 (discontinued)	60	38	2	0	0 (1942)	2	2,559	7,674 (1941)	3
9425500	Santa Maria River near Alamo	1,439.0	3,650	12/1939-4/1966 (discontinued)	48	18	17	18	1,637 (1956)	10,211	24,878	184,661 (1941)	26
9426000	Bill Williams below Alamo Dam	4,623.0	4,120	10/1939-current	54	16	16	14	1,275 (1975)	33,963	82,317	701,711 (1993)	63
9426500	Bill Williams River at Planet	5,043.9	3,900	10/1914-9/1946 (discontinued)	64	9	21	6	11,876 (1933)	68,506	115,312	399,012 (1941)	17
9426620	Bill Williams River near Parker	5,327.0	NA	10/1988-current	78	14	5	3	645 (1990)	4,421	69,097	626,398 (1993)	14

Sources: USGS NWIS, USGS 1998 and USGS 2003.

Notes:
Statistics based on Calendar Year
Annual Flow statistics based on monthly values
Summation of Average Annual Flows may not equal 100 due to rounding.
Period of record may not equal Year of Record used for annual Flow/Year statistics due to only using years with a 12 month record

Appendix – Bill Williams, Springs

Table 4.2-5 Springs in the Bill Williams Basin

A. Major Springs (10 gpm or greater):

Map Key	Name	Location		Discharge (in gpm)[1]	Date Discharge Measured
		Latitude	Longitude		
1	Genung	341631	1124245	228	6/18/1946
2	Copper Basin	342545	1124017	200	11/6/1974
3	Kaiser Hot	343348	1132946	40	8/20/1980
4	Buckman Flat	343616	1123631	36	8/9/1979
5	Unnamed	343615	1123630	27	8/9/1979
6	Unnamed[2]	343725	1134226	18	5/9/1979

B. Minor Springs (1 to 10 gpm):

Name	Location		Discharge (in gpm)[1]	Date Discharge Measured
	Latitude	Longitude		
Wood	343650	1124658	9	9/19/1979
Unnamed	343440	1124232	8	3/4/1982
Iron	343504	1123425	6	8/9/1979
Signal	342817	1133807	4	12/13/1979
Quail	341714	1130007	4	9/7/1979
Unnamed	341720	1132313	3	6/8/1979
Unnamed	342641	1124017	3	3/16/1979
Unnamed	341429	1125300	2	3/16/1979
Unnamed	342647	1124133	2	3/10/1981
Lawler	342405	1125758	1	10/18/1979
Bonita	343437	1134158	1	5/9/1979
Little Santa Cruez	343448	1134230	1	5/9/1979
Unnamed	342653	1124132	1	4/17/1973

C. Total number of springs, regardless of discharge, identified by USGS (see ALRIS, 2005 and USGS, 2006): 249 to 303

Notes:

[1]Most recent measurement identified by ADWR

[2]Spring is not displayed on current USGS topo maps

Appendix – Bill Williams, Groundwater

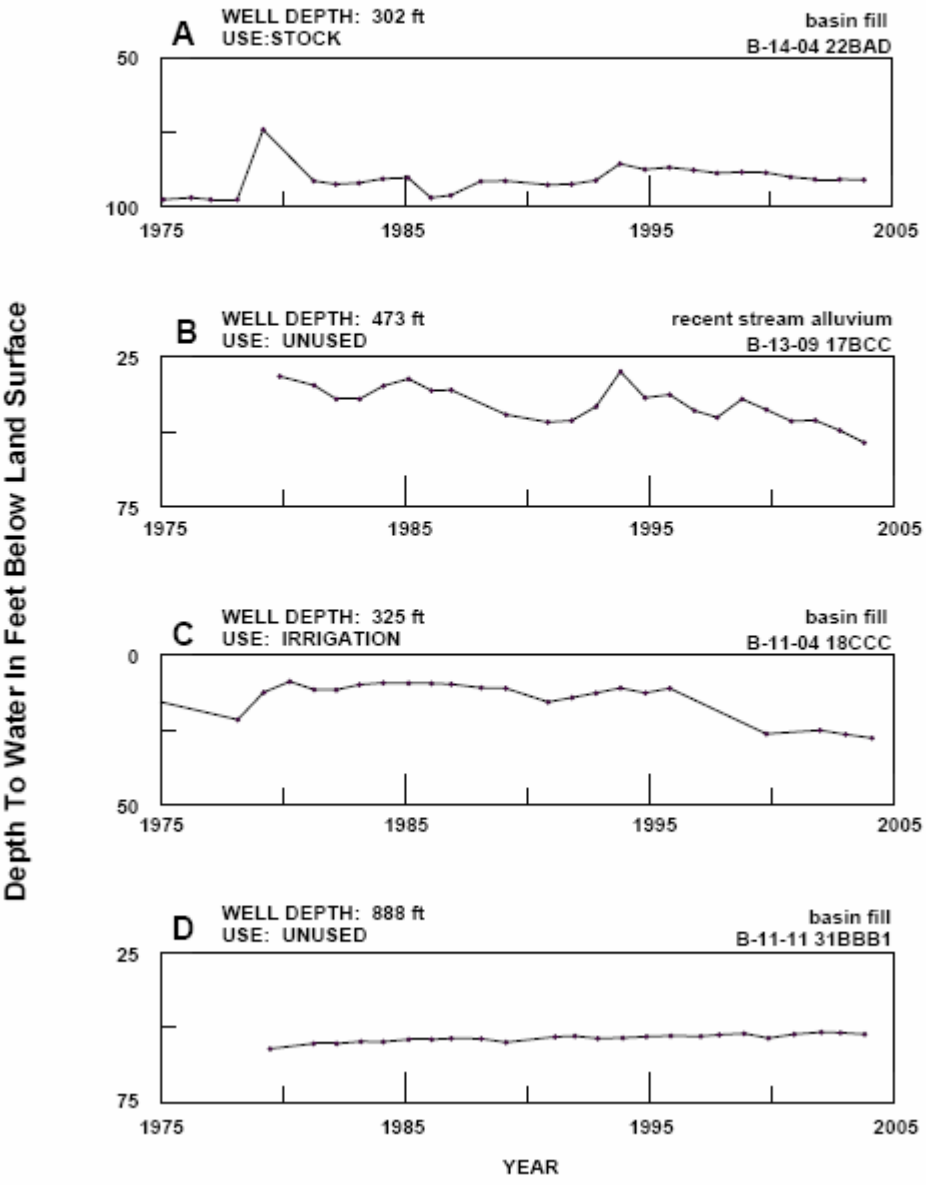
Table 4.2-6 Groundwater Data for the Bill Williams Basin

Basin Area, in square miles:	3,350	
Major Aquifer(s):	**Name and/or Geologic Units**	
	Recent Stream Alluvium	
	Basin Fill	
	Volcanic Rock	
Well Yields, in gal/min:	Range 1.3-440 Median 2 (3 wells measured)	Measured by ADWR and/or USGS
	Range 5-5,000 Median 280 (195 wells reported)	Reported on registration forms for large (> 10-inch) diameter wells
	Range 10-4,000	ADWR (1990 and 1994)
	Range 0-500	USGS (1994)
Estimated Natural Recharge, in acre-feet/year:	32,000	Freethey and Anderson (1986)
Estimated Water Currently in Storage, in acre-feet:	23,000,000 (to 1,200 ft)	ADWR (1990)
	10,000,000[1] (to 1,200 ft)	Freethey and Anderson (1986)
	20,000,000 (to 1,200 ft)	Arizona Water Commission (1975)
Current Number of Index Wells:	21	
Date of Last Water-level Sweep:	1979 (117 wells measured)	

Notes:
[1]Predevelopment Estimate

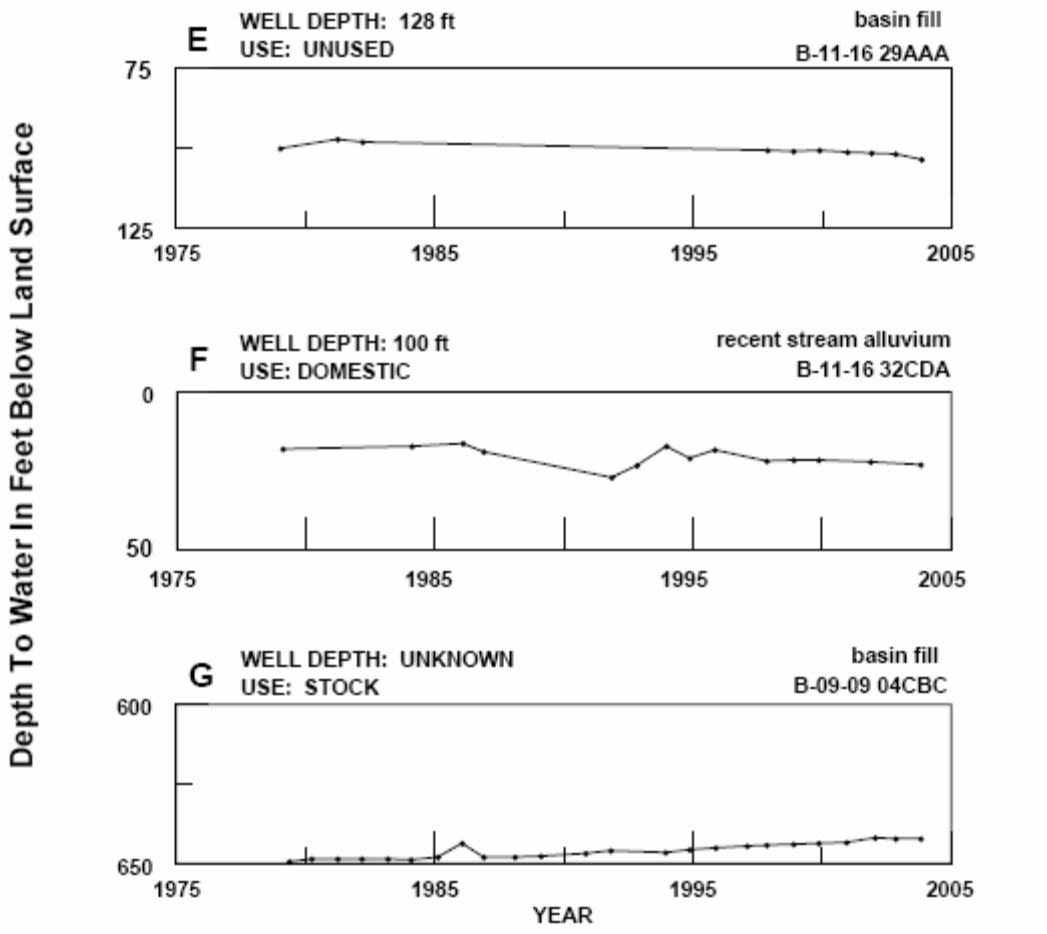
Appendix – Bill Williams, Hydrographs

Figure 4.2-7
Bill Williams Basin
Hydrographs Showing Depth to Water in Selected Wells



Appendix – Bill Williams, Hydrographs

Figure 4.2-7 (Con't.)
Bill Williams Basin
Hydrographs Showing Depth to Water in Selected Wells



Appendix – Bill Williams, Exceedences

Table 4.2-7 Water Quality Exceedences in the Bill Williams Basin[1]

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Parameter(s) Exceeding Drinking Water Standard[2]
		Township	Range	Section	
1	Well	17 North	11 West	13	As
2	Well	17 North	11 West	25	As
3	Spring	16 North	5 West	32	As, Cd
4	Spring	15 North	6 West	25	As, Cd
5	Well	15 North	8 West	27	NO3, Rad
6	Well	15 North	10 West	26	As
7	Well	15 North	11 West	21	As
8	Well	15 North	14 West	20	As, Rad
9	Well	14.5 North	8 West	29	As
10	Well	14.5 North	8 West	29	As
11	Spring	14 North	4 West	30	As
12	Well	14 North	6 West	8	F
13	Well	14 North	6 West	16	F
14	Well	14 North	6 West	31	F
15	Spring	14 North	7 West	25	F
16	Well	14 North	7 West	25	F
17	Spring	14 North	7 West	25	F
18	Well	14 North	7 West	27	F
19	Spring	14 North	8 West	23	As
20	Spring	14 North	8 West	23	As, F, Rad
21	Well	14 North	8 West	34	F
22	Well	14 North	9 West	13	As
23	Well	14 North	9 West	16	NO3, Rad
24	Well	14 North	10 West	32	Rad
25	Well	14 North	12 West	30	As
26	Well	14 North	13 West	13	Pb, Rad
27	Well	14 North	15 West	13	F
28	Well	13 North	3 West	18	As, Cd
29	Well	13 North	4 West	9	Rad
30	Well	13 North	5 West	22	F
31	Well	13 North	5 West	25	Rad
32	Spring	13 North	6 West	2	As, Cd
33	Well	13 North	6 West	16	As
34	Well	13 North	6 West	16	F
35	Well	13 North	7 West	18	Rad
36	Well	13 North	7 West	21	F
37	Well	13 North	7 West	21	F
38	Spring	13 North	8 West	35	Rad
39	Well	13 North	10 West	16	As, Rad
40	Spring	13 North	11 West	14	As
41	Well	13 North	13 West	3	F
42	Well	13 North	13 West	3	F
43	Spring	13 North	13 West	17	F
44	Well	12.5 North	3 West	32	As
45	Well	12.5 North	3 West	33	NO3
46	Well	12 North	3 West	18	As
47	Well	12 North	4 West	6	Rad
48	Well	12 North	6 West	33	As
49	Spring	12 North	9 West	5	As
50	Well	12 North	9 West	22	F
51	Spring	12 North	9 West	26	As
52	Well	12 North	13 West	8	As
53	Well	11 North	4 West	7	As
54	Well	11 North	4 West	15	NO3

Appendix – Bill Williams, Exceedences

Table 4.2-7 Water Quality Exceedences in the Bill Williams Basin (cont'd)[1]

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Parameter(s) Exceeding Drinking Water Standard[2]
		Township	Range	Section	
55	Well	11 North	18 West	14	As
56	Well	11 North	18 West	15	Cd, F, Pb, NO3, TDS
57	Well	11 North	18 West	15	Cd, F, Pb, NO3, TDS
58	Well	11 North	18 West	15	Cd, F, Hg
59	Well	10 North	13 West	11	F
60	Well	10 North	14 West	14	F

B. Lakes and Streams

Map Key	Site Type	Site Name	Length of Impaired Stream Reach (in miles)	Area of Impaired Lake (in acres)	Designated Use Standard[3]	Parameter(s) Exceeding Use Standard[2]
a	Lake	Alamo Lake	NA	1,414	A&W, FC, FBC, AgL	NH3, pH, Hg
b	Stream	Boulder Creek (unnamed wash latitude 344114, longitude 1130304 to Wilder Creek)	14	NA	A&W	Hg
c	Stream	Boulder Creek (Wilder Creek to Copper Creek)	3	NA	A&W, FBC, AgL	As, Cu, Hg, Zn
d	Stream	Burro Creek (Boulder Creek to Black Canyon)	17	NA	A&W	Hg
e	Lake	Coors Lake	NA	229	FC	Hg

Notes:

[1] Most water quality samples collected between 1979 and 2003.

[2] NH3 = Ammonia
As = Arsenic
Cd = Cadmium
Cu = Copper
F= Fluoride
Pb = Lead
pH = Measurement of acidity or alkalinity
Hg = Mercury
NO3 = Nitrate/Nitrite
TDS = Total Dissolved Solids
Rad = One or more of the following radionuclides - Gross Alpha, Gross Beta, Radium, and Uranium
Zn = Zinc

[3] A&W = Aquatic and Wildlife
AgL = Agricultural Livestock Watering
FBC = Full Body Contact
FC = Fish Consumption

Appendix – Bill Williams, Cultural Demand

Table 4.2-8: Cultural Water Demands in the Bill Williams Basin[1]

Year	Recent (Census) and Projected (DES) Population	Number of Registered Water Supply Wells Drilled		Average Annual Demand (in acre-feet)						Data Source
				Well Pumpage			Surface-Water Diversions[2]			
		Q ≤ 35 gpm	Q > 35 gpm	Municipal	Industrial[3]	Irrigation	Municipal	Industrial	Irrigation	
1971		1,041[4]	206[4]	18,000			700			ADWR (1994) ADWR (2007)
1972										
1973										
1974										
1975										
1976				18,000			800			
1977										
1978										
1979										
1980	5,532									
1981	5,393	115	12	18,000			600			
1982	5,253									
1983	5,114									
1984	4,974									
1985	4,835									
1986	4,695	86	9	22,000			500			
1987	4,556									
1988	4,416									
1989	4,277									
1990	4,138									
1991	4,193	111	13	500	<300	15,600	500	NR	NR	USGS (2005) ADWR (2007) Malcom Pirnie (2006)
1992	4,248									
1993	4,304									
1994	4,359									
1995	4,414									
1996	4,470	135	3	500	<300	4,200	500	NR	NR	
1997	4,525									
1998	4,580									
1999	4,636									
2000	4,691									
2001	4,692	36	0	600	<300	3,200	500	NR	NR	
2002	4,694									
2003	4,695									
2010	4,705									
2020	4,714									
2030	4,724									
2040	4,733									
2050	4,738									
ADDITIONAL WELLS:[5]		41								
WELL TOTALS:		1,565	243							

Notes:
NR = Not reported

[1] Does not include evaporation losses from stockponds and reservoirs.

[2] The 1994 ADWR Arizona Water Resources Assessment included surface water diversions for this basin for the Bill Williams National Wildlife Refuge. Surface water diversions in this basin are for the Town of Bagdad and based on available data from Phelps Dodge. Municipal water demand listed here may also be for industrial use at the mine.

[3] Groundwater withdrawn in the Big Sandy Basin is delivered to the Bill Williams Basin for industrial use at the Bagdad Mine. These withdrawals are not included in this table.

[4] Includes all wells through 1980.

[5] Other water-supply wells are listed in the ADWR Well Registry for this basin, but they do not have completion dates. These wells are summed here.

Table 4.2-10 Adequacy Determinations in the Bill Williams Basin[1]

Map Key	Subdivision Name	County	Location			No. of Lots	ADWR File No.[2]	ADWR Adequacy Determination	Reason(s) for Inadequacy Determination[3]	Date of Determination	Water Provider at the Time of Application
			Township	Range	Section						
1	Highland Pines	Yavapai	14 North	3 West	33, 34	14	53-500204	Adequate		12/16/1974	Subdivision wells
2	Peeples Valley #2	Yavapai	11 North	5 West	22, 23	NA	53-501138	Adequate		12/03/1987	Subdivision wells
3	Pinon Estates #1	Yavapai	11 North	5 West	14, 15	49	53-501187	Adequate		07/16/1980	Peeples Valley Water Company
4	Pinon Estates #1	Yavapai	11 North	5 West	14, 15	49	53-501188	Adequate		03/21/1986	Peeples Valley Water Company
5	Pinon Estates #2	Yavapai	11 North	5 West	14, 15	59	53-501189	Adequate		03/10/1986	Peeples Valley Water Company
6	Rolling Hills	Yavapai	13 North	5 West	25, 26, 35, 36	41	53-300123	Adequate		03/20/1996	Dry Lot Subdivision
7	Shawnee Hills	Yavapai	11 North	5 West	23	17	53-300210	Adequate		10/24/1996	Peeples Valley Water Company
8	Springs Del Sol Condominiums	La Paz	11 North	18 West	15	35	53-401879	Adequate		01/18/2006	Springs Del Sol Domestic Water Improvement District

Notes:

[1]Each determination of the adequacy of water supplies available to a subdivision is based on the information available to ADWR and the standards of review and policies in effect at the time the determination was made. In some cases, ADWR might make a different determination if a similar application were submitted today, based on the hydrologic data and other information currently available, as well as current rules and policies.

[2] Prior to February 1995, ADWR did not assign file numbers to applications for adequacy determination.

[3] A. Physical/Continuous

1) Insufficient Data (applicant chose not to submit necessary information, and/or available hydrologic data insufficient to make determination)
2) Insufficient Supply (existing water supply unreliable or physically unavaible; for groundwater, depth-to-water exceeds criteria)
3) Insufficient Infrastructure (distribution system is insufficient to meet demands or applicant proposed water hauling)

B. Legal (applicant failed to demonstrate a legal right to use the water or failed to demonstrate the provider's legal authority to serve the subdivision)
C. Water Quality
D. Unable to locate records

NA = Data not currently available to ADWR

Appendix – Bill Williams,

Appendix C

Access to Highway and Property Purchase

Appendix for ADOT 2004 Location and Concept Design Report for Highway 93, I-40 to Wikieup – Reasonable Access vs. ADOT purchase of property.

Parcel Number	Owner
203-03-008	David Moraan
203-02-021 & 023	Wildlife Wavstation
203-02-024	James Withrow
203-03-001	Ravmond & Ida Reves
203-03-004	Jane Imeila
202-07-028	Bvner Cattle Comeanv
202-07-026 & 027	Marvin and Treena Black
252-05-010	Anita M. Waite
252-05-070	Sherwood L. Koehn & Anita M. Waite
202-10-004	Roberta A. Nielsen
202-34-015	Anthonv J. & Mildred F. Rizzo
202-34-013	Fred H. & Earline Faris
202-34-011	HR Investments
202-34-018	BV & CY Familv Trust
202-34-027	Shirlev & Bobbv Loftin
202-34-009	Robert G. & Pamela M. Whitham
202-34-008	James E. Polston
202-33-010	Pamela Marie Sutter
202-33-005	Frank W. & Lisa A. Mueller
202-33-004	Debra Zozava
202-77-011	Roadrunner RealwCoro.
202-76-012	Roadrunner RealwCoro.
202-76-010A	Dan M. & Janas B. Barrett
202-76-009	Dan M. & Janas B. Barrett
202-76-005	Silver Ranch CorD.
202-76-004	David & Jane Foat

Alterative A1-3: Of these properties, it is recommended that ADOT purchase parcels 203-02-021, 203-02-023, 202-02-024, 203-03-0 I and 203-03-04. These parcels are located relatively far from the future interchanges to their north and south, and are adjacent to the Big Sandy River bed, making any frontage roads difficult and costly to construct (ADOT, Jacobs).

Alternative B-3: There are several parcels that will not need to be acquired based on the assumption that a parcel has access if it is adjacent to another parcel with the same owner that has access. For instance, near milepost 118.6, parcels 203-27-5 and 203-27-2 do not have direct access to a frontage road, but they are adjacent to parcel 203-27-6, which has access to Cyprus Bagdad Copper Road. Byner Cattle Company owns all three of the parcels, so access can be provided to parcels 203-27-5 and 203-27-2 through parcel 203-27-6 (ADOT, Jacobs).

Alternative C1-1: Approximately four miles north of the southern end of Alternative C-I, at MP 108.7 is parcel 202-07-28. This parcel, owned by Byner Cattle Company, is located just south of

Cane Springs Wash. The topography of the wash would make a frontage road from the future TI at Upper Trout Creek Road impractical. Building a frontage road from the "Tribe South" Tl would involve crossing through approximately two miles of BLM land. Both of these options would outweigh the cost of purchasing the parcel (ADOT, Jacobs).

In order to provide access to parcels 202-07-026, 202-07-027 and 252-05-10 (located on the east side of US 93 near MP 108.5), a road can be constructed from the northern boundary of parcels 202-07-026 & 027 (MP 108.5) north along the section line to Upper Trout Creek Road (MP 108) (ADOT, Jacobs).

Between the future Upper Trout Creek Interchange and the unnamed TI to its north, from MP 106.3 to 105.3, lies parcel 252-05-070. This parcel encompasses an entire section, and is bordered on the north and the south by State Lands. In order to access this parcel, it is recommended that a frontage road be built from one of the future interchanges. Coordination with State Lands will be necessary in developing this road (ADOT, Jacobs).

Two parcels east of the unnamed TI (MP 104.4) are lacking adequate access to the crossroad. Building a road south from the crossroad along the midsection line that forms the eastern boundary of parcel 202-10-4 will provide that parcel with adequate access to the cross road for the nearby TI. Parcel 202-34-15 can be provided with access by building a road north from the crossroad along the property line running along the eastern edge of the parcel (ADOT, Jacobs).

Between MP 103 and 104, several parcels west of US 93 and south of the "Antelope South" TI at MP 102.6 will also be left without adequate access if a frontage road is not built. Access to parce1s 202- 34-11,202-34-18,202-34-9,202-34-8,202-33-10, 202-33-5, and 202- 33-4 can be provided by a new access road built on the section line running along the western border of these properties. Further analysis by the designer and R/W Group will be needed to determine whether this frontage road should be extended to the unnamed interchange to the south in order to give access to parcel 202-34-13 (MP 104.3) (ADOT, Jacobs).

Alternative D1-1: In this segment, there are several parcels without access. Just to the south of the McGarry's Wash TI, from MP 94.3 to 93.3, is parcel 202-77-011, owned by Roadrunner Realty Corp. This parcel exists on both the east and west sides of US 93. The portion of the parcel on the west side of US 93 can be provided with access along the section line that forms the western border of Section 9. Access can be provided to the portion of the parcel on the east side of the highway by building an access road along the eastern edge of Section 5 south to the northwest comer of Section 9. The road can be extended eastward along the northern border of Section 9 if necessary (ADOT, Jacobs).

Parcel 202-76-012, which currently has access to US 93 at MP 92.6, can be provided with access to the ultimate TI crossroad by extending the road westward along the southern edge of Section 5. The road can then head north along the western property line of parcel 202-76-012 to connect with the proposed frontage road at MP 92.5, thus providing access to parcel 202-76-0 l0A (ADOT, Jacobs).

Parcels 202-76-009 (MP 92.5 to 93) and 202-76-005 (MP 92.5) on the east side of US 93 can be provided with access by building a frontage road north from the end of the McGarry's Wash TI crossroad along the eastern edge of section 5 to the midsection line. When the road reaches the midsection line, it will head west to connect with the proposed frontage road, thus providing access to both parcels. The frontage road itself, which has been proposed for the interim condition, will then provide adequate access for parcel 202-76-004, at the northern end of the McGarry's Wash project (MP 92.2 to 92.4) (ADOT, Jacobs).

Appendix D

Proposed and Existing Land Uses within US Highway 93 Area Plan

Proposed and Existing Land Uses within Northwest Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Public Lands	661	21N	17W	4		Public Lands	BLM
Public Lands	658	21N	17W	5		Public Lands	BLM
Public Lands	40	21N	17W	6	SE 1/4 SE 1/4	Public Lands	BLM
Rural Development Area	377	21N	17W	6	Portion	Rural Development Area	Private
Rural Development Area	36	21N	17W	7	Port NW 1/4	Rural Development Area	Private
Public Lands	30	21N	17W	8	Portion	Public Lands	BLM
Public Lands	145	21N	17W	8	Portion	Public Lands	BLM
Public Lands	223	21N	17W	8	Portion	Public Lands	BLM
Rural Development Area	77	21N	17W	8	Portion	Rural Development Area	Private
Rural Development Area	105	21N	17W	8	Portion	Rural Development Area	State Trust
Suburban Development Area	61	21N	17W	8	Portion	Rural Development Area	State Trust
Public Lands	635	21N	17W	9		Public Lands	BLM
Public Lands	624	21N	17W	16		Public Lands	BLM
Public Lands	127	21N	17W	17	Portion	Public Lands	BLM
Public Lands	468	21N	17W	17	Portion	Public Lands	BLM
Rural Development Area	42	21N	17W	17	Portion	Rural Development Area	Private
Public Lands	637	21N	17W	20		Public Lands	BLM
Public Lands	625	21N	17W	21		Public Lands	BLM
Public Lands	587	22N	17W	19		Public Lands	BLM
Public Lands	471	22N	17W	29	E 1/2, NW 1/4	Public Lands	BLM
Rural Development Area	147	22N	17W	29	SW 1/4	Rural Development Area	Private
Low Density Residential	2	22N	17W	30	Portion	Rural Development Area	Private
Low Density Residential	6	22N	17W	30	Portion	Rural Development Area	Private
Low Density Residential	11	22N	17W	30	Portion	Rural Development Area	Private
Public Lands	305	22N	17W	30	N 1/2	Public Lands	BLM
Rural Development Area	144	22N	17W	30	Portion	Rural Development Area	Private
Suburban Estate	64	22N	17W	30	Portion	Rural Development Area	Private
Suburban Residential	65	22N	17W	30	Portion	Rural Development Area	Private
General Commercial	1	22N	17W	31		Rural Development Area	Private
General Commercial	9	22N	17W	31	Portion	Rural Development Area	Private
Low Density Residential	1	22N	17W	31	Portion	Rural Development Area	Private
Low Density Residential	3	22N	17W	31	Portion	Rural Development Area	Private
Low Density Residential	4	22N	17W	31	Portion	Rural Development Area	Private
Low Density Residential	4	22N	17W	31	Portion	Rural Development Area	Private
Low Density Residential	6	22N	17W	31	Portion	Rural Development Area	Private
Low Density Residential	7	22N	17W	31	Portion	Rural Development Area	Private
Low Density Residential	8	22N	17W	31	Portion	Rural Development Area	Private
Low Density Residential	8	22N	17W	31	Portion	Rural Development Area	Private
Low Density Residential	8	22N	17W	31	Portion	Rural Development Area	Private
Low Density Residential	15	22N	17W	31	Portion	Rural Development Area	Private
Rural Development Area	417	22N	17W	31	Portion	Rural Development Area	Private
Suburban Estate	34	22N	17W	31	Portion	Rural Development Area	Private
Suburban Residential	72	22N	17W	31	Portion	Rural Development Area	Private
Public Lands	638	22N	17W	32		Public Lands	BLM
Public Lands	687	22N	18W	2		Public Lands	BLM
Public Lands	678	22N	18W	3		Public Lands	BLM
General Commercial	3	22N	18W	4		Rural Development Area	State Trust
Rural Development Area	200	22N	18W	4	Portion	Rural Development Area	State Trust
Rural Industrial	5	22N	18W	4	Portion	Rural Industrial	Private
Rural Industrial	441	22N	18W	4	Portion	Rural Development Area	State Trust
Rural Development Area	668	22N	18W	5		Rural Development Area	Private
Rural Development Area	671	22N	18W	6		Rural Development Area	Private
Rural Development Area	640	22N	18W	8		Rural Development Area	Private
Rural Development Area	398	22N	18W	9	Portion	Rural Development Area	Private
Rural Industrial	244	22N	18W	9	Portion	Rural Development Area	Private
General Commercial	113	22N	18W	10	Portion	Rural Development Area	Private
General Commercial	117	22N	18W	10	Portion	Rural Development Area	Private
Light Industrial	317	22N	18W	10	Portion	Rural Development Area	Private
Rural Industrial	49	22N	18W	10	Portion	Rural Development Area	Private
Public Lands	641	22N	18W	11		Public Lands	BLM
Public Lands	658	22N	18W	13	Portion	Public Lands	BLM
Rural Development Area	45	22N	18W	13	Portion	Rural Development Area	Private
Public Lands	641	22N	18W	14		Public Lands	BLM
Public Lands	73	22N	18W	15	Portion	Public Lands	BLM
Rural Development Area	200	22N	18W	15	Portion	Rural Development Area	Private
Rural Industrial	337	22N	18W	15	Portion	Rural Development Area	Private
Rural Development Area	640	22N	18W	16		Rural Development Area	Private

Proposed and Existing Land Uses within Northwest Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Rural Development Area	639	22N	18W	17		Rural Development Area	Private
Rural Development Area	642	22N	18W	21		Rural Development Area	Private
Rural Development Area	620	22N	18W	22	Portion	Rural Development Area	Private
Rural Industrial	20	22N	18W	22	Portion	Rural Development Area	Private
Rural Development Area	84	22N	18W	23	Portion	Rural Development Area	Private
Rural Development Area	312	22N	18W	23	Portion	Rural Development Area	Private
Rural Industrial	206	22N	18W	23	Portion	Rural Development Area	Private
Public Lands	711	22N	18W	24		Public Lands	BLM
Public Lands	763	22N	18W	24		Public Lands	BLM
Public Lands	642	22N	18W	25		Public Lands	BLM
Public Lands	640	22N	18W	26		Public Lands	BLM
Rural Development Area	641	22N	18W	27		Rural Development Area	Private
Public Lands	642	22N	18W	34		Public Lands	BLM
General Commercial	3	22N	18W	35	Portion	Rural Development Area	State Trust
Public Lands	642	22N	18W	35		Public Lands	BLM
Suburban Development Area	209	22N	18W	35	Portion	Rural Development Area	State Trust
Suburban Development Area	417	22N	18W	35	Portion	Rural Development Area	State Trust
General Commercial	2	22N	18W	36	Portion	Rural Development Area	State Trust
Public Lands	310	23N	18W	6	W 1/2	Public Lands	BLM
Suburban Estate	325	23N	18W	6	E 1/2	Public Lands	Private
Suburban Residential	632	23N	18W	7		Rural Development Area	Private
Public Lands	656	23N	18W	8		Public Lands	BLM
Suburban Residential	660	23N	18W	17		Rural Development Area	Private
Rural Development Area	651	23N	18W	18		Rural Development Area	State Trust
Rural Development Area	640	23N	18W	19		Rural Development Area	Private
Public Lands	647	23N	18W	20		Public Lands	BLM
Suburban Residential	642	23N	18W	21		Rural Development Area	Private
Public Lands	72	23N	18W	27	E 1/2 NE 1/4	Public Lands	BLM
Rural Development Area	523	23N	18W	27	Portion	Rural Development Area	Private
Suburban Development Area	39	23N	18W	27	Portion	Rural Development Area	Private
Public Lands	645	23N	18W	28		Public Lands	BLM
General Commercial	126	23N	18W	29	Portion	General Commercial	Private
Rural Development Area	504	23N	18W	29	Portion	Rural Development Area	Private
Public Lands	635	23N	18W	30		Public Lands	BLM
Rural Development Area	318	23N	18W	31	W 1/2	Rural Development Area	Private
Suburban Residential	331	23N	18W	31	E 1/2	Rural Development Area	Private
Public Lands	368	23N	18W	32	Portion	Public Lands	BLM
Suburban Development Area	286	23N	18W	32	Portion	Rural Development Area	State Trust
General Commercial	1	23N	18W	33	Portion	Rural Development Area	Private
General Commercial	3	23N	18W	33	Portion	Rural Development Area	Private
General Commercial	4	23N	18W	33	Portion	Rural Development Area	Private
General Commercial	9	23N	18W	33	Portion	Rural Development Area	Private
General Commercial	9	23N	18W	33	Portion	Rural Development Area	Private
General Commercial	12	23N	18W	33	Portion	Rural Development Area	Private
General Commercial	14	23N	18W	33	Portion	Rural Development Area	Private
General Commercial	26	23N	18W	33	Portion	General Commercial	Private
General Commercial	314	23N	18W	33	Portion	General Commercial	Private
Light Industrial	1	23N	18W	33	Portion	Rural Development Area	Private
Light Industrial	2	23N	18W	33	Portion	Light Industrial	Private
Suburban Development Area	218	23N	18W	33	Portion	Rural Development Area	Private
Public Lands	640	23N	18W	34		Public Lands	BLM
Public Lands	640	23N	19W	1		Public Lands	BLM
Public Lands	593	23N	19W	2		Public Lands	BLM
Rural Development Area	77	23N	19W	2	S 1/2 NW 1/4	Rural Development Area	Private
Public Lands	629	23N	19W	3	Portion	Public Lands	BLM
Rural Development Area	40	23N	19W	3	SW 1/4 SW 1/4	Rural Development Area	Private
Public Lands	637	23N	19W	10		Public Lands	BLM
Public Lands	641	23N	19W	11		Public Lands	BLM
General Commercial	17	23N	19W	12	Portion	Rural Development Area	State Trust
Light Industrial	1	23N	19W	12	Portion	Rural Development Area	State Trust
Light Industrial	11	23N	19W	12	Portion	Rural Development Area	State Trust
Suburban Development Area	140	23N	19W	12	Portion	Rural Development Area	State Trust
Suburban Development Area	403	23N	19W	12	Portion	Rural Development Area	State Trust
Public Lands	613	23N	19W	13		Public Lands	BLM
Public Lands	635	23N	19W	14		Public Lands	BLM
Public Lands	640	23N	19W	23		Public Lands	BLM
Public Lands	624	23N	19W	24		Public Lands	BLM

Proposed and Existing Land Uses within Northwest Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Suburban Residential	625	23N	19W	25		Rural Development Area	Private
Public Lands	642	23N	19W	36		Public Lands	BLM
Public Lands	634	24N	18W	31		Public Lands	BLM
Rural Development Area	496	24N	19W	3		Rural Development Area	Private
Public Lands	495	24N	19W	4		Public Lands	BLM
Suburban Estate	491	24N	19W	5		Rural Development Area	Private
Suburban Estate	464	24N	19W	6		Rural Development Area	Private
Suburban Estate	602	24N	19W	7		Rural Development Area	Private
General Commercial	37	24N	19W	8	Port of NE 1/4	Rural Development Area	Private
Public Lands	367	24N	19W	8	Portion	Public Lands	BLM
Suburban Development Area	234	24N	19W	8	Port of N 1/2	Rural Development Area	Private
General Commercial	1	24N	19W	9	Portion	Rural Development Area	Private
General Commercial	10	24N	19W	9	Port of NW 1/4	Rural Development Area	Private
Rural Development Area	521	24N	19W	9	Portion	Rural Development Area	Private
Suburban Development Area	26	24N	19W	9	Port of NW 1/4	Rural Development Area	Private
Suburban Development Area	69	24N	19W	9	Port of NW 1/4	Rural Development Area	Private
Public Lands	641	24N	19W	10		Public Lands	BLM
Public Lands	481	24N	19W	11	NW 1/4, S 1/2	Public Lands	BLM
Rural Development Area	158	24N	19W	11	NE 1/4	Rural Development Area	Private
Public Lands	639	24N	19W	14		Public Lands	BLM
Public Lands	559	24N	19W	15	Portion	Public Lands	BLM
Suburban Development Area	81	24N	19W	15	W 1/2 SW 1/4	Rural Development Area	Private
Rural Development Area	642	24N	19W	16		Rural Development Area	State Trust
Rural Development Area	641	24N	19W	17		Rural Development Area	Private
Public Lands	604	24N	19W	18		Public Lands	BLM
Public Lands	642	24N	19W	20		Public Lands	BLM
Rural Development Area	643	24N	19W	21		Rural Development Area	Private
Public Lands	481	24N	19W	22	N 1/2, SW 1/4	Public Lands	BLM
Rural Development Area	159	24N	19W	22	SE 1/4	Rural Development Area	Private
Public Lands	482	24N	19W	23	S 1/2, NW 1/4	Public Lands	BLM
Rural Development Area	158	24N	19W	23	NW 1/4	Rural Development Area	Private
Public Lands	629	24N	19W	24		Public Lands	BLM
Public Lands	640	24N	19W	25		Public Lands	BLM
General Commercial	20	24N	19W	26	Port W 1/2	Rural Development Area	Private
General Commercial	70	24N	19W	26	Port W 1/2	Rural Development Area	Private
Light Industrial	201	24N	19W	26	Port W 1/2	Rural Development Area	Private
Public Lands	318	24N	19W	26	E 1/2	Public Lands	BLM
Rural Development Area	17	24N	19W	26	Port W 1/2	Rural Development Area	Private
Public Lands	482	24N	19W	27	W 1/2, SE 1/4	Public Lands	BLM
Suburban Development Area	158	24N	19W	27	NE 1/4	Rural Development Area	Private
Public Lands	641	24N	19W	28		Public Lands	BLM
Rural Development Area	638	24N	19W	33		Rural Development Area	Private
Public Lands	323	24N	19W	34	S 1/2	Public Lands	BLM
Rural Development Area	315	24N	19W	34	N 1/2	Rural Development Area	Private
Rural Development Area	639	24N	19W	35		Rural Development Area	Private
Public Lands	157	24N	19W	36	N 1/2 N 1/2	Public Lands	BLM
Rural Development Area	480	24N	19W	36	S1/2, N1/2 S1/2	Rural Development Area	State Trust
Rural Development Area	557	24N	20W	1		Rural Development Area	Private
General Commercial	29	25N	19W	19	Port SW 1/4	Rural Development Area	Private
Light Industrial	97	25N	19W	19	Port W 1/2	Rural Development Area	Private
General Commercial	126	25N	19W	30	Port of SE 1/4	General Commercial	Private
Suburban Development Area	357	25N	19W	30	Portion	Rural Development Area	Private
General Commercial	33	25N	19W	31	Portion	Rural Development Area	Private
Suburban Development Area	162	25N	19W	31	SE 1/4	Rural Development Area	Private
Suburban Estate	446	25N	19W	31	Portion	Rural Development Area	Private
Public Lands	474	25N	19W	32	N 1/2, SW 1/4	Public Lands	BLM
Rural Development Area	162	25N	19W	32	SE 1/4	Rural Development Area	State Trust
Suburban Estate	643	25N	19W	33		Rural Development Area	Private
Commercial Recreation	303	25N	20W	2	Portion	Rural Development Area	State Trust
Suburban Estate	641	25N	20W	3		Rural Development Area	Private
Public Lands	151	25N	20W	4	SE 1/4	Public Lands	BLM
Suburban Estate	487	25N	20W	4	SW 1/4, N 1/2	Rural Development Area	Private
Public Lands	334	25N	20W	10	N 1/2	Public Lands	BLM
Suburban Estate	307	25N	20W	10	S 1/2	Rural Development Area	Private
Suburban Estate	574	25N	20W	11	Portion	Rural Development Area	Private
Public Lands	4	25N	20W	12	Port of NW 1/4	Rural Development Area	BLM
Suburban Development Area	64	25N	20W	12	Port of SW 1/4	Rural Development Area	Private

Proposed and Existing Land Uses within Northwest Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Suburban Estate	644	25N	20W	21		Rural Development Area	Private
Suburban Development Area	638	25N	20W	22		Rural Development Area	Private
Suburban Development Area	248	25N	20W	23	Portion	Rural Development Area	Private
Suburban Estate	641	25N	20W	23		Rural Development Area	Private
Public Lands	329	25N	20W	24	W 1/2	Public Lands	BLM
Suburban Development Area	315	25N	20W	24	E 1/2	Rural Development Area	Private
Suburban Estate	641	25N	20W	25		Rural Development Area	Private
Public Lands	630	25N	20W	26		Public Lands	BLM
Public Lands	650	25N	20W	36		Public Lands	BLM
Public Lands	386	26N	20W	6	Portion	Public Lands	BLM
Public Lands	632	26N	20W	7		Public Lands	BLM
Public Lands	228	26N	20W	8	Portion	Public Lands	BLM
Public Lands	38	26N	20W	16	Portion	Public Lands	BLM
Public Lands	576	26N	20W	17	Portion	Public Lands	BLM
Public Lands	637	26N	20W	18		Public Lands	BLM
Public Lands	641	26N	20W	19		Public Lands	BLM
Public Lands	640	26N	20W	20		Public Lands	BLM
Public Lands	355	26N	20W	21	Portion	Public Lands	BLM
Public Lands	155	26N	20W	27	Portion	Public Lands	BLM
Public Lands	625	26N	20W	28	Portion	Public Lands	BLM
Public Lands	645	26N	20W	29		Public Lands	BLM
Public Lands	640	26N	20W	32		Public Lands	BLM
Public Lands	636	26N	20W	33		Public Lands	BLM
Public Lands	578	26N	20W	34	Portion	Public Lands	BLM
Suburban Development Area	29	26N	20W	35	Port of SW 1/4	Rural Development Area	Private
Public Lands	637	26N	21W	1		Public Lands	BLM
Public Lands	639	26N	21W	2		Public Lands	BLM
Public Lands	633	26N	21W	12		Public Lands	BLM
Public Lands	636	26N	21W	13		Public Lands	BLM
Public Lands	638	27N	20W	18		Public Lands	BLM
Urban Development Area	632	27N	20W	19		Urban Development Area	Private
Suburban Development Area	9	27N	20W	29		Suburban Development Area	Private
Suburban Development Area	642	27N	20W	29		Suburban Development Area	Private
Public Lands	193	27N	20W	30	Port of S 1/2	Public Lands	BLM
Urban Development Area	66	27N	20W	30	Port N 1/2	Urban Development Area	Private
General Commercial	0	27N	20W	31	Port of W1/2	General Commercial	Private
General Commercial	2	27N	20W	31	W 1/2	General Commercial	Private
General Commercial	10	27N	20W	31	W 1/2	General Commercial	Private
General Commercial	16	27N	20W	31	W 1/2	General Commercial	Private
General Commercial	27	27N	20W	31	W 1/2	General Commercial	Private
General Commercial	29	27N	20W	31	W 1/2	General Commercial	Private
General Commercial	34	27N	20W	31	W 1/2	General Commercial	Private
General Commercial	35	27N	20W	31	W 1/2	General Commercial	Private
General Commercial	36	27N	20W	31	W 1/2	General Commercial	Private
General Commercial	36	27N	20W	31	W 1/2	General Commercial	Private
General Commercial	36	27N	20W	31	W 1/2	General Commercial	Private
Rural Industrial	314	27N	20W	31	E 1/2	Rural Development Area	Private
Rural Industrial	641	27N	20W	32		Rural Development Area	State Trust
Public Lands	647	27N	21W	1		Public Lands	BLM
Public Lands	632	27N	21W	2		Public Lands	BLM
Public Lands	627	27N	21W	3		Public Lands	BLM
Public Lands	629	27N	21W	4		Public Lands	BLM
Public Lands	639	27N	21W	10		Public Lands	BLM
Public Lands	643	27N	21W	11		Public Lands	BLM
Public Lands	638	27N	21W	12		Public Lands	BLM
Rural Development Area	640	27N	21W	13		Rural Development Area	Private
Public Lands	644	27N	21W	14		Public Lands	BLM
Public Lands	641	27N	21W	15		Public Lands	BLM
Public Lands	637	27N	21W	23		Public Lands	BLM
Public Lands	26	27N	21W	24	Port SW 1/4	Public Lands	BLM
Public Lands	158	27N	21W	24	NE 1/4	Public Lands	BLM
Public Lands	163	27N	21W	24	SE 1/4	Public Lands	Private
Urban Development Area	136	27N	21W	24	Portion	Rural Development Area	Private
Urban Development Area	160	27N	21W	24	Portion	Urban Development Area	Private
Urban Development Area	161	27N	21W	24	Portion	Urban Development Area	Private
Urban Development Area	83	27N	21W	25	Portion	Urban Development Area	Private
Urban Development Area	452	27N	21W	25	Portion	Urban Development Area	Private

Proposed and Existing Land Uses within Northwest Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Public Lands	646	27N	21W	26		Public Lands	BLM
Public Lands	643	27N	21W	35		Public Lands	BLM
Public Lands	40	27N	21W	36	NE 1/4 NE 1/4	Public Lands	BLM
Public Lands	79	27N	21W	36	S 1/2 SW 1/4	Public Lands	BLM
Rural Industrial	524	27N	21W	36	Portion	Rural Development Area	State Trust
Public Lands	327	28N	21W	5	W 1/2	Public Lands	BLM
Rural Industrial	317	28N	21W	5	E 1/2	Rural Development Area	State Trust
Public Lands	641	28N	21W	6		Public Lands	BLM
Public Lands	624	28N	21W	7		Public Lands	BLM
Public Lands	233	28N	21W	8	Port of W 1/2	Public Lands	BLM
Rural Development Area	168	28N	21W	8	Port of S 1/2	Rural Development Area	State Trust
Rural Industrial	236	28N	21W	8	Port of E 1/2	Rural Development Area	State Trust
Rural Industrial	646	28N	21W	9		Rural Development Area	State Trust
Public Lands	636	28N	21W	15		Public Lands	BLM
Rural Development Area	646	28N	21W	16		Rural Development Area	State Trust
General Commercial	7	28N	21W	17	Port NW 1/4	Rural Development Area	State Trust
Rural Development Area	247	28N	21W	17		Rural Development Area	State Trust
Rural Development Area	369	28N	21W	17		Rural Development Area	State Trust
Public Lands	633	28N	21W	18		Public Lands	BLM
Public Lands	639	28N	21W	19		Public Lands	BLM
Public Lands	643	28N	21W	20		Public Lands	BLM
Public Lands	635	28N	21W	21		Public Lands	BLM
Public Lands	645	28N	21W	22		Public Lands	BLM
Public Lands	625	28N	21W	26		Public Lands	BLM
Public Lands	638	28N	21W	27		Public Lands	BLM
Public Lands	637	28N	21W	28		Public Lands	BLM
Public Lands	635	28N	21W	29		Public Lands	BLM
Public Lands	638	28N	21W	33		Public Lands	BLM
Public Lands	642	28N	21W	34		Public Lands	BLM
Public Lands	628	28N	21W	36		Public Lands	BLM

Proposed and Existing Land Uses within Southeast Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Public Lands	170	13N	10W	5	Portion	Public Lands	BLM
Public Lands	656	13N	10W	6		Public Lands	BLM
Public Lands	633	13N	10W	7		Public Lands	BLM
General Commercial	6	13N	10W	8	Portion	Rural Development Area	Private
Public Lands	163	13N	10W	8	Portion	Public Lands	BLM
Public Lands	154	13N	10W	17	Portion	Public Lands	BLM
Rural Development Area	11	13N	10W	17	Portion	Rural Development Area	Private
Public Lands	637	13N	10W	18		Public Lands	BLM
Rural Development Area	641	13N	10W	19		Rural Development Area	Private
Public Lands	163	13N	10W	20	Portion	Public Lands	BLM
Public Lands	659	13N	11W	1		Public Lands	BLM
Public Lands	661	13N	11W	2		Public Lands	BLM
Public Lands	664	13N	11W	3		Public Lands	BLM
Public Lands	662	13N	11W	4		Public Lands	BLM
Public Lands	663	13N	11W	5		Public Lands	BLM
Public Lands	638	13N	11W	9		Public Lands	BLM
Public Lands	640	13N	11W	10		Public Lands	BLM
Public Lands	641	13N	11W	11		Public Lands	BLM
Public Lands	635	13N	11W	12		Public Lands	BLM
Public Lands	637	13N	11W	13		Public Lands	BLM
Public Lands	642	13N	11W	14		Public Lands	BLM
Public Lands	589	14N	11W	6		Public Lands	BLM
Public Lands	593	14N	11W	7		Public Lands	BLM
Public Lands	640	14N	11W	8		Public Lands	BLM
Public Lands	638	14N	11W	16		Public Lands	BLM
Public Lands	640	14N	11W	17		Public Lands	BLM
Public Lands	596	14N	11W	18		Public Lands	BLM
Public Lands	595	14N	11W	19		Public Lands	BLM
Public Lands	638	14N	11W	20		Public Lands	BLM
Public Lands	639	14N	11W	21		Public Lands	BLM
Public Lands	639	14N	11W	22		Public Lands	BLM
Public Lands	640	14N	11W	27		Public Lands	BLM
Public Lands	638	14N	11W	28		Public Lands	BLM
Public Lands	639	14N	11W	29		Public Lands	BLM
Public Lands	595	14N	11W	30		Public Lands	BLM
Public Lands	597	14N	11W	31		Public Lands	BLM
Public Lands	639	14N	11W	32		Public Lands	BLM
Public Lands	640	14N	11W	33		Public Lands	BLM
Public Lands	641	14N	11W	34		Public Lands	BLM
Public Lands	641	14N	11W	35		Public Lands	BLM
Public Lands	529	14N	12W	1	Portion	Public Lands	BLM
Rural Development Area	111	14N	12W	1	Portion	Rural Development Area	Private
Public Lands	642	14N	12W	2	Portion	Public Lands	BLM
Rural Development Area	642	14N	12W	3		Rural Development Area	Private
Public Lands	645	14N	12W	4		Public Lands	BLM
Public Lands	304	14N	12W	5	S 1/2	Public Lands	BLM
Rural Development Area	338	14N	12W	5	N 1/2	Rural Development Area	Private
Rural Development Area	640	14N	12W	9		Rural Development Area	Private
Public Lands	630	14N	12W	10		Public Lands	BLM
Public Lands	39	14N	12W	11	SW 1/4 SW 1/4	Public Lands	BLM
Rural Development Area	607	14N	12W	11	Portion	Rural Development Area	Private
Public Lands	641	14N	12W	12		Public Lands	BLM
Rural Development Area	638	14N	12W	13		Rural Development Area	Private
Public Lands	627	14N	12W	14		Public Lands	BLM
Public Lands	621	14N	12W	15		Public Lands	BLM
Rural Development Area	41	14N	12W	15	10, 11 & 14	Rural Development Area	Private
Rural Development Area	639	14N	12W	23		Rural Development Area	Private
Rural Development Area	638	14N	12W	24		Rural Development Area	Private
Rural Development Area	639	14N	12W	25		Rural Development Area	Private
Public Lands	632	15N	12W	6		Public Lands	BLM
Rural Development Area	656	15N	12W	7		Rural Development Area	Private
Public Lands	641	15N	12W	8		Public Lands	BLM
Public Lands	642	15N	12W	16		Public Lands	BLM
Rural Development Area	640	15N	12W	17		Rural Development Area	Private
Public Lands	523	15N	12W	18	Portion	Public Lands	BLM
Rural Development Area	104	15N	12W	18	Portion	Rural Development Area	Private
Public Lands	597	15N	12W	19		Public Lands	BLM

Proposed and Existing Land Uses within Southeast Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Public Lands	635	15N	12W	20		Public Lands	BLM
Rural Development Area	639	15N	12W	21		Rural Development Area	Private
Public Lands	636	15N	12W	22		Public Lands	BLM
Public Lands	640	15N	12W	26		Public Lands	BLM
Rural Development Area	638	15N	12W	27		Rural Development Area	Private
Public Lands	641	15N	12W	28		Public Lands	BLM
Public Lands	640	15N	12W	29		Public Lands	BLM
Public Lands	631	15N	12W	30		Public Lands	BLM
Public Lands	639	15N	12W	32		Public Lands	BLM
Public Lands	639	15N	12W	33		Public Lands	BLM
Public Lands	637	15N	12W	34		Public Lands	BLM
Rural Development Area	641	15N	12W	35		Rural Development Area	Private
Public Lands	643	15N	12W	36		Public Lands	BLM
Rural Development Area	639	15N	13W	1		Rural Development Area	Private
Rural Development Area	640	15N	13W	2		Rural Development Area	Private
Rural Development Area	641	15N	13W	3		Rural Development Area	Private
Public Lands	642	15N	13W	4		Public Lands	BLM
Public Lands	637	15N	13W	10		Public Lands	BLM
Public Lands	398	15N	13W	11	Portion	Public Lands	BLM
Rural Development Area	238	15N	13W	11	Portion	Rural Development Area	Private
Public Lands	484	15N	13W	12	Portion	Public Lands	BLM
Rural Development Area	155	15N	13W	12	Portion	Rural Development Area	Private
Rural Development Area	638	15N	13W	13	Portion	Rural Development Area	Private
Public Lands	596	15N	13W	14	Portion	Public Lands	BLM
Rural Development Area	41	15N	13W	14	Portion	Rural Development Area	Private
Public Lands	635	15N	13W	23		Public Lands	BLM
Public Lands	160	15N	13W	24	Portion	Public Lands	BLM
Public Lands	234	15N	13W	24	Portion	Public Lands	BLM
Rural Development Area	242	15N	13W	24	Portion	Rural Development Area	Private
Rural Development Area	627	16N	12W	31		Rural Development Area	Private
Public Lands	636	16N	13W	2		Public Lands	BLM
Commercial Recreation	8	16N	13W	3	Portion	Rural Development Area	Private
Commercial Recreation	81	16N	13W	3	Portion	Rural Development Area	Private
Public Lands	40	16N	13W	3	Portion	Public Lands	BLM
Rural Development Area	504	16N	13W	3	Portion	Rural Development Area	Private
Rural Development Area	599	16N	13W	3	Portion	Rural Development Area	Private
Public Lands	285	16N	13W	4	Portion	Public Lands	BLM
Rural Development Area	38	16N	13W	4	Portion	Rural Development Area	Private
Rural Development Area	40	16N	13W	4	Portion	Rural Development Area	Private
Rural Development Area	312	16N	13W	4	S 1/2	Rural Development Area	Private
Rural Development Area	312	16N	13W	4	S 1/2	Rural Development Area	Private
Public Lands	639	16N	13W	5		Public Lands	BLM
Public Lands	642	16N	13W	8	Portion	Public Lands	BLM
Public Lands	599	16N	13W	9	Portion	Public Lands	BLM
Rural Development Area	38	16N	13W	9	Portion	Rural Development Area	Private
Rural Development Area	643	16N	13W	10	Portion	Rural Development Area	Private
Public Lands	559	16N	13W	11	Portion	Public Lands	BLM
Rural Development Area	78	16N	13W	11	Portion	Rural Development Area	Private
Rural Development Area	78	16N	13W	11	Portion	Rural Development Area	Private
Public Lands	489	16N	13W	14	Portion	Public Lands	BLM
Rural Development Area	149	16N	13W	14	Portion	Rural Development Area	Private
Rural Development Area	322	16N	13W	15	Portion	Rural Development Area	Private
Suburban Development Area	54	16N	13W	15	Portion	Rural Development Area	Private
Suburban Development Area	241	16N	13W	15	Portion	Rural Development Area	Private
Public Lands	637	16N	13W	16		Public Lands	BLM
Public Lands	640	16N	13W	17		Public Lands	BLM
Public Lands	640	16N	13W	20		Public Lands	BLM
Public Lands	634	16N	13W	21		Public Lands	BLM
Suburban Development Area	2	16N	13W	21	Portion	Rural Development Area	Private
Commercial Recreation	3	16N	13W	22	Portion	Rural Development Area	Private
Commercial Recreation	4	16N	13W	22	Portion	Rural Development Area	Private
General Commercial	7	16N	13W	22	Portion	Rural Development Area	Private
General Commercial	9	16N	13W	22	Portion	Rural Development Area	Private
General Commercial	10	16N	13W	22	Portion	Rural Development Area	Private
General Commercial	12	16N	13W	22	Portion	Rural Development Area	Private
General Commercial	15	16N	13W	22	Portion	Rural Development Area	Private
General Commercial	20	16N	13W	22	Portion	Rural Development Area	Private

Proposed and Existing Land Uses within Southeast Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Light Industrial	1	16N	13W	22	Portion	Rural Development Area	Private
Light Industrial	3	16N	13W	22	Portion	Rural Development Area	Private
Light Industrial	6	16N	13W	22	Portion	Rural Development Area	Private
Public Facilities	4	16N	13W	22	Portion	Rural Development Area	Private
Rural Development Area	301	16N	13W	22	Portion	Rural Development Area	Private
Suburban Development Area	9	16N	13W	22	Portion	Rural Development Area	Private
Suburban Development Area	11	16N	13W	22	Portion	Rural Development Area	Private
Suburban Development Area	29	16N	13W	22	Portion	Rural Development Area	Private
Suburban Development Area	171	16N	13W	22	Portion	Rural Development Area	Private
Public Lands	524	16N	13W	23	Portion	Public Lands	BLM
Rural Development Area	37	16N	13W	23	Portion	Rural Development Area	Private
Rural Development Area	78	16N	13W	23	Portion	Rural Development Area	Private
Public Lands	482	16N	13W	25	Portion	Public Lands	BLM
Rural Development Area	156	16N	13W	25	Portion	Rural Development Area	Private
Public Lands	309	16N	13W	26	Portion	Public Lands	BLM
Rural Development Area	330	16N	13W	26	Portion	Rural Development Area	Private
Commercial Recreation	120	16N	13W	27	Portion	Rural Development Area	Private
General Commercial	4	16N	13W	27	Portion	Rural Development Area	Private
General Commercial	4	16N	13W	27	Portion	Rural Development Area	Private
General Commercial	6	16N	13W	27	Portion	Rural Development Area	Private
General Commercial	9	16N	13W	27	Portion	Rural Development Area	Private
General Commercial	11	16N	13W	27	Portion	Rural Development Area	Private
General Commercial	13	16N	13W	27	Portion	Rural Development Area	Private
General Commercial	14	16N	13W	27	Portion	Rural Development Area	Private
Public Lands	74	16N	13W	27	Portion	Public Lands	BLM
Suburban Development Area	6	16N	13W	27	Portion	Rural Development Area	Private
Suburban Development Area	12	16N	13W	27	Portion	Rural Development Area	Private
Suburban Development Area	21	16N	13W	27	Portion	Rural Development Area	Private
Suburban Development Area	40	16N	13W	27	Portion	Rural Development Area	Private
Suburban Development Area	51	16N	13W	27	Portion	Rural Development Area	Private
Suburban Development Area	55	16N	13W	27	Portion	Rural Development Area	Private
Suburban Development Area	76	16N	13W	27	Portion	Rural Development Area	Private
Suburban Development Area	79	16N	13W	27	Portion	Rural Development Area	Private
Public Lands	632	16N	13W	28		Public Lands	BLM
Suburban Development Area	3	16N	13W	28	Portion	Rural Development Area	Private
Public Lands	638	16N	13W	29		Public Lands	BLM
Public Lands	636	16N	13W	33		Public Lands	BLM
Rural Development Area	640	16N	13W	34		Rural Development Area	Private
Rural Development Area	640	16N	13W	35		Rural Development Area	Private
Public Lands	477	16N	13W	36	Portion	Public Lands	BLM
Rural Development Area	160	16N	13W	36	Portion	Rural Development Area	Private
Public Lands	557	16.5N	13W	20		Public Lands	BLM
Public Lands	326	16.5N	13W	21	Portion	Public Lands	BLM
Rural Development Area	231	16.5N	13W	21	Portion	Rural Development Area	Private
Public Lands	410	16.5N	13W	22	Portion	Public Lands	BLM
Rural Development Area	143	16.5N	13W	22	Portion	Rural Development Area	Private
Public Lands	550	16.5N	13W	23		Public Lands	BLM
Public Lands	643	16.5N	13W	26		Public Lands	BLM
Public Lands	517	16.5N	13W	27	Portion	Public Lands	BLM
Rural Development Area	123	16.5N	13W	27	Portion	Rural Development Area	Private
General Commercial	16	16.5N	13W	28	Portion	Rural Development Area	Private
Public Lands	359	16.5N	13W	28	Portion	Public Lands	BLM
Rural Development Area	122	16.5N	13W	28	Portion	Rural Development Area	Private
Rural Development Area	146	16.5N	13W	28	Portion	Rural Development Area	Private
Public Lands	642	16.5N	13W	29		Public Lands	BLM
Public Lands	643	16.5N	13W	32		Public Lands	BLM
General Commercial	6	16.5N	13W	33	Portion	Rural Development Area	Private
Public Lands	495	16.5N	13W	33	Portion	Public Lands	BLM
Rural Development Area	142	16.5N	13W	33	Portion	Rural Development Area	Private
Public Lands	201	16.5N	13W	34	Portion	Public Lands	BLM
Rural Development Area	440	16.5N	13W	34	Portion	Rural Development Area	Private
Public Lands	643	16.5N	13W	35		Public Lands	BLM
Public Lands	156	17N	13W	2	NW 1/4	Public Lands	BLM
Rural Development Area	79	17N	13W	2	W 1/2 SW 1/4	Rural Development Area	State
Rural Development Area	165	17N	13W	2	SE 1/4	Rural Development Area	State Trust
Rural Development Area	223	17N	13W	2	S 1/2, NW 1/4	Rural Development Area	Private
Public Lands	313	17N	13W	3	W 1/2	Public Lands	BLM

Proposed and Existing Land Uses within Southeast Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Rural Development Area	310	17N	13W	3	E 1/2	Rural Development Area	Private
Public Lands	620	17N	13W	4		Public Lands	BLM
Public Lands	618	17N	13W	5		Public Lands	BLM
Public Lands	637	17N	13W	9		Public Lands	BLM
Public Lands	461	17N	13W	10	Portion	Public Lands	BLM
Rural Development Area	172	17N	13W	10	E 1/2 E 1/2	Rural Development Area	Private
Public Lands	204	17N	13W	11	Portion	Public Lands	BLM
Rural Development Area	433	17N	13W	11	Portion	Rural Development Area	Private
Public Lands	642	17N	13W	13		Public Lands	BLM
Public Lands	236	17N	13W	14	Portion	Public Lands	BLM
Rural Development Area	405	17N	13W	14	Portion	Rural Development Area	Private
Public Lands	471	17N	13W	15	Portion	Public Lands	BLM
Rural Development Area	169	17N	13W	15	Portion	Rural Development Area	Private
Public Lands	640	17N	13W	16		Public Lands	BLM
Public Lands	640	17N	13W	21		Public Lands	BLM
Rural Development Area	642	17N	13W	22		Rural Development Area	Private
Rural Development Area	642	17N	13W	23		Rural Development Area	Private
Public Lands	639	17N	13W	24		Public Lands	BLM
Public Lands	641	17N	13W	25		Public Lands	BLM
Public Lands	156	17N	13W	26	Portion	Public Lands	BLM
Rural Development Area	487	17N	13W	26	Portion	Rural Development Area	Private
Public Lands	640	17N	13W	27		Public Lands	BLM
Public Lands	640	17N	13W	28		Public Lands	BLM
Public Lands	636	17N	13W	34		Public Lands	BLM
Public Lands	75	17N	13W	35	Portion	Public Lands	BLM
Public Lands	319	17N	13W	35	Portion	Public Lands	BLM
Rural Development Area	240	17N	13W	35	Portion	Rural Development Area	Private
Public Lands	641	17N	13W	36		Public Lands	BLM
Rural Development Area	319	18N	13W	3	E 1/2	Rural Development Area	Private
General Commercial	14	18N	13W	4	Portion	Rural Development Area	Private
Light Industrial	39	18N	13W	4	Portion	Rural Development Area	Private
Light Industrial	324	18N	13W	4	W 1/2	Rural Development Area	Private
Light Industrial	560	18N	13W	4	Portion	Rural Development Area	State Trust
Rural Development Area	642	18N	13W	5		Rural Development Area	Private
Rural Development Area	634	18N	13W	6		Rural Development Area	State Trust
Rural Development Area	634	18N	13W	7		Rural Development Area	Private
Rural Development Area	640	18N	13W	8		Rural Development Area	State Trust
Rural Development Area	641	18N	13W	9		Rural Development Area	Private
Rural Development Area	641	18N	13W	10		Rural Development Area	State Trust
Rural Development Area	80	18N	13W	15		Rural Development Area	Private
Rural Development Area	643	18N	13W	16		Rural Development Area	State Trust
Rural Development Area	639	18N	13W	17		Rural Development Area	Private
Rural Development Area	633	18N	13W	18		Rural Development Area	State Trust
Rural Development Area	640	18N	13W	20		Rural Development Area	State Trust
Rural Development Area	644	18N	13W	21		Rural Development Area	Private
Rural Development Area	40	18N	13W	22	NW 1/4 NE 1/4	Rural Development Area	Private
Rural Development Area	600	18N	13W	22		Rural Development Area	State Trust
Rural Development Area	565	18N	13W	23		Rural Development Area	Private
Public Lands	65	18N	13W	26	Portion	Public Lands	BLM
Public Lands	79	18N	13W	26	Portion	Public Lands	BLM
Rural Development Area	499	18N	13W	26	Portion	Rural Development Area	Private
Rural Development Area	642	18N	13W	27		Rural Development Area	Private
Rural Development Area	641	18N	13W	28		Rural Development Area	Private
Rural Development Area	640	18N	13W	29		Rural Development Area	Private
Rural Development Area	639	18N	13W	32		Rural Development Area	State Trust
Public Lands	639	18N	13W	33		Public Lands	BLM
Public Lands	641	18N	13W	34		Public Lands	BLM
Public Lands	80	18N	13W	35	Portion	Public Lands	BLM
Rural Development Area	565	18N	13W	35	Portion	Rural Development Area	Private
Rural Development Area	638	19N	13W	3		Rural Development Area	Private
Rural Development Area	23	19N	13W	4	Portion	Rural Development Area	Private
Rural Development Area	34	19N	13W	4	Portion	Rural Development Area	Private
Rural Development Area	45	19N	13W	4	Portion	Rural Development Area	Private
Rural Development Area	57	19N	13W	4	Portion	Rural Development Area	Private
Rural Development Area	88	19N	13W	4	Portion	Rural Development Area	Private
Rural Development Area	285	19N	13W	4	Portion	Rural Development Area	Private
Rural Development Area	638	19N	13W	5		Rural Development Area	Private

Proposed and Existing Land Uses within Southeast Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Rural Development Area	627	19N	13W	6		Rural Development Area	State Trust
Rural Development Area	629	19N	13W	7		Rural Development Area	State Trust
Rural Development Area	165	19N	13W	8	Portion	Rural Development Area	Private
Rural Development Area	419	19N	13W	8	Portion	Rural Development Area	Private
Rural Development Area	640	19N	13W	8		Rural Development Area	State Trust
Rural Development Area	642	19N	13W	10		Rural Development Area	State Trust
Rural Development Area	312	19N	13W	15		Rural Development Area	State Trust
Rural Development Area	328	19N	13W	15	W 1/2	Rural Development Area	Private
Rural Development Area	173	19N	13W	16	Portion	Rural Development Area	Private
Rural Development Area	406	19N	13W	16	Portion	Rural Development Area	Private
Rural Development Area	640	19N	13W	17	Portion	Rural Development Area	Private
Rural Development Area	630	19N	13W	18		Rural Development Area	State Trust
Rural Development Area	632	19N	13W	19		Rural Development Area	Private
Rural Development Area	641	19N	13W	20		Rural Development Area	State Trust
Rural Development Area	180	19N	13W	21	Portion	Rural Development Area	Private
Rural Development Area	392	19N	13W	21	Portion	Rural Development Area	Private
Rural Development Area	641	19N	13W	22		Rural Development Area	State Trust
Rural Development Area	639	19N	13W	27		Rural Development Area	Private
Rural Development Area	153	19N	13W	28	Portion	Rural Development Area	Private
Rural Development Area	391	19N	13W	28	Portion	Rural Development Area	Private
Rural Development Area	638	19N	13W	29		Rural Development Area	Private
Rural Development Area	631	19N	13W	30		Rural Development Area	State Trust
Rural Development Area	632	19N	13W	31		Rural Development Area	Private
Rural Development Area	641	19N	13W	32		Rural Development Area	State Trust
General Commercial	12	19N	13W	33	Portion	Rural Development Area	Private
Light Industrial	39	19N	13W	33	Portion	Rural Development Area	Private
Rural Development Area	8	19N	13W	33	Portion	Rural Development Area	Private
Rural Development Area	79	19N	13W	33	Portion	Rural Development Area	Private
Rural Development Area	429	19N	13W	33	Portion	Rural Development Area	Private
Rural Development Area	642	19N	13W	34		Rural Development Area	State Trust
Suburban Estate	634	20N	13W	3		Suburban Development Area	Private
Suburban Estate	316	20N	13W	4	N 1/2	Suburban Development Area	State Trust
Suburban Residential	319	20N	13W	4	S 1/2	Suburban Development Area	State Trust
General Commercial	2	20N	13W	5	Portion	Suburban Development Area	Private
General Commercial	19	20N	13W	5	Portion	Suburban Development Area	Private
General Commercial	64	20N	13W	5	Portion	General Commercial	Private
General Commercial	70	20N	13W	5	Portion	Suburban Development Area	Private
Suburban Estate	73	20N	13W	5	Portion	Suburban Development Area	Private
Suburban Residential	73	20N	13W	5	Portion	Suburban Development Area	Private
Suburban Residential	211	20N	13W	5	Portion	Suburban Development Area	Private
Light Industrial	622	20N	13W	6		Suburban Development Area	State Trust
Suburban Estate	634	20N	13W	7		Suburban Development Area	Private
General Commercial	1	20N	13W	8	Portion	Suburban Development Area	State Trust
General Commercial	35	20N	13W	8	Portion	Suburban Development Area	State Trust
Suburban Residential	591	20N	13W	8	Portion	Suburban Development Area	State Trust
General Commercial	11	20N	13W	9	Portion	Suburban Development Area	Private
General Commercial	41	20N	13W	9	Portion	General Commercial	Private
General Commercial	57	20N	13W	9	Portion	General Commercial	Private
Suburban Residential	9	20N	13W	9	Portion	Suburban Development Area	Private
Suburban Residential	225	20N	13W	9	Portion	Suburban Development Area	Private
Suburban Residential	231	20N	13W	9	Portion	Suburban Development Area	Private
Suburban Estate	640	20N	13W	10		Suburban Development Area	State Trust
Suburban Residential	642	20N	13W	16		Suburban Development Area	State Trust
Suburban Residential	641	20N	13W	17		Suburban Development Area	Private
Rural Development Area	631	20N	13W	18		Suburban Development Area	State Trust
Rural Development Area	631	20N	13W	19		Suburban Development Area	Private
Suburban Development Area	642	20N	13W	20		Suburban Development Area	State Trust
Rural Development Area	628	20N	13W	30		Suburban Development Area	State Trust
Rural Development Area	628	20N	13W	31		Suburban Development Area	Private
Rural Development Area	642	20N	13W	32		Suburban Development Area	State Trust
Rural Development Area	141	20N	13W	33	Portion	Suburban Development Area	Private
Rural Development Area	640	20N	13W	34		Suburban Development Area	State Trust
Rural Development Area	640	20N	14W	1		Rural Development Area	Private
Rural Development Area	628	20N	14W	2		Rural Development Area	State Trust
Rural Development Area	628	20N	14W	3		Rural Development Area	Private
Rural Development Area	625	20N	14W	4		Rural Development Area	State Trust
Rural Development Area	646	20N	14W	12		Rural Development Area	State Trust

Proposed and Existing Land Uses within Southeast Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Rural Development Area	635	21N	13W	28		Rural Development Area	Private
Suburban Estate	641	21N	13W	29		Suburban Development Area	Private
Suburban Estate	639	21N	13W	30		Suburban Development Area	Private
Light Industrial	6	21N	13W	31	Portion	Suburban Development Area	Private
Light Industrial	256	21N	13W	31	Portion	Suburban Development Area	Private
Light Industrial	293	21N	13W	31	Portion	Suburban Development Area	Private
Light Industrial	641	21N	13W	32		Suburban Development Area	State Trust
Light Industrial	199	21N	13W	33	Portion	Suburban Development Area	Private
Suburban Estate	403	21N	13W	33	Portion	Suburban Development Area	Private
Rural Development Area	640	21N	14W	17		Rural Development Area	Private
Rural Development Area	642	21N	14W	18		Rural Development Area	Private
Rural Development Area	136	21N	14W	19	Portion	Rural Development Area	Private
Rural Development Area	454	21N	14W	19	Portion	Rural Development Area	Private
Rural Development Area	639	21N	14W	20		Rural Development Area	Private
Rural Development Area	640	21N	14W	21		Rural Development Area	Private
Rural Development Area	640	21N	14W	22		Rural Development Area	Private
Rural Development Area	639	21N	14W	23		Rural Development Area	Private
Rural Development Area	638	21N	14W	25		Rural Development Area	Private
Rural Development Area	637	21N	14W	26		Rural Development Area	Private
Rural Development Area	565	21N	14W	27	Portion	Rural Development Area	Private
Rural Development Area	155	21N	14W	28	Portion	Rural Development Area	Private
Rural Development Area	426	21N	14W	28	Portion	Rural Development Area	Private
Commercial Recreation	56	21N	14W	29	Portion	Rural Development Area	Private
General Commercial	1	21N	14W	29	Portion	Rural Development Area	Private
General Commercial	2	21N	14W	29	Portion	Rural Development Area	Private
General Commercial	8	21N	14W	29	Portion	Rural Development Area	Private
General Commercial	10	21N	14W	29	Portion	Rural Development Area	Private
General Commercial	11	21N	14W	29	Portion	Rural Development Area	Private
General Commercial	20	21N	14W	29	Portion	Rural Development Area	Private
General Commercial	66	21N	14W	29	Portion	Rural Development Area	Private
Rural Development Area	1	21N	14W	29	Portion	Rural Development Area	Private
Rural Development Area	33	21N	14W	29	Portion	Rural Development Area	Private
Rural Development Area	36	21N	14W	29	Portion	Rural Development Area	Private
Rural Development Area	46	21N	14W	29	Portion	Rural Development Area	Private
Rural Development Area	75	21N	14W	29	Portion	Rural Development Area	Private
Suburban Development Area	177	21N	14W	29	Portion	Rural Development Area	Private
Rural Development Area	638	21N	14W	30		Rural Development Area	Private
Rural Development Area	638	21N	14W	31		Rural Development Area	Private
Rural Development Area	170	21N	14W	32	NW 1/4	Rural Development Area	Private
Rural Development Area	469	21N	14W	32		Rural Development Area	State Trust
Rural Development Area	644	21N	14W	33		Rural Development Area	Private
Rural Development Area	38	21N	14W	34	Portion	Rural Development Area	Private
Rural Development Area	639	21N	14W	34		Rural Development Area	Private
General Commercial	5	21N	14W	35	Portion	Rural Development Area	Private
General Commercial	7	21N	14W	35	Portion	Rural Development Area	Private
Rural Development Area	41	21N	14W	35	Portion	Rural Development Area	Private
Rural Development Area	548	21N	14W	35	Portion	Rural Development Area	Private
General Commercial	6	21N	14W	36	Portion	Rural Development Area	Private
General Commercial	8	21N	14W	36	Portion	Rural Development Area	Private
Rural Development Area	157	21N	14W	36	Portion	Rural Development Area	Private
Rural Development Area	429	21N	14W	36	Portion	Rural Development Area	Private
Rural Development Area	637	21N	15W	7		Rural Development Area	Private
Rural Development Area	642	21N	15W	8		Rural Development Area	State Trust
Rural Development Area	638	21N	15W	9		Rural Development Area	Private
Rural Development Area	643	21N	15W	13		Rural Development Area	State Trust
Rural Development Area	640	21N	15W	14		Rural Development Area	State Trust
Rural Development Area	633	21N	15W	15		Rural Development Area	State Trust
Rural Development Area	637	21N	15W	16		Rural Development Area	State Trust
General Commercial	15	21N	15W	17	Portion	General Commercial	Private
General Commercial	16	21N	15W	17	Portion	General Commercial	Private
General Commercial	37	21N	15W	17	Portion	General Commercial	Private
Rural Development Area	522	21N	15W	17	Portion	Rural Development Area	Private
General Commercial	16	21N	15W	18	Portion	Rural Development Area	State Trust
Rural Development Area	604	21N	15W	18	Portion	Rural Development Area	State Trust
Public Lands	639	21N	15W	19		Public Lands	BLM
Public Lands	637	21N	15W	21		Public Lands	BLM
Public Lands	4	21N	15W	22	Portion	Public Lands	BLM

Proposed and Existing Land Uses within Southeast Corridor of US Highway 93 Area Plan

Proposed Land Use	Acres	Twn	Rng	Sect	Portion	Exist General Plan Land Use	Tenure
Public Lands	606	21N	15W	22		Public Lands	BLM
Public Lands	38	21N	15W	23	Portion	Public Lands	BLM
Public Lands	565	21N	15W	23		Public Lands	BLM
Rural Development Area	639	21N	15W	24		Rural Development Area	State Trust
Public Lands	165	21N	15W	25	Portion	Public Lands	BLM
Rural Development Area	475	21N	15W	25	Portion	Rural Development Area	Private
Public Lands	640	21N	15W	26	Portion	Public Lands	BLM
Public Lands	638	21N	15W	27		Public Lands	BLM
Public Lands	568	21N	15W	28	Portion	Public Lands	BLM
Rural Development Area	70	21N	15W	28	Portion	Rural Development Area	Private
Public Lands	483	21N	15W	29	Portion	Public Lands	BLM
Rural Development Area	157	21N	15W	29	Portion	Rural Development Area	State Trust
Public Lands	319	21N	15W	30	N 1/2	Public Lands	BLM
Rural Development Area	318	21N	15W	30	S 1/2	Rural Development Area	State Trust
Neighborhood Commercial	10	21N	16W	12	Portion	Suburban Development Area	Private
Suburban Development Area	628	21N	16W	12		Suburban Development Area	Private
Suburban Development Area	166	21N	16W	13	Portion	Suburban Development Area	BLM
Suburban Development Area	300	21N	16W	13	Portion	Suburban Development Area	BLM
Suburban Development Area	640	21N	16W	24		Suburban Development Area	BLM

Appendix E

Status of Entitlement Requests

Land Use Requests for new Entitlements to be considered as part of the US Highway Corridor Area Plan

Request	APN	Parcel	Twn	Rng	Sect	Acres	Requested Land Use	Existing Land Use	Area Plan Land Use	Status
1	340-26-001	Portion of W1/2	24N	19W	26	287.0	General Commercial, Light Industrial	Rural Development Area	General Commercial, Light Industrial	Granted
2	308-20-008	Portion of NW 1/4 NE 1/4	23N	18W	19	25.0	General Commercial	Rural Development Area	Rural Development Area	Retain existing land use
3	339-22-003 & 004	Section 10 except Hwy 93	22N	18W	10	576.0	Gen Comm, Light Ind, Solar	Rural Development Area	Gen Com, Light Ind, Rural Ind	Granted
4	339-31-012	Parcel 182, Legend Ranch	22N	18W	9	42.6	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
5	339-31-013	Parcel 183, Legend Ranch	22N	18W	9	42.6	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
6	339-31-015	Parcel 185, Legend Ranch	22N	18W	9	42.7	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
7	339-32-003	Parcel 192, Legend Ranch	22N	18W	15	42.2	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
8	339-32-004	Parcel 193, Legend Ranch	22N	18W	15	41.8	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
9	339-32-012	Parcel 269, Legend Ranch	22N	18W	15	41.0	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
10	339-39-010	Parcel 270, Legend Ranch	22N	18W	15	41.0	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
11	339-40-001	Parcel 271, Legend Ranch	22N	18W	23	41.0	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
12	339-40-002	Parcel 272, Legend Ranch	22N	18W	23	40.6	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
13	339-40-003	Parcel 273, Legend Ranch	22N	18W	23	40.5	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
14	339-40-006	Parcel 283, Legend Ranch	22N	18W	23	40.0	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
15	339-40-007	Parcel 284, Legend Ranch	22N	18W	23	40.0	General Commercial	Rural Development Area	Rural Industrial	Modified to RI
16	253-13-018	Parcel 10, Windmill Ranch	19N	13W	4	26.8	General Commercial	Rural Development Area	Rural Development Area	Retain existing land use
17	253-13-025	Parcel 24, Windmill Ranch	19N	13W	4	35.1	General Comm, Comm Recreation	Rural Development Area	Rural Development Area	Retain existing land use
18	253-13-026	Parcel 25, Windmill Ranch	19N	13W	4	35.2	General Comm, Comm Recreation	Rural Development Area	Rural Development Area	Retain existing land use

Total Granted	863.0
Total Modified	495.8
Total Denied	122.0
Grand Total	**1,480.8**

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The Silverado Area Plan, PMA Design, et. al. 2006

The Golden Valley Area Plan, Mohave County, 2002

The Long Mountain Area Plan, Mohave County, 2006