



**A.R.S. Section 9-461 E.1. – Conservation Element:** A conservation element for the conservation, development, and utilization of natural resources, including forests, soils, rivers and other waters, harbors, fisheries, wildlife, minerals and other natural resources.

**A.R.S. Section 9-461 D.3. – Environmental Element:** An environmental planning element that contains analysis, policies and strategies to address anticipated effects, if any, of plan elements on air quality, water quality, and natural resources associated with proposed development under the general plan. The policies and strategies to be developed under this element shall be designed to have community-wide applicability and shall not require the production of an additional environmental impact statement or similar analysis beyond the requirements of state and federal law.

**A.R.S. Section 9-461 D.5. – Water Resources Element:** A water resources element that addresses the current available surface water, groundwater, and effluent supplies and an analysis of how the future growth projected in the general plan will be adequately served by the legally and physically available water supply or a plan to obtain additional necessary water supplies.

## 7 – Conservation, the Environment, and Water Resources Element

The Conservation and Environmental Element identifies the significant natural resources in the Quartzsite area and policies to protect these resources. As Quartzsite continues to grow, it is important that its development compliments and enhances its natural resources. The Conservation and Environmental Elements are outlined within the Arizona Revised Statutes in two separate sections. In order to strategically plan for the conservation and protection of natural resources in Quartzsite, these separate required elements have been combined into this chapter. The La Posa Interdisciplinary Management Plan prepared by the Bureau of Land Management has been used as a reference for information contained in this Element.

The Element is structured in the following format: the Background section identifies the existing conditions of the Quartzsite area including topography, geology, the natural environment and the built environment; the Evaluation and Analysis section examines current and potential future effects of urban development on important quality of life indicators such as air, water, energy, noise, wildlife, and archeological resources; the Goals, Objectives and Policies section identifies community goals and policies to ensure that the effects of urban development in Quartzsite do not endanger the environmental health of the community or its natural resources; and the Action Plan identifies a list of projects and a general timeline to meet the identified goals.

### 7.1 BACKGROUND AND EXISTING CONDITIONS

#### 7.1.1 TOPOGRAPHY

The Planning Area consists mainly of mountains, washes and lowlands. The mountains in the Area trend to the Southwest and include portions of Granite Mountain and “Q” Mountain. Tyson Wash is a major drainage, passing directly through Quartzsite. It originates south of Town and passes through Quartzsite and drains into the Colorado River.



## 7.1.2 GEOLOGY

Ancient rivers and historic geologic activity have determined the geology of the Quartzsite area. Today, a number of washes cross through the Town of Quartzsite. Information for this section has been taken from the La Posa Interdisciplinary Management Plan.

### SOILS

The Town of Quartzsite lies on an old lake bottom; its soil deposits have undergone “folding, faulting, and intrusion by volcanic material and consequently have metamorphosed and uplifted.” This geologic activity was followed by erosion and subsequent overlaying of new marine sediments.

The dominant soils in Quartzsite are gravelly loams and gravelly sands. The gravelly sands occur in the numerous desert washes throughout the area. The extremely gravelly loams can be found in the uplands adjacent to the washes. These areas are typically desert pavement. These soils are typically covered by varnished gravel and high in salinity.

### MINERALS

The mining that occurs in the Quartzsite area is small in scale, usually consisting of screening and dry-washing sand from the washes and areas close to Granite Mountain. Production figures are estimated to be quite low. Such minerals currently mined include: gold, silver, mercury, uranium and copper. According to the La Posa Interdisciplinary Management Plan, there are 16 mining claims on BLM lands within the Quartzsite area.

Leasable minerals, such as oil, gas, coal, sodium, potassium, sulfur, gilsonite and geothermal resources, are located approximately four miles west of Quartzsite. Salable minerals include varieties of sand, gravel, stone, cinders, pumicite, and clay.

### WATER RESOURCES

The Town of Quartzsite currently obtains its potable water from an underground aquifer through wells. Although the Colorado River is located only 25 miles to the West, the Town does not have a canal or other surface method of obtaining Colorado River water. In addition, the Town of Quartzsite does not have a water treatment plant or other method to treat surface supplied water for drinking purposes. Therefore, the Town must rely on the underground aquifer for its water supply. Until recently, residents of the Town obtained their water through individual private wells. As a result, there are several hundred private wells within the Town limits. There is no assurance that the water being supplied by private wells meets safe drinking water standards. In response to this situation, the Town Council began plans to construct a public municipal water system shortly after incorporation in 1989. At the present time



the Town has one (1) main public well located just to the North of Town Hall and East of Plymouth Ave. In addition to the well No. 1, there is a 300,000 gallon ground level storage tank and booster pump station at this location. This well No. 1 has a capacity to pump approximately 200 gallons per minute. This main well extends to a depth of approximately 1,200 feet. In addition to the main well, there is also a smaller backup auxiliary well at this location. This auxiliary well is at a depth of approximately 600 feet, and has a capacity of approximately 35 GPM.

### **7.1.3 NATURAL ENVIRONMENT**

The weather in Quartzsite is typically favorable with most days of the year filled with sunshine. The warm climate is home to a unique habitat for wildlife. This habitat contains several species that have special designation due to threats to population or range area. Information for this section has been taken from the La Posa Interdisciplinary Management Plan.

#### **CLIMATE**

The Quartzsite region is famous for sunny days and clear skies. The average annual rainfall is 3 ½ inches. Summer thunderstorms account for forty-percent of annual rainfall. Most of the remaining precipitation comes as rain during the winter months from the cold fronts created from the Pacific Ocean. Typical daytime temperatures in the winter reach the seventies and in the summer reach into the low one-hundreds. Periods of frost, which rarely exceed ten days per year, occur in December and January. Strong winds occur in March and April with the clearest and most stable weather conditions taking place from November to January.

#### **VEGETATION**

The vegetation in the Lower Colorado River Valley subdivision is dominated by white bursage and creosote bush. Desert drainages with mixed riparian scrub abound throughout the Valley and support stands of desert ironwood, blue palo verde, honey mesquite, smoke tree, and various other shrubs and grasses.

The sandier soils and dunes in the Quartzsite area support creosote bush, white bursage, long-leaved Mormon tea, and extensive stands of big galleta. This area is subject to extensive erosion when vegetation is removed or heavily disturbed. Protection of Quartzsite's washes and drainage ditches should be a priority of the Town of Quartzsite.

On the foothills and mountainsides, foothill palo verde, ironwood, catclaw, brittle bush and cholla cactus can be found. Saguaro cactus, barrel cactus, range ratany, and ocotillo are also present in the Quartzsite area.



During the winter months a variety of annual forbs and grasses are produced throughout the area. These annuals are dominated by wooly plantain, lupine, Mediterranean grass, and needle grama.

## WILDLIFE AND HABITATS

### **Big Game**

Three big game species occur within the Quartzsite area: desert bighorn sheep, mule deer and javelina. Desert bighorn sheep are found occasionally in the mountainous areas. Mining, habitat encroachment, disease, and road construction have depleted much of the bighorn sheep populations in the area.

Mule deer are the most commonly sighted of the big game species. These deer prefer the densely vegetated desert washes, bajadas, and foothills. Mule deer populations in the area have been stabilized with the addition of water resources in the area.

A small population of javelina is found in the Plomosa Mountains. This species is dependent upon the availability of water and succulent forage plants such as cacti.

### **Small Game and Furbearers**

Four common species of small game are found throughout the Quartzsite area: Gambel's quail, white-winged dove, mourning dove, and desert cotton-tail rabbit. Furbearers include bobcat, ring-tailed cat, kit fox, and coyote.

### **Non-game**

Other wildlife species include Merriam's kangaroo rat, several species of pocket mouse, white-throated woodrat, black-tailed jackrabbit, and Harris' antelope squirrel. Common bird species are black-throated sparrow, cactus wren, greater roadrunner, Gila woodpecker, verdin, loggerhead shrike, and black-tailed gnatcatcher. Reptiles and amphibians include the sidewinder, western diamondback rattlesnake, Sonoran gopher snake, western whiptail, desert iguana, zebra-tailed lizard, side-blotched lizard, red-spotted toad, and Great Plains toad.

## 7.1.4 BUILT ENVIRONMENT

### HISTORY OF QUARTZSITE

Quartzsite's recent history is deeply rooted in mining activity which took place during the late nineteenth to early twentieth centuries. During this time, various mining sites were inhabited by as many as hundreds of individuals and families in search of minerals. During the 1940's, many areas in and adjacent to Quartzsite were used by the military as training sites. Remnants from of such sites can be found in and around Quartzsite.



## HISTORIC DISTRICTS AND SITES

Main Street in Quartzsite, between Exit 17 and State Route 95, is designated as a historic district. Tyson Wells Stage Stop Museum is located on Main Street just west of SR 95. This original adobe stage station was built in 1866 by Charley Tyson and was an important way-station for travelers passing through Quartzsite because of its excellent water wells. The museum houses many mining and historical displays.

Also located off of Main Street, at the end of Cemetery Road, is the Hi Jolly Monument and Cemetery. The Hi Jolly Monument, known as “Hi Jolly’s Last Camp,” is the centerpiece of the cemetery and was dedicated by the Governor of Arizona in 1935. The Monument is the resting site of Syrian camel driver, Hadji Ali. Ali came to the Southwest in the 1850’s with a large number of camels as part of an U.S. Army experiment using camels as desert pack animals.

## 7.2 EVALUATION AND ANALYSIS

### 7.2.1 AIR QUALITY

Air quality in the Quartzsite area is generally good. Dry weather, travel related to winter visitor camping, and off-highway vehicle (OHV) traffic may contribute to the degradation of air quality in the form of airborne dust particles. Periods of non-compliance with Arizona Department of Environmental Quality Standards have occurred in the vicinity of Quartzsite. Paving of roadways and stabilization of bare dirt on vacant lots would help to control the Particulate Matter in the area.

Future development could also impact the air quality and mitigation measures taken to prevent those impacts from occurring. Activities that could affect air quality include transportation, industrial activity and various forms of development. Detrimental affects from these activities include: dust from unpaved roads, dirt parking lots and construction sites, carbon monoxide from fuel burning, and smoke from lot clearing.

### 7.2.2 WATER QUALITY

The purpose of the Water Resources Element is to help ensure that the current and future residents of Quartzsite have a reliable and adequate source of drinking water. The Town provided drinking water must meet all Federal and State water quality standards. Future growth, as envisioned in the General Plan, will require substantial additional supplies of drinking water. Assuming that each future resident uses 150 gallons of potable water per day for all uses, the total daily water demand in the year 2020 would be 3,750,000 gallons per day for the projected population of 25,000.



In order to serve the future population of 25,000 residents, additional wells will need to be constructed. In addition, additional ground level water storage tanks will need to be constructed. The Town is currently in the planning phases for a new main well No. 2. This new main well would be located on BLM leased land west of Kofa Avenue and north of Cowell Street. The 5 acre BLM leased site would also include a new 500,000 gallon ground level storage tank and booster pump station. This well should have a pumping capacity of 500 gallons per minute. A hydrology study is currently in process on the BLM site to determine exact well location and optimum depth. The main well No. 2 should be constructed and in operation within the next 3-5 years depending on funding availability. A third main well should be developed and be in operation by the year 2015. This third main well should also have a capacity to pump at least 500 gallons per minute. The Town should consider installing a 1,000,000 gallon ground level water storage tank at this third well location.

The Town owned wells currently provide drinking water that meets all State and Federal requirements. The water quality from the deep main well No. 1 is good with all constituent chemicals being within the acceptable range for safe drinking water. It is anticipated that future Town owned wells will also provide good quality water supplies. The water quality test results are contained in the appendix of this general plan document.

In summary, the Town of Quartzsite residents should have reliable and adequate water resources available into the foreseeable future from the existing aquifer. With the addition of new deep wells and water storage facilities, the Town residents should have adequate drinking water supplies and good drinking water quality.

### **7.2.3 ENERGY CONSERVATION**

Energy is an important subject for Arizonans due to regional increases in energy prices and notable energy shortages in neighboring states. Energy conservation is not only cost effective as it reduces home energy costs and increases long term reserves but it is better for the environment as it reduces the production of harmful pollutants.

Energy conservation should be addressed at the regional level as well as the building specific level. On a state and nation-wide scale, state and federal agencies can provide loans for energy savings programs to businesses and existing residences. On a regional scale, land use and transportation planning can be used to promote compact design that reduces driving miles and promotes non-motorized forms of transportation. On a local level, municipalities can increase energy conservation by promoting energy efficient building construction. On a construction site scale, the orientation of buildings and the use of landscaping can reduce direct sunlight exposure and therefore reduce cooling costs. On a building specific scale, increased insulation and energy standards can reduce home energy bills.



Quartzsite's high summer temperatures make energy conservation for home cooling costs of major importance. The abundant winter sunlight also provides residents with an excellent source of solar power to heat their residences. Currently, there are no energy conservation requirements for new home construction within the Town of Quartzsite.

The State of Arizona sponsors a program that identifies ENERGY STAR partners in building. The homebuilders who participate in the program can promote their homes as ENERGY STAR compliant. The ENERGY STAR program certifies that the homes are 30% more efficient than homes constructed using the Model Energy Code. This method of energy conservation includes a prescribed list of energy saving methods that range from building orientation to the selection of kitchen appliances.

The State of Arizona Department of Energy is currently in the process of developing a State Energy code. This code would be based on the Federal 1995 Model Energy Code and would promote voluntary compliance with code provisions.

#### **7.2.4 NOISE POLLUTION**

Noise is often a byproduct of an urban environment. Noise can be a product of a number of things, but most of the noise in Quartzsite is related to transportation. Fortunately, Quartzsite enjoys an area relatively free of noise pollution. Future growth and development may impact this and Quartzsite should consider this when planning for a possible airport and new construction.

Noise mitigation strategies include the construction of sound walls, traffic calming devices and proper land use planning, with high density residential and commercial areas used as buffer zones. In order to minimize conflicts, the Town of Quartzsite should adopt stringent Noise Limitation standards within the Zoning Ordinance. The Land Use Element was developed to provide sufficient buffer zones between incompatible land uses and the land use patterns minimize the impact of noise pollution to noise sensitive recipients.

#### **7.2.5 WILDLIFE**

Urbanization of an area affects the habitats and viability of many local species. Continued urban development should take into account the affect of development on the natural environment and implement mitigating measures whenever feasible. Fortunately, no Federally-listed or proposed threatened or endangered species regularly occur within the Quartzsite area. Also, the Quartzsite area does not contain habitat for any listed or proposed threatened or endangered species. The peregrine falcon, a Federally-listed endangered species, has been sighted occasionally in the Quartzsite area during the migratory and winter seasons, as has the ferruginous hawk.



The Sonoran desert tortoise (pictured below), Gila monster (see picture to the left), chuckwalla, spotted bat, greater western mastiff bat, pale Townsend’s gib-eared bat and the California leaf-nosed bat are all species at risk and are known to inhabit areas within and around Quartzsite. Mountain lions are seldom seen, but have likely occasionally passed through the Quartzsite area.

**Wild Horses and Burros**

The Quartzsite area includes a small portion of the Cibola-Trigo Herd Management Area (HMA). The entire HMA supports approximately 115 wild horses and 165 burros. The HMA is one of only two areas in Arizona supporting wild horses. Due to the lack of permanent water, many of the wild horses and burros who come to the Quartzsite area do so on a purely temporary basis.



**7.2.6 ARCHEOLOGY**

Unique and important cultural properties are present in the Quartzsite area. Efforts should be made to identify and protect these historic areas. Evidences of aboriginal inhabitants can be found throughout the area. BLM has identified some of the common sites as campsites, lithic quarries and workshops, lithic scatters, ceramic scatters, sleeping circles, rock alignments, and trails. Site types that are rare throughout the region include: geoglyphs (earth figures or intaglios – large figures, designs, and pathways drawn into the desert pavement), ceremonial sites, roasting pits, hunting blinds, pictographs, cremation sites, and historic wagon roads. Within the Town of Quartzsite and surrounding areas, approximately 700 cultural resource sites have been recorded by the BLM. However, there are many other known sites that have not been recorded, and there is potential for a great number of additional undiscovered sites. The bulk of sites fall into the category of low-to-moderate site or area of a significance and sensitivity. A small percentage of these sites have been designated as sites with high cultural value. The following sites were taken from the La Posa Interdisciplinary Management Plan.

**BLM-Managed Cultural Resource Sites in and around Quartzsite**

Name	Description	Significance
Fisherman Intaglio	Human-shaped figure holding a large spear with a white quartz point	Popular; Sociocultural



Big Arrow Site	Complex geoglyph with two human figures, a huge arrow, and several other features	Popular; Sociocultural
Bouse geoglyph	Large human-shaped earth figure	Scientific
White Cross	Small cross and circle made of white quartz	Scientific
Circle and Arrow	Small rock alignment in the form of an arrow emerging from a circle	Scientific
Tyson Wash Site	A complex with many petroglyphs, a water tank in the wash, and mortar holes in the rocks	Popular; Sociocultural
Dripping Springs	Complex petroglyph site and historic mining developments at an active seep	Popular; Sociocultural
Tule Springs	Site includes petroglyphs and evidence of mining activity	Scientific; Popular
Lazarus Tanks	Group of red pictographs	Scientific
North Kofa Site	Large site with petroglyphs	Scientific; Popular
Black Mesa Southwest	Small complex of petroglyphs	Scientific
Kegley/Lynch #1	Small complex of petroglyphs	Scientific
Bear Hills Site	Small petroglyph site with several rock rigs	Scientific; Popular
Rock Ring "Town"	Complex of very large rock rings	Scientific; Popular
The Community Center	"Big House" area with several huge cleared areas	Scientific
The Quartzsite Rock Alignment	Military rock alignment of a large arrow pointing to Quartzsite	Sociocultural
Military Campsites	Training or maneuver sites related to General Patton's World War II or 1964 Desert Strike activities	Scientific; Popular
Quartzsite Milling Site	A huge milling site on the side of a hill	Popular; Sociocultural
Granite Mountain Cabin	A small stone mining cabin	Scientific; Popular
Spanish Wall	A stone wall built to create a drywash ramp for mining purposes	Popular; Sociocultural
Erdman Mine	A unique mining operation	Scientific; Popular



### 7.3 GOALS, OBJECTIVES AND POLICIES

***Goal: Ensure a high standard for air and water quality/quantity that meets the needs of current residents while protecting the community against natural and man-made hazards.***

Objective: Maintain Quartzsite's air quality.

Policy: Adopt an ordinance requiring construction and earth moving operators to develop dust control plans and apply control measures to minimize dust at the project site.

Policy: Develop an ordinance that prohibits the installation or construction of fireplaces and wood stoves in new construction, unless the devices are "clean burning," as certified by the Environmental Protection Agency.

Policy: Conduct a comprehensive multi-media campaign to promote voluntary strategies such as alternative transportation modes, compressed work schedules, telecommuting, alternative fuels for vehicles, alternatives to wood burning, and fueling vehicles after sunset in the summer.

Policy: Pave, gravel, or stabilize all unpaved roads and alleys carrying a significant volume of vehicle traffic.

Objective: Improve Quartzsite's water quality

Policy: Meet or exceed all Federal, State and local water quality standards.

Policy: Encourage water and energy conservation whenever possible.

Objective: Protect and enhance the archeological and historical resources of the Quartzsite community.

***Goal: Create and maintain a sustainable community where our natural resources are protected and conserved for future generations.***

Objective: Promote water conservation in order to extend the use of our vital natural resources.

Policy: The Town shall institute a voluntary water conservation program for area residents and businesses.



Policy: The Town shall continue to maintain and audit the Town's water system to eliminate losses and prevent contamination.

Objective: Promote the protection of the diverse wildlife and their natural habitat in the Quartzsite area.

Policy: The Town shall work with state and federal agencies in the protection of at risk species.

Policy: The Town shall support the protection and conservation of important natural resources, including the mountains and desert washes.

Objective: Maintain a sustainable community where the conflicts between residential and commercial/industrial development are considered and minimized.

Policy: The Town shall consider noise impacts from roadways and any industry on neighboring residential development.



## 7.4 ACTION PLAN

<b>Phase</b>	<b>Project</b>	<b>Responsible Agency/ Department</b>	<b>Funding Source</b>
<b>1 -5 years</b>	Set up an Air Quality Steering Committee.	Public Works	Town of Quartzsite
	Scope and conduct an air quality monitoring study.	Town of Quartzsite	Town of Quartzsite
	Design and conduct an air and water quality outreach/education program.	Town of Quartzsite	Town of Quartzsite
	Identify measures and develop ordinances to improve air and water quality.	Town of Quartzsite/ Planning Commission	Town of Quartzsite
<b>6 + years</b>	Develop design guidelines for urban development that help mitigate noise impacts.	Town of Quartzsite	Town of Quartzsite
	Develop design guidelines for new development that consider minimizing heat gain and energy conservation.	Town of Quartzsite/ Planning Commission	Town of Quartzsite