

ENVIRONMENTAL PLANNING

ENVIRONMENTAL PLANNING ELEMENT**7.0 GOALS**

1. Encourage the preservation of native vegetation and habitat through sound planning principles.
2. Continue to work toward providing clean air and water quality.
3. Promote mitigation proposals for new development to reduce the potential for land subsidence.
4. Adopt policy that regulates the size and types of development permitted within the City's floodplains.

7.1 PURPOSE

The Environmental Planning Element provides a critical evaluation of the environmental forces that shape our natural and built environments. It provides guidance in conserving, maintaining, and where necessary, restoring the natural environment of the Eloy Planning Area.

7.2 EXISTING CONDITIONS

The forces of weather and of the elements will continue to shape the Santa Cruz Valley. The environmental features of the Eloy Planning Area are a relatively flat alluvial agricultural valley floor with several mountain peaks which rise dramatically from the valley floor. Other environmental features located within the Planning Area include mountain ranges, ephemeral streams, and a reservoir. Clean air, sunshine and abundant water supplied by groundwater and a canal system provide for the demands of the community.

7.3 DISCUSSION

Environmental assessment is used to determine areas with high, moderate, and low degrees of development sensitivity. Environmental Suitability is measured by comparing a variety of environmentally sensitive areas and features of local significance. The intent is to identify those areas least and most suitable for urban development and then focus urbanizing development on those areas where impact on the environment is minimized.

Key environmental features were selected and evaluated for inclusion on the Environmental Map. ArcGIS, a Geographic Information System, was used to perform an analysis of environmentally sensitive areas and features, including:

- Topography and Slope
- Soil Conditions
- Land Subsidence
- Vegetation and Habitat

ENVIRONMENTAL PLANNING ELEMENT**7.0 GOALS****7.1 PURPOSE****7.2 EXISTING CONDITIONS****7.3 DISCUSSION**

- Rivers, Streams, and Canals
- 100-Year Floodplains
- Resource Land Ownership (where BLM and State Trust Lands may limit development)

Topography and Slope

The Planning Area contains lands which are relatively flat, between 0- and 5-percent slopes and other land that has steep slopes, some greater than 25-percent. Approximately 32.2 of the 542 square miles of the Eloy City Limits and Planning Area are affected by slopes greater than five-percent.

Development may occur without additional costs for geological and slope studies if the slopes are less than five-percent. Developments which occur on land with slopes greater than five-percent (5%) would be subject to geological evaluations for slope stability. Development on land with slopes greater than ten-percent would be faced with severe mitigation hurdles.

As shown on the map below, there are three main areas within the Planning Area that rise dramatically from the valley floor with slopes in some areas exceeding 25-percent. There are also four mountainous regions outside but in near proximity to the Planning Area which exhibit moderate and steep slopes from five-percent to in excess of 25-percent. No development or construction may occur on a slope of 15% or greater.

Soil Conditions

Eloy has a strong heritage of agricultural production, due in large part to the high quality of the soil within the Santa Cruz Basin. Characteristics of soils greatly affect development, both existing development, vacant sites, and surrounding property. The presence of expansive soils can cause major damage to foundations as they soak up water and then dry out. It will be important to verify, as development occurs, where expansive soil is located and take proper mitigating actions to minimize any negative impacts this may cause. Typically, soil is compacted when construction occurs for buildings, streets, sidewalks, and other utilities and infrastructure. Compacting soil is important for a few reasons. First, by compacting soil to a specific density helps determine the type and thickness of foundations, how high the building can be constructed, and will help prevent future shifting and possible cracking of any foundation placed on top. Second, compaction affects the percolation level of the soil. The more compacted the soil the less water can infiltrate down into lower levels of the soil, which also increases run-off and erosion.

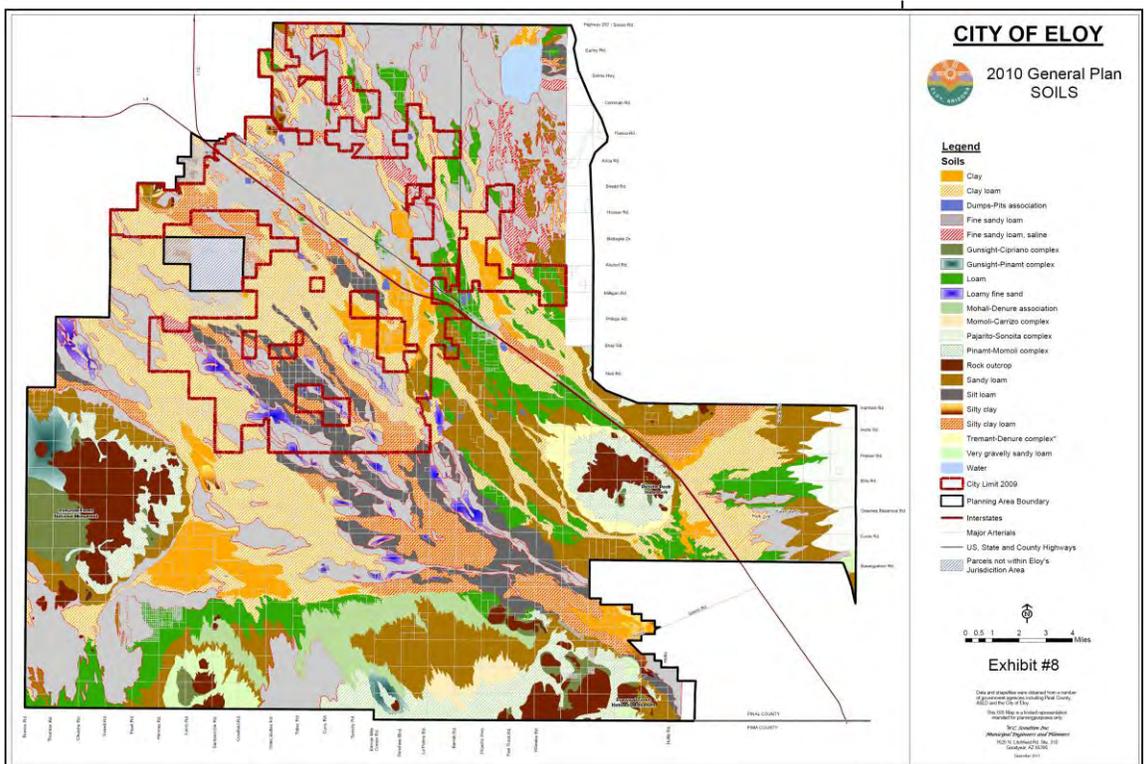
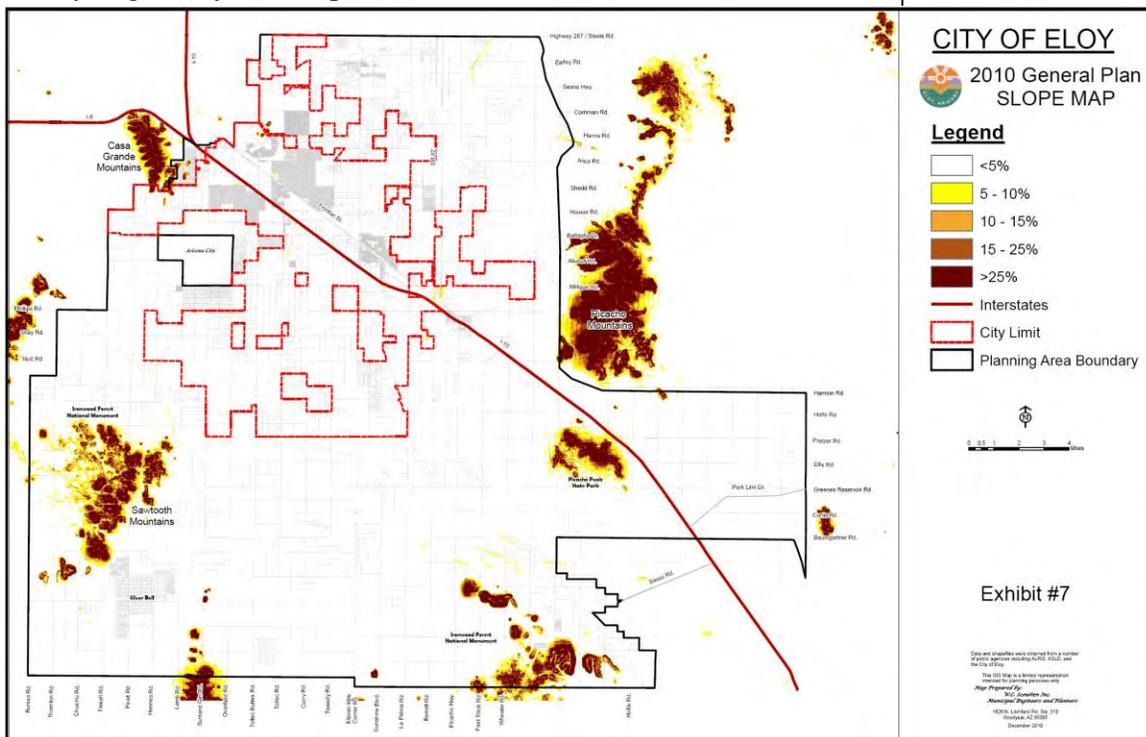
It will be important for developments, after construction of buildings and infrastructure, to come back through and use amended soil techniques to increase infiltration of open space soil. This could be accomplished by

Topography and Slope

Soil Conditions

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tilling and/or mixing into the existing compacted on-site soil additional nutrient rich soil and gypsum. Proper use of vegetation can reduce runoff and soil loss. Additionally, the use of drywells can increase infiltration quantities. Mixing existing soil will also work if the soil has a low clay content. Clay negatively affects percolation.



Part of the responsibility of the City will be to handle storm water retention. Increasing infiltration by using soils that allow for higher infiltration rates within open space or water retention areas may increase the quantity of water these areas can handle during storm events.

Land Subsidence

Land subsidence is a phenomenon caused by a variety of natural and human-induced processes. With regard to the Planning Area, subsidence occurs due to groundwater withdrawal for both community use of potable water as well as for agricultural uses. Extensive groundwater withdrawal in the study area for urban and agricultural activities has created major subsidence of the alluvium, creating numerous fissures.

The distribution of subsidence in Eloy correlates to a historical pattern of groundwater table declines. The center of this subsidence-caused bowl (which is located near Downtown Eloy) has shifted in a southeastward direction in response to a similar movement of the water table cone of the fissure zones. An additional landform associated with subsidence is the generation of earth fissures on the land's surface. Earth fissures usually occur along old surface cracks and, on occasion, facilitate water infiltration. While earth fissures may increase water infiltration they also increase the potential and likelihood of ground water contamination.

Earth fissures pose a significant geologic hazard to developments and may prove restrictive to improvements and construction near to the fissures. Proposed developments in the vicinity of fissures may need to perform analyses to determine the magnitude of the hazard and recommend a form of mitigation. Typical mitigation involves avoidance by means of a setback from the fissure itself. Standards and criteria may need to be adopted to accommodate this hazard.

The accompanying hazard map shows the general subsidence area, along with the 100-year flood plain, and fissure zones.

According to the map, a large portion of the Planning Area is located within the subsidence area. The area affected by land subsidence may expand if the amount of water withdrawn from the water table exceeds recharge rates. It is important to note that in the recent past, Eloy experienced a rising water table, which, if it occurs again may help stabilize local land subsidence. Also, as of the drafting of the 2001 General Plan it was noted that there had not been an appreciable water level decline since 1993. The rate of subsidence was reduced through the shift from groundwater to alternate sources, such as Central Arizona Project (CAP) and reclaimed water. Development in areas documented with subsidence/fissure conditions will require enhanced geotechnical analysis.

Land Subsidence

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Vegetation and Habitat

Wildlife

Native wildlife common to the Eloy Planning Area includes songbirds, raptors, small and large mammals, and reptiles. Also, Roadrunners, Coyotes, Javelina, Rattlesnakes, Round-Tailed Squirrels, Black-Tailed Jackrabbits, and Desert Pocket Mice may still be found within the City. There are a total of 18 endangered or threatened species of animals within Pinal County (List attached within the Appendix) that may or may not exist within the Eloy Planning Area. Developments within the FEMA 100-year floodplains may be required to show compliance with the Endangered Species Act.

Vegetation

The predominant plant species found in this area include Creosote Bush, Bursage, Palo Verde, Ocotillo, Mesquite, Brittlebush, and the Prickly Pear/Cholla Cacti. Agricultural uses have included the growing of cotton, vegetable crops, orchards, as well as, periodically leaving fields fallow. A large portion of the Planning Area is used as agricultural land.

The Santa Cruz River supports vegetation that provides food, cover, and hunting opportunities for animal species, such as Javelina and Coyotes. Picacho Reservoir, located in the northeast portion of the Planning Area, is a primary waterfowl habitat. Birds of many species flock to the reservoir to nest. The intermittent water body is also known as a Blue Heron rookery and is a stopover for migratory birds, including the Glossy Ibis and White Pelican.

While the lack of "critical habitat" area has been documented through the Arizona Game and Fish Department, seven species within the study area are currently protected by the Endangered Species Act (ESA). New development within the City of Eloy, and within the Planning Area in general will need to take into account the endangered species. Developers should submit copies of applications to the State Game and Fish Department, who should in turn notify Eloy when a threatened, endangered, or sensitive species exists within the proposed development area. There are 17 endangered or threatened plant species within Arizona. It should be noted that the Department's Heritage Data Management System did not identify any habitat of the cactus ferruginous pygmy owl within the Planning Area.

Rivers, Streams and Canals

Eloy's Planning Area surface water drainage patterns can be characterized by small ephemeral washes and streams and a major watercourse. The Santa Cruz River is considered a major watercourse and flows in a northwesterly direction from the southeast corner of the Planning Area to

Vegetation and Habitat

Wildlife

Vegetation



Rivers, Streams and Canals

the Santa Cruz Flats. North of Nutt Road, the Santa Cruz River enters the Flats as an undefined channel. At that point, the floodwaters are not contained within a defined channel and spread in a braided manner across the flats. Some of that water also enters human-made channels within the Santa Cruz Flats.

Numerous small washes and ephemeral streams cross the northwest corner of the Planning Area. Some originate in the Casa Grande and Sawtooth Mountains and flow out onto the alluvial fans and the valley basin floor. These washes are not always clearly defined and have a tendency to meander. As a result, the exact floodplains are not easily identified. Picacho Reservoir, located to the northeast of the Planning Area, is the only intermittent surface water body.

CAP canals and agricultural irrigation canals transect the Planning Area. The Central Arizona Irrigation and Drainage District (CAIDD) manages the distribution of irrigation water in the Eloy area for delivery to the District's member farms. CAIDD provides water for 87,000 acres of land within the District through 220 miles of irrigation canals. The District is also responsible for 350 Irrigation wells. The Santa Rosa Canal crosses the Planning Area through the central part of Eloy. The two canal systems that serve Eloy's Planning Area are the Florence-Casa Grande Canal and the Central Main Canal.

100-Year Flood Plain

The City of Eloy has identified the 100-year flood hazard areas by using the Federal Emergency Management Agency (FEMA) flood insurance rate maps. There are approximately 112 square miles of land within the 100-year flood plain area. This comprises approximately twenty-one (21%) percent of Eloy's entire Planning Area. Areas identified as part of the 100-year floodplain have a one-percent chance of sustaining major flooding within any given year. The remaining portion of the Planning Area (79-percent) has is not shown on the FEMA maps to be part of a 100-year Floodplain. However, flood in these areas may occur and the FEMA maps should not be the sole source of flooding information used in determining flooding risk for future and existing developments. It is worth noting that the last major flooding along the Santa Cruz and Greenes Rivers (and the Greenes River Canal) occurred in 1993. The damage to Property within Eloy, from that flooding, was minor.

The rivers and streams within the Planning Area are nearly always dry, but will provide a means for conveying water during rain or storm events. These water corridors may experience flooding during severe storm events. Restricting development within the floodplain area may help protect the community from loss of investment, property value and life due to flooding and erosion.

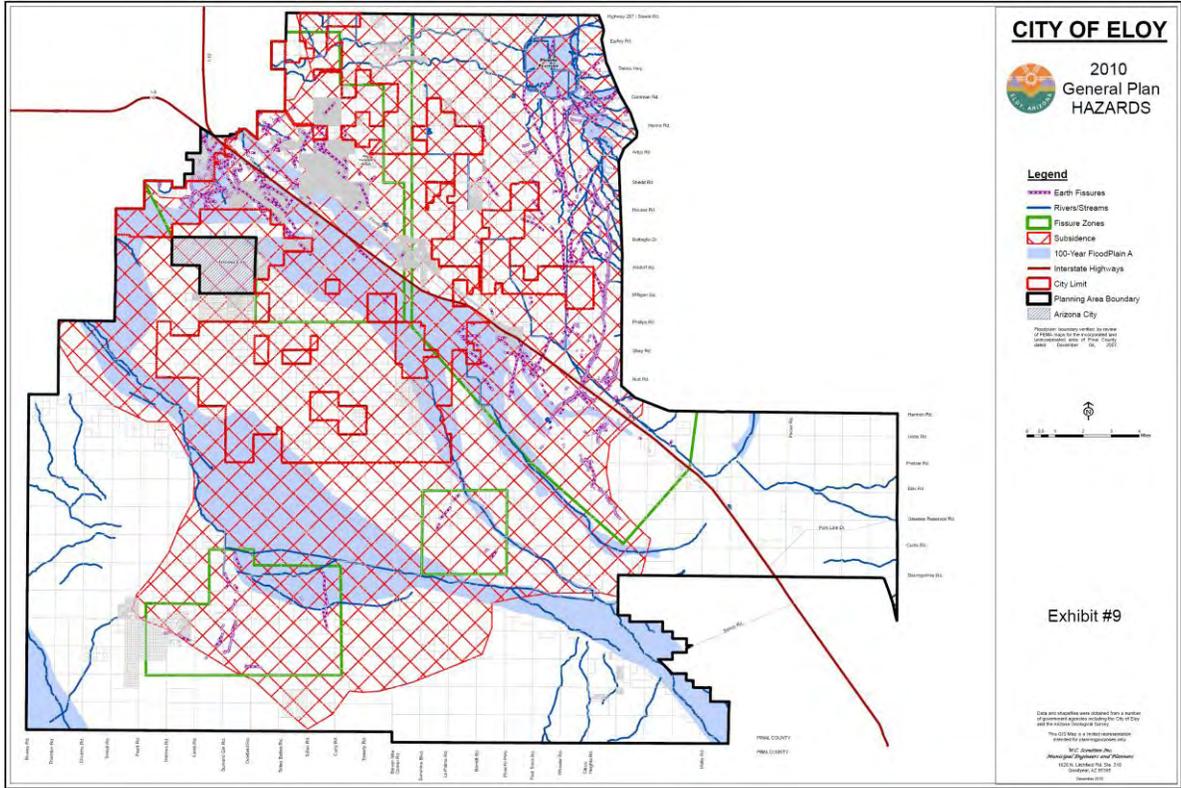


100-Year Flood Plain

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The City of Eloy will encourage 'Smart' development within the known floodplain areas as well as ensuring that developments adhere to the 'No Adverse Impact Development' criteria to help minimize flood hazards (or maintain its current level).

The City may also look at ways to increase open space requirements within these areas to help maintain natural and beneficial functions of the floodplain.



Water

A majority of Eloy's Planning Area and City limits are located within the Pinal Active Management Area (AMA). The Pinal AMA is divided into five sub-basins, one of which is the Eloy sub-basin. All told, the Pinal AMA is approximately 4,000 square miles in area.

In 2005-2006, Arizona Department of Water Resources conducted a study of the Pinal County AMA in support of assured water supply rules modification. Eloy is located within the Eloy Sub-basin of the Pinal Active Management Area (AMA). According to the study, approximately 75-percent of all water use within the Eloy Sub-Basin (in 1995) was due to agriculture irrigation. Recharge of the water is occurring from natural sources, unlined irrigation canals, and percolation from over-irrigated areas.

Water

The depth-to-groundwater within Eloy Sub-basin ranges from less than 100-feet in the northern region to approximately 400-feet in the south and central regions.

The Arizona Department of Water Resources (ADWR) manages groundwater quality in the Eloy Sub-basin. The ADWR adopted changes to its third Management Plan for the Pinal Active Management Area in April 2008. In the Pinal Active Management Area, the majority of the groundwater supplies are of acceptable quality for most uses. The quality of groundwater from the City wells is generally good and secondary treatment is not required for most wells. Although not a concern at the present time, there is a potential for migration of contaminants into aquifer systems, since some areas will remain dependent on groundwater pumping. It is important to note that of the 86 well samples taken, 60 of the samples exceeded minimum allowances of health based contaminants in either the primary or secondary Maximum Contaminant Levels (MCL's).

Air Quality

Currently, the Division of Air Quality Control and the Department of Health and Human Resources in Pinal County monitor and implement air quality standards and regulations. Pinal County's air quality management efforts serve four different functions: monitoring, planning, permitting, and field inspection/complaints. Eloy lies within the Hayden PM10 "attainment" area.

Seasonal winds, unpaved roads and shoulders and agriculture and ranching operations all present challenges for the area's particulate matter (PM10) levels. The standard for PM10 measures the County for three criteria pollutants, specifically carbon monoxide, ozone, and particulate matter (PM10). The Clean Air Act (CAA) and its subsequent amendments charge the EPA to administer national ambient air quality standards. Pinal County has air-monitoring stations within or near the Planning Area, including downtown Eloy, Casa Grande Downtown, Pinal Air Park and the Pinal County Housing Complex.

The Arizona Department of Environmental Quality (ADEQ) recommends paving or providing a topical treatment on dirt roads when they exceed 250 trips per day. The Environmental Planning Element seeks to mitigate this problem proactively by discouraging new development that will place additional traffic burdens on dirt roads.

Objectives of the Land Use Element and the Environment Planning Element should focus on reducing vehicle trips that increase carbon monoxide levels. Bicycle lanes and trail systems are included to help decrease automobile trips. While reducing automobile trips on dirt roads may lower total PM10 impacts to the surrounding area, in the near term there will still be significant problems from wind and agriculture and ranching operations.

Air Quality

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7.4 OBJECTIVES

The objectives and policies within this Element provide the City with direction for directing future growth, development, and revitalization to areas where the environmental characteristics are suitable.

1. Verify floodplain hazard delineation and research alternatives to minimize hazards to persons, structures and to minimize erosion and elevated flood height risks.
2. Protect and conserve the quality and quantity of surface and groundwater resources.
3. Promote long-term conservation of potable water resources.
4. Continue to treat effluent water to quality levels that will allow groundwater recharge.
5. Maintain and enhance air quality within the City Limits and Planning Area of Eloy.
6. Identify, manage, and protect endangered and threatened species and species of special concern.
7. Preserve the natural aesthetic quality of the Sonoran Desert in developed areas through the use and preservation of native/drought tolerant vegetation.
8. Develop permitting procedures with the Pinal County Flood Control District.

7.4 OBJECTIVES