v. Landowner Cooperation

Cooperate with adjacent landowners/managers to minimize negative impacts and promote opportunities for interagency collaboration.

vi. Long-term Stewardship

Sustain long-term stewardship by developing management partnerships and funding strategies that address property needs.

II. EXISTING CONDITIONS

A. Climate

Temperatures within the region range from an average low of 10 degrees Fahrenheit (F) in January to 90 degrees (F) in July and August. Temperature extremes vary from –27 degrees (F) to a high of 99 degrees (F).

B. Geology

The bedrock types within the area include sandstone, claystone, and shale. The New Mexico Bureau of Mines and Mineral Resources Memoir 29 notes that the site lies east of the Tijeras Fault (Kelley 1977). Geology at the site is typical of the East Mountain area.

C. Topography

Site elevation ranges from 6,600 to 6,800 feet above sea level. Slope conditions vary widely throughout the property.

D. Soil Conditions

Soil types at Ojito include soils from the Rock outcrop and Carlito series. Soil information specific to Ojito follows:

i. RCE: Rock outcrop-Bond complex

This soil consists of approximately 40 percent Rock outcrop and 30 percent Bond stony sandy loam that is typically located in areas that range between 5 to 35 percent slope. Rock

outcrop soils are mainly sandstone bedrock that is fractured in the upper two to three feet. Runoff is rapid although water erosion hazard is slight. Bond soil has a stony sandy loam surface. Runoff is medium and the water erosion hazard is moderate to severe.

These soils are typically used for watershed, wildlife habitat, recreation, and community development. The shallow depth to bedrock; however, may severely limit the extent to which community development can occur (Rich 2000).

ii. La: La Fonda Loam

Soil conditions are almost level with typical slope conditions of one to three percent. These soils are found along Highway 14, north of Tijeras Canyon. Within this soil mapping unit, small areas of Manzano, Silver, and Bond soils may be found. Water erosion hazards are moderate and runoff is medium. Community development, range, wildlife habitat, watershed, and recreational uses may be appropriate for this soil (Rich 2000).

iii. CAF: The Carlito Complex

These soils occur along canyon walls where runoff is rapid and the potential for erosion is severe. They are found mainly in areas with 50 to 80 percent slope. These soils are typically very thin and are comprised primarily of clay and silt sized particles. They are conducive to range, wildlife habitat, recreation, and watershed uses (Rich 2000).

E. Hydrology and Water Quality

Annual precipitation at the Sandia Ranger Station—the nearest gauging station—is 13.9 inches. Groundwater depth varies from 5 to 200 feet throughout the property.

Two watercourses are located within the property's boundaries. Both watercourses—referred to as *acequias* by the Acequia Association—originate from springs located offsite. The County will not interfere with delivery of water by the Acequia Association through its historic locations and will afford the Acequia Association access to maintain its courses for the purpose of water delivery. The Acequia Association will not alter the location of the historic water flows without consultation and approval of the County. A description of the two watercourses follows:

A winter scene at Ojito de San Antonio

i. Acequia Madre

The Acequia Madre derives its water from the Ojo de San Antonio, a natural arroyo that channels both spring water and storm water run off. The present course of the Acequia Madre crosses through the terraced field to the north of Las Manzanares [Ojito] *orchard and then flows in a southerly direction to a reed filled holding pond created by a concrete dam structure. This dam contains two culvert pipes which allow the water to be controlled as it flows down hill towards the next holding area at the estanque adjacent to Highway 14. From here, the creek is siphoned through a culvert beneath Highway 14, and then daylights on the east side of the highway where it continues to flow in an easterly direction towards the site of the first plaza. It then flows along the base of the Centinela ridge in a maintained ditch on the western edge of the plaza. Once past the plaza, the acequia disperses into a marsh like area, and ultimately flows into San Antonio Creek* (Monk 1998).

ii. Ojo de San Antonio

The primary, man-made watercourse is a spring fed system which begins at an elevation near the mouth of the Ojo Springs. This ditch, unlike the Acequia Madre, is primarily spring fed, and the water is of the highest quality. It is uniformily two feet wide and approximately 18 inches deep. From its source, the watercourse flows through private property and is bisected by a series of fences and locked gates. The flow, however, is unimpeded by any physical structures, and maintains a strong volume year round. The ditch flows south of the old Wright property, and is cut into an embankment at a higher elevation than the orchard and fields to the north. A few feet from the southern edge of the old Wright house, the water falls approximately eight feet down into a concrete and rock masonry lined pool. From here, it flows down hill following the road to the property, cuts across the road beneath a steel grate and flows into a PVC flume which is suspended above and across the first holding area of the Acequia Madre de San Antonio. From the flume, the ditch continues in a north easterly direction down the slope past the dry estanque to Highway 14 where it is siphoned below the

roadway. To the east of the highway, the water daylights in a concrete collector where it splits into two distinct channels. (Monk 1998.)

F. Plant Communities

Ojito boasts a unique combination of several different plant typologies due to water resources, soil conditions, and human influence. Principally, native vegetation consists of native grasses, including sideoats grama, blue grama, black grama, and bottlebrush squirreltail. Evergreen trees include Piñon pine, Oneseed juniper, and Alligator juniper. Deciduous trees found onsite include oak, box elder, weeping willow, apple, and pear. Although rock outcrop areas are less hospitable hosts, cacti, native grasses, and lichens are well represented in these areas at Ojito (Rich 2000; Crawford 2000; Monk 1998). [See Appendix B for a partial plant list.]

Plants at Ojito are grouped into three plant communities: *the piñon-juniper community, riparian vegetation, and the non-native orchard plantings.*

i. Piñon-Juniper Community

Approximately 80 percent of the site is comprised of piñon-juniper woodlands. This plant community surrounds the spring, riparian, and orchard areas with native vegetation typical of the Sandia Mountain Wilderness. This community of plants is found outside of spring reaches.

Two rare and sensitive plant species may be found within this community. Gypsum Sand Verbena, *Abronia bigelovii*, is found in both grasslands and piñon-juniper woodlands. Santa Fe Milkvetch, *Astragalus feensis*, is found primarily in piñon-juniper areas. These species have not been located at Ojito, but the property will be monitored for their presence. [See Appendix C for photos of these rare and sensitive plants.]

ii. Riparian Vegetation

Water-influenced or riparian vegetation includes native species commonly found in wetter areas throughout the state. The *Ojo de San Antonio* spring—located offsite—has created a ribbon of water-influenced vegetation and provides excellent habitat for many wildlife species. In addition, there is one endangered plant species that may be found in this habitat type, the Great Plains Lady Tresses Orchid, *Spiranthes magnicamporum*. It is primarily found in riparian areas less than 7500 feet in elevation.

The Lady Tresses Orchid has not been found onsite; it could, however, be transplanted here to expand its populations. [See Appendix C.]

iii. Non-native Orchard Plantings

Origins of the orchard area date back to the mid 1800's. Historical records show that catholic priests planted apples, and apricots here, with cherries and pears planted by subsequent owner, Charles Wright, who experimented with other varieties of fruit trees and grapes during the 1930's (Monk 1998). A healthy stand of wild plums is also found on the property. Most of these trees still produce fruit. Although the orchard is a small portion of the 88-acre property, it forms a large part of the site's identity, and contributes greatly to habitat diversity and visitor enjoyment.

Macro and micro vegetation at Ojito de San Antonio Open Space

G. Forest Health and Fuel Load Reduction

Vegetation in the riparian and orchard areas grew unmanaged for years. As a result, the condition of the orchard fruit trees is poor and fuel-loading hazards developed in some areas. A substantial amount of juniper was removed from the orchard and that has benefited some trees. Tree trimming and pruning is needed to optimize tree health throughout the property. In coordination with the Acequia Association, dead and downed fuel will be thinned from the watercourses to prevent catastrophic fire loss in the riparian area.

H. Forest Pests

Forest pests are insects that can degrade the overall plant health of the forest. Signs of slow degradation throughout the Ojito watershed are noted and an effort will be made to curtail the damage caused by these insects. Primary pests are those that attack tree species that are likely to be found at Ojito. Open Space management is concerned by the potential for Ips Bark Beetles, Piñon Pitch Nodule Moth, Western Cedar Bore, Twig Beetles, Round headed and Fatheaded Wood Borer infestations.

I. Noxious Weeds

There are three classes of noxious weeds in New Mexico as defined by the New Mexico State University Cooperative Extension Services publication, *New Mexico's Invasive Weeds* (Lee 1999). Class A weeds are not native to an ecosystem and are not presently found in the state but are threatening to invade. Preventing infestations and eliminating new infestations is the highest priority for this class. Class B weeds are not native to the ecosystem and are presently limited to particular areas within the state. Preventing new infestations should be a priority for weeds in this class. Class C weeds are also not native to the state yet are widespread throughout the state. The following noxious weeds are likely at Ojito: Class A—Hoary cress (*Cardaira draba*), Canada thistle (*Cirsium arvense*), and Scotch thistle (*Onopordum acanthium*); Class B—Russian knapweed (*Acroptilon repens*), and Musk thistle (*Carduus nutans*); and, Class C—Field bindweed (*Convolvulus arvensis*), and Jointed goatgrass (*Aegilops cylindrica*). The County will consider incorporating environmentally sensitive mitigation measures to control noxious weed infestations.

J. Wildlife Communities

The availability of plant forage and water attract many animal species to Ojito. Good vegetative cover at Ojito is also favored by many animals as wildlife corridor habitat. Evidence

of deer, mountain lion, and black bear presence at Ojito has been found. The primary mammal found at Ojito is the black bear. Bear visitations typically begin in August and continue through October. It is not uncommon to see them during these months searching for fruit in the orchard. Ojito provides crucial habitat for these large animals during times of drought and minimizes the potential conflict that may occur if they had to travel longer distances for food and water.

The combination of riparian, piñon-juniper woodland, and ponderosa pine-oak vegetation is an exceptional habitat for diverse bird populations. A total of 56 bird species were observed at Ojito during surveys conducted between Fall 2000 and Winter 2002. Forty species of these birds are likely breeders, *four of which are rare to the Sandias, Yellow-breasted Chat, Lazuli and Indigo Bunting and Blue Grosbeak, thus attesting to the uniqueness of the riparian area here* (Rominger 2002).

According to *Partners in Flight,* 16 species are listed as *high priority birds;* 3 are also listed as *high priority* by the National Audubon Society's *Watch List,* including the Band-tailed Pigeon, Lewis's Woodpecker, and Virginia's Warbler (Rominger 2002). [See Appendix D for Rominger Bird Surveys and Priority Scores.] Despite the relative small size of the site*, it supports this amazing array of bird life year-round due to its rich biodiversity, available water and, at present, minimal human disturbance* (Rominger, 2002). As a result, pursuing *Important Bird Area (IBA) Designation through the National Audubon Society should be facilitated. The bird habitat at this site is already classified as a priority habitat by the Coalition of Conservation Organizations that includes the National Audubon Society and Bird Conservation International. This classification was made due to the presence of high priority species found on the site* (Wearne and Abram 2003).

i. Federal Endangered Species

There are two endangered mammals found in Bernalillo County—the Spotted Bat and the Meadow Jumping Mouse. The Spotted Bat Habitat includes all forest types found in the area. It is known to occur less than regularly in this area. A variety of rangeland management activities contribute to the loss of habitat for this Meadow Jumping Mouse. The degradation of habitat in areas where these bats and mice live can be detrimental to their populations.

Only two bird species on the endangered list that may be present from time to time at Ojito. They are the Peregrine Falcon and the Willow Flycatcher. The habitat for the falcon includes wooded areas on or near cliffs. The Willow Flycatchers' primary habitat is riparian woodland areas. The restoration of riparian areas is the most critical component for the recovery of this species.

ii. State Sensitive Species

A wildlife biology inventory will be conducted to assess habitat viability for federally listed threatened and endangered species as well as state listed and candidate species of concern. Where appropriate, site improvements will be considered to enhance the viability of the identified species at Ojito. In addition to site-specific enhancements, it is recognized that

encouraging wildlife corridors throughout Open Space properties in the East Mountains, including those owned by the City of Albuquerque, Bernalillo County, and the U.S. Forest Service, is an important consideration in the resource development at all Open Space properties.

III. HISTORY AND CULTURE

A. Tijeras Canyon—Early Population Patterns

There is some evidence suggesting that the Tijeras Canyon area (including the Village of San Antonio) was used *sporadically* by Archaic era hunters and gatherers between 8000 B.C. and 1 B.C.. Around 700 A.D., during the Prehistoric era, domestic crops were periodically planted within the canyon. These domestic crop plantings were introduced in Tijeras Canyon long after they had been introduced in other Southwest areas.

In 1975, the remains of the old San Antonio settlement were excavated. Carbon dating evidence indicates human use at the site dating back to the 1200s (Cordell 1980). Evidence also supports the claim that population numbers increased slightly between 1300 and 1425 A.D. based on the number of archeological sites and the architecture found at these sites. These population shifts are likely attributable to the *aggregation* of persons at San Antonio and Tijeras Pueblo. During the Sixteenth Century, the number of settlement sites decreased and with it came a corresponding decrease in population. As a result, human reliance on natural resources also decreased in the canyon environment (Cordell 1980).

Currently, there is no evidence showing permanent settlements were established within the canyon during the Seventeenth and early part of the Eighteenth Centuries. It was during this time, however, that the Faraoan Apaches used the area as staging grounds for raids on lower lying settlements. Undoubtedly, both Indian and Hispanic parties entered the canyon to camp for short periods of time. *By 1763, the Comanche had replaced the Faraoan Apache as the most feared and most admired of the nomadic raiders of Hispanic hamlets and Pueblo villages. It was in response to this Comanche threat that the land grant Cañon de Carnue was founded as a buffer community, with its town called San Miguel de Laredo located somewhere within the struggling community now known as Carnuel (Cordell 1980).* The colonial government—through the establishment of the land grant and land grant communities—gave land ownership incentives to subjects willing to settle in areas that could provide some measure of defense of the territory considered to be more economically valuable. [Cordell 1980.]