



PIMA COUNTY

BINGHAM MANAGEMENT PLAN

January 2019



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Cover photo: Bingham Cienega (foreground) and the Galiuro Mountains (background), February 2011. Photo by Brian Powell



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Abstract

Bingham Cienega, located along the San Pedro River, has been selected for the first management plan submitted to the U. S. Fish and Wildlife Service under the Multi-Species Conservation Plan. The site was chosen because of the property's small size, remoteness, and the need for updating an outdated management plan to reflect more recent acquisitions and changed ecological conditions. The new plan addresses the following Conservation Targets:

- Wildlife habitat connectivity;
- Mesquite bosque and other distinct plant communities;
- Native aquatic species;
- Shallow groundwater and surface water discharge in the Bingham Planning Area;
- Tributary streamflow and recharge from outside the Bingham Planning Area;
- Cultural resources; and
- Visual resources.

Though the Multi-Species Conservation Plan obligates that certain topics be addressed, the plan's scope was expanded to address broader goals and topics. Additional topics—selected by the planning team—include ranch resources, fire management, public use, caretaking and visual resources, all of which tie the Bingham Planning Area into the larger landscape setting of the San Pedro Valley and adjacent ranches.

Many changes in the condition of resources in the Bingham Cienega Natural Preserve have occurred over the last 20 years. As a result, many of the objectives in this new management plan reflect the need to better monitor and study conditions and to choose actions that have the most potential to stabilize or enhance the conditions of the Conservation Targets (Targets). This management plan emphasizes maintaining and monitoring system processes rather than artificially restoring past conditions.

The management for each resource or topic is separated into “recommended actions” that are within the Pima County's purview, and “management opportunities” that involve collaboration with others, usually for a common purpose that extends beyond the Bingham Planning Area. In particular, Pima County intends to use the final list of actions and opportunities identified in this plan to guide future management of tributary watersheds that lie within Pima County management. Existing Restrictive Covenants and a Conservation Easement also guide future management within the Bingham Planning Area, and copies of these are attached as appendices.

Actual selection of actions will depend on funding, collaborative opportunities, and staffing relative to other lands in the Multi-Species Conservation Plan portfolio. Pima County anticipates continued dialogue with U. S. Fish and Wildlife Service and others on management and any biological enhancements.

1 Introduction

1.1 Geographic Location

The Bingham Cienega Planning Area (Planning Area) is located in the Lower San Pedro River valley of southern Arizona, in northeastern Pima County (Figures 1.1, 1.2). This part of the San Pedro river basin represents the eastern edge of the Sonoran Desert and western edge of the Chihuahuan Desert where a short distance separates the Santa Catalina-Rincon mountains complex to the west and the Galiuro Mountains to the east. It is a place of confluence and diversity.

The land surrounding the Planning Area is owned and managed by a tapestry of federal, state, Pima County, private landowners and corporations (Figure 1.1). The highest elevations in Santa Catalina, Rincon, and Galiuro mountains are predominantly managed by the U. S. Forest Service and National Park Service, and include forested patches of oak, juniper and conifers. The mountains have extensive alluvial aprons of coarse gravels mantled with semi-desert grassland and desert scrub. This apron, or bajada, is majority owned by the state of Arizona. Pima County holds a number of grazing leases on state land near to the Planning Area. These grazing leases are associated with the A7, Six-Bar, M Diamond, and Tesoro Nueve ranches. Private ownership in the vicinity of the Planning Area is relatively limited, and occurs primarily along the San Pedro River bottomlands. Here, the Bayless and Berkelew Corporation is a significant land owner. The U. S. Bureau of Land Management (BLM) also manages a portion of the watershed.

Within the Planning Area itself, most of the land is part of the Bingham Cienega Natural Preserve (Preserve) owned by the Pima County Regional Flood Control District (District). Smaller parcels that are part of the Planning Area are near to the Bingham Cienega and are part of Pima County's M Diamond Ranch (Fig. 1.2). Importantly, the Planning Area includes a 19-acre residential inholding that is in a Life Estate owned by the Kelly Family and held in a Conservation Easement by The Nature Conservancy (TNC). Management of the residential inholding will be guided by this plan only after the Life Estate is completed.

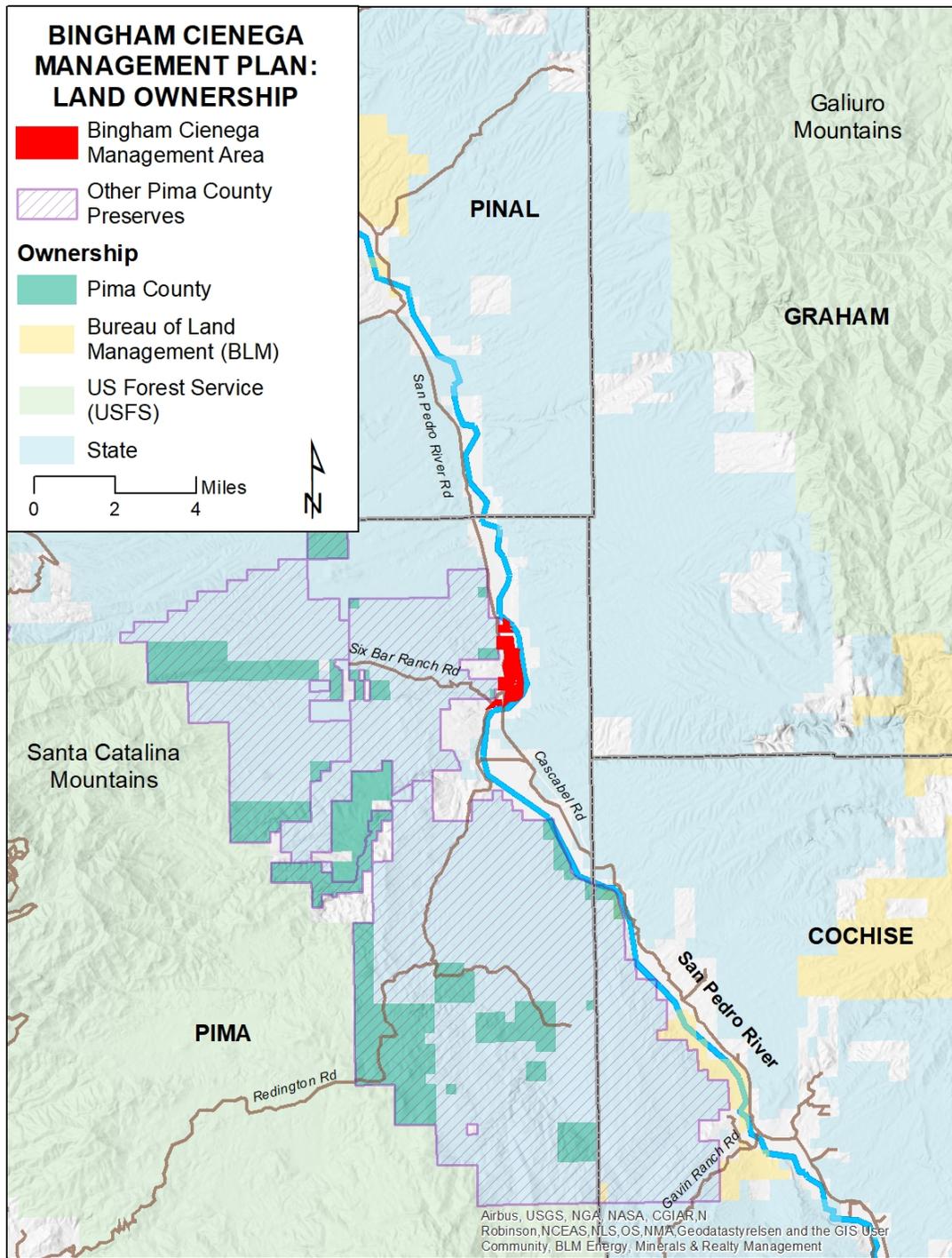


Figure 1.1. Location of the Planning Area in relation to the San Pedro River and adjacent counties.

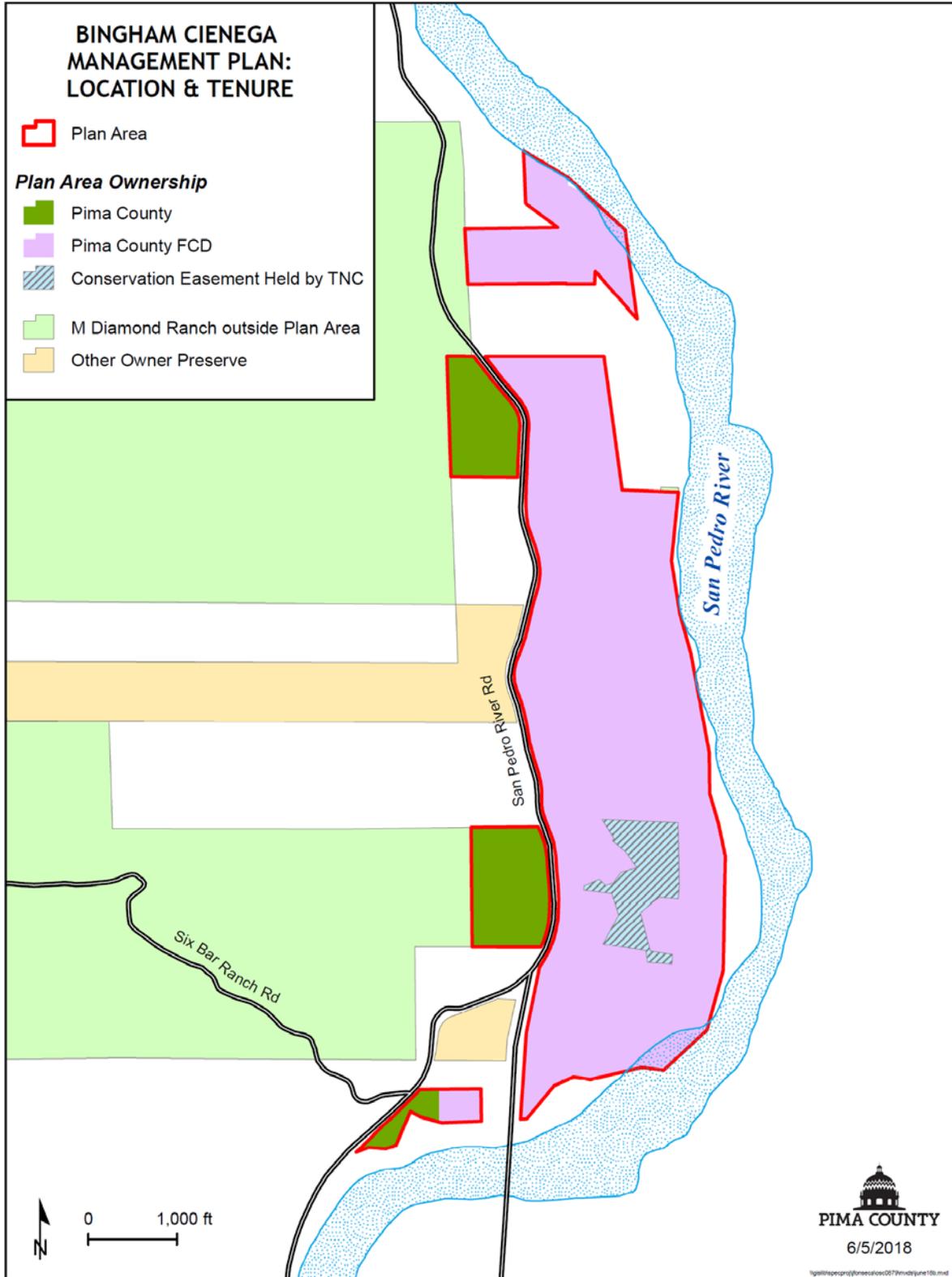


Figure 1.2. Planning Area boundaries and land ownership.

1.2 Socio-Cultural Setting and Land Use

Approximately 100 people live in the northeast portion of Pima County, principally along the San Pedro River Road (unpublished analysis on 2010 census data by Carolyn Leung, Pima Association of Governments for this plan). Residents rely primarily on long-distance travel to obtain food, medical care and other necessities. Several volunteer fire departments in the valley are no longer in operation, and there are fewer and fewer families engaged in agriculture. During the 1980s and 1990s, parcels were being split into smaller lots and sold for residential use as the older generations passed on (The Nature Conservancy 2000). One effect of this lot splitting was to fragment ownership and increase the number of absentee land owners. The Sonoran Desert Conservation Plan (SDCP) has, to some degree, mitigated this trend in the watershed surrounding the Planning Area by providing justification and funds to acquire and manage cattle ranches in cooperation with small-scale ranchers (Pima County 2000a, b).

Land use in the areas surrounding Bingham Cienega are primarily cattle ranching and alfalfa farming. Because most of the lands upon which cattle ranching occurs have naturally low productivity, ranching depends on irrigation of pastures and croplands to supplement feed. In the last several decades, diversion of the San Pedro River upstream of Bingham Cienega for irrigation has ceased due to the scarcity of any base flows in the river itself near Redington, Arizona. Agriculture now depends solely on high-lift turbine pumps and increasingly expensive electricity. Pima County and the Bayless and Berkalew Ranch are the main water users near the Planning Area (Table 1).

Recreation in the San Pedro basin includes hunting, hiking, camping, mountain biking and all-terrain vehicle use. The principal recreational access points are along the Redington and San Pedro River roads. The San Pedro Road, in particular, is a critical feature for residents. Erosion and flooding (principally along tributaries to the San Pedro River) can temporarily eliminate road access for residents. Changes in the drainage along San Pedro River Road in Pima County, which is maintained by Cochise County, have the potential to adversely affect the Planning Area. At one time, the Arizona Department of Transportation (ADOT) considered an Interstate 10 bypass highway along the San Pedro River, but the plans were dropped and the associated right-of-way for the highway was released.

No mining is known to have historically occurred in the Planning Area, but nearby Buehman Canyon and the Oracle Ridge areas in the Santa Catalina Mountains have been the focus of recent exploration activities for potential mines. The Oracle Ridge Mine is now in receivership and the Korn Kob claim in Buehman Canyon is currently inactive. However, mining claims to these and other areas are still held by private entities.

The Arizona State Land Department (ASLD) leases land for grazing, various pipelines, roads, utilities, minerals and other purposes, and represents another source of uncertainty in terms of future land use because of the agency's mission to maximize revenue for public trusts. Most recently, the SunZia power line has been approved by federal regulators; that line crosses many areas of State land. No date for construction has been established.

In terms of social networks, the Redington Natural Resource Conservation District (NRCD) seems to be the principal group in the area (Table 1). There is also a nascent watershed

group for the Lower San Pedro River. Pima County maintains ties with various land owners and non-governmental organizations operating in the valley.

Table 1.1. Key organizations operating within and/or near to the Planning Area, 2018.

Name	Effect on conservation activities
Pima County	Manages County-owned ranches, and recreation on County parks
	Monitors conditions on County-managed conservation properties
Pima County Regional Flood Control District	Manages floodplain uses on private and state trust lands
	Operates the Floodprone Land Acquisition Program
	Oversees land they own, has a riparian restoration program
	Operates flood warning system including rain gages
Pima County Sheriff's Department	Law enforcement response
Arizona State Land Department	Administers leases on State Trust Land adjoining Bingham
Arizona Department of Forestry	Potential partner in fire suppression and post-fire restoration
U. S. Forest Service	Administers activities on USFS land in the watershed
	Potential partner in preserving land connectivity and fire management
U. S. Bureau of Land Management	Oversees County use of BLM land south of Bingham Cienega
Arizona Game and Fish Department	Manages hunting and ATV use
	Law enforcement response
	Administers hunting licenses and fish stocking
	Oversees a program to monitor and restore native wildlife
	Administers Heritage funds for inventory and management
The Nature Conservancy	Nearby conservation land owner
	Holds and monitors Conservation Easements at Bingham and on nearby private lands
Redington Natural Resources Conservation District	Can receive and implement grants for conservation projects
	Can solicit community input and disseminate information to land owners
Archaeology Southwest	Nearby conservation land owner
Bayless and Berkalew Ranch	Neighboring land owner with farming operation along San Pedro River
	Potential help with feral pig control
	Current cattle ranching operator at the County's A7 Ranch
Kelly-Bingham family	Neighboring set of land owners; Jack and Lois hold a Life Estate in the Planning Area
Goff family	Current operator for Pima County's Bar V Ranch (upstream watershed)
Cochise County	Maintains San Pedro Road via contract to Pima County
Sulfur Springs Valley Electric Cooperative	Utility company that maintains power line easement at Bingham
Bellota Preservation Corporation	Nearby conservation-oriented landowner. All Bellota parcels are under under a Conservation Easement
Lower San Pedro Collaborative	Watershed planning group made up of conservation professionals, interested citizens, and some key land owners

Animal Plant Health Inspection Service (APHIS)	Potential partner in managing feral pigs
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1.3 History of Pima County Acquisitions in the Planning Area

In 1978, the Arizona Natural Heritage Program identified Bingham Cienega as one of Arizona’s rarest natural features due to its spring-fed wetlands. The 1986 Arizona Wetlands Priority Plan (sponsored by Arizona State Parks Board and Arizona Game and Fish Department [AZGFD]) identified the property’s wetland and riparian forest as reason to target the site for acquisition by a federal, state, or local government. As a result, the Pima County Flood Control District (District) acquired the Bingham property as part of its Floodprone Land Acquisition Program, marking the second time in the District’s history that the program was used to protect a natural floodplain area from development¹.

As part of the Bingham acquisition, the District signed and funded a 25-year management agreement with TNC to “protect, preserve, and enhance its riparian and aquatic habitat and other natural values.” The District further agreed to refrain from conducting or permitting any use of the property that would adversely affect its ecological, scenic, flood mitigation, or recreational values.

The acquisition included many acres of farm fields from which natural vegetation had been cleared. After the acquisition, the wetlands reclaimed some of the former farmland, thereby considerably expanding the extent of wetlands. A restoration project funded by the Arizona Water Protection Fund helped to establish native vegetation in former farm fields that lay outside the wetland, and all the while TNC worked diligently to inventory and monitor site conditions, maintain fences, manage fire risk, and take other measures necessary to protect native plants and animals and ecosystem processes.

In 2000, Pima County’s SDCP identified the San Pedro River Valley for long-term conservation via a “working landscape” or ranch conservation approach (Pima County 2000b). In 2004, Pima County voters authorized funding for purchasing open space from willing sellers. In the San Pedro Valley, the first acquisition opportunity arose with the City of Tucson, which was looking to transfer ownership of the A7 Ranch (located upstream and adjacent to the Planning Area) to Pima County. Soon after this acquisition, Pima County purchased the Six Bar Ranch, then later the M Diamond Ranch. Portions of the Planning Area, which includes parts of the M Diamond Ranch were conveyed to both Pima County and the District.

1.3.1 Bingham Acquisition Timeline

1988. Jack and Lois Kelly approached TNC of Arizona about a possible sale of approximately 300 acres at Bingham Cienega, which surrounded the headquarters of their M Diamond Ranch.

¹ Floods and erosion from the San Pedro River are a natural part of this landscape, and one purpose of the acquisition was to allow those processes to continue unhindered.

1989. TNC and the District agreed to an arrangement whereby the District acquired Bingham Cienega and TNC would hold a Conservation Easement to the 19-acre inholding that was retained in Kelly ownership. A Conservation Easement, which is held by TNC, is placed on the inholding. Over the next 25 years, the District paid TNC to manage what is now known as the Bingham Cienega Natural Preserve. During this time, TNC—in cooperation with the District—maintained fences, carried out research and monitoring, and oversaw restoration of former farm fields (The Nature Conservancy 2001).

2012. The Kelly's sold the M Diamond Ranch, including the 19-acre inholding, to the Oracle Ridge Mining Corporation. Through an agreement with Oracle Ridge, Pima County and the District acquired the M Diamond Ranch. Pima County Natural Resources, Parks and Recreation Department (NRPR) assumed the associated grazing leases while the District took possession of the private, floodprone portions of the M Diamond Ranch. In addition, a Life Estate was established to allow the Kellys to maintain residential occupancy and full management of the inholding.

2014. The management agreement between the District and TNC ends and the District transferred site caretaking responsibilities to NRPR. All site management, monitoring, and reporting activities that were carried out by TNC were retained by NRPR and new fire preparedness activities were initiated. TNC continues Conservation Easement monitoring of the 19-acre inholding Life Estate.

2016. Pima County and the District obtained a Section 10 (a)(1)(b) (herein Section 10) permit for incidental take of species under the Endangered Species Act (Pima County 2016). In a related action, most of the Planning Area was encumbered with restrictive covenants to ensure the mitigation values of the properties are not impaired (Appendix A).

2017. A portion of the Planning Area was allocated as mitigation under the Section 10 permit, triggering a requirement for a management plan to be provided by March 1, 2019 to U. S. Fish and Wildlife Service (USFWS).

2018. The District acquired a small parcel of the San Pedro River floodplain from Durango Land and Cattle. This parcel was added to the Planning Area.

1.4 Significance of the Planning Area

The Planning Area serves many purposes and contributes many different outcomes:

- The area's natural state helps conserve natural floodplain function and sediment storage along the San Pedro River and tributaries. Some of the tributaries are already entrenched all the way to the San Pedro River, but several distributary flow systems persist on the Holocene alluvial terraces, thereby providing long-term sediment storage and attenuation of flood flows.
- Natural wetlands, which are present onsite, are regionally scarce. As early as 1978, the state's Natural Heritage Program identified Bingham Cienega for protection, as did the state's Wetland Priority Plan and state Natural Areas Study. Even though the current condition of these wetlands is poor due to a rapidly declining water table, the natural condition of the site would most likely allow the wetlands to return if and/or when the water table rises to its previous position.

- The area provides extensive forests of mesquite woodland (bosque) in a portion of the San Pedro River Valley where much removal of mesquite has occurred because of clearing for agriculture. As such, the remaining mesquite forest in the Planning Area provides an important patch of this regionally rare vegetation type. The conservation of mesquite at Bingham is complemented by TNC's acquisition of the adjacent Rhodes/Furrow property.
- The acquisition conserves natural and restored patches of sacaton-mesquite savanna that were historically much more common in this part of the San Pedro River Valley.
- The site provides landscape-level wildlife connectivity along the San Pedro River and between the Catalina-Rincon mountain complex and the Galiuro Mountains. The value of this wildlife connectivity is recognized at the state level.
- For the MSCP, the Planning Area conserves Important Riparian Areas that include Priority Conservation Areas for many covered species, including the yellow-billed cuckoo, and others. Conservation activities here serve as mitigation to offset impacts to Pima County projects and private developments that occur elsewhere in Pima County's Section 10 permit area.
- The acquisition has stabilized the living situation for one of the area's oldest ranch families, and has contributed to a sense of tradition and place by preventing subdivision and lotsplits. The Life Estate has allowed the Kelly family to continue to inhabit this historic homestead and engage in activities such as maintaining crop seed varieties derived from their forebears. Their sale of the M Diamond Ranch to Pima County has helped to ensure future succession to a small-scale rancher.
- The property is located within a zone of high archaeological sensitivity as defined in the SDCP (Pima County 2000c). Archaeologists have identified many archaeological and historic sites in the Lower San Pedro River Valley. The acquisition provides the opportunity to preserve archaeological and historic sites.
- The infrastructure investments made by the District have contributed to fire preparedness in a remote rural area that has experienced loss of volunteer firefighting capabilities.

1.5 Need for Revision of the 1992 Bingham Management Plan

Collazo (1992) prepared the only comprehensive management plan for the Preserve. A new, more up-to-date management plan is needed because:

1. TNC's 25-year management agreement with the District has ended;
2. Many management objectives were addressed during TNC's tenure including the inventory of biological resources, fencing, monitoring, active vegetation restoration efforts, fish introduction, invasive species management and initiation of fire preparedness;
3. Conditions have changed from an expanding to significantly reduced cienega;
4. Additional nearby lands have been acquired by Pima County and the District, which are being addressed in the new planning effort; and
5. Pima County and the District now hold a permit under the Endangered Species Act, which requires certain planning, management and monitoring activities take place.

Because of these conditions and needs, the new planning effort—outlined in this document—will result in a management plan that is appropriate for the new land ownership and conditions within the Planning Area as well as management capacities for Pima County departments.

2 Planning Process and Framework

2.1 MSCP Obligation

The Planning Area was selected to be the first MSCP-compliant management plan because of the property's size, remoteness, and long history of being managed for natural resource protection and research. The Planning Area is primarily located in the Important Riparian Area of the Maeveen Marie Behan Conservation Lands System (Figure 2.1). There are also two tracts of land within the Biological Core that have Sonoran desert scrub located on old terraces west of the San Pedro River Road.

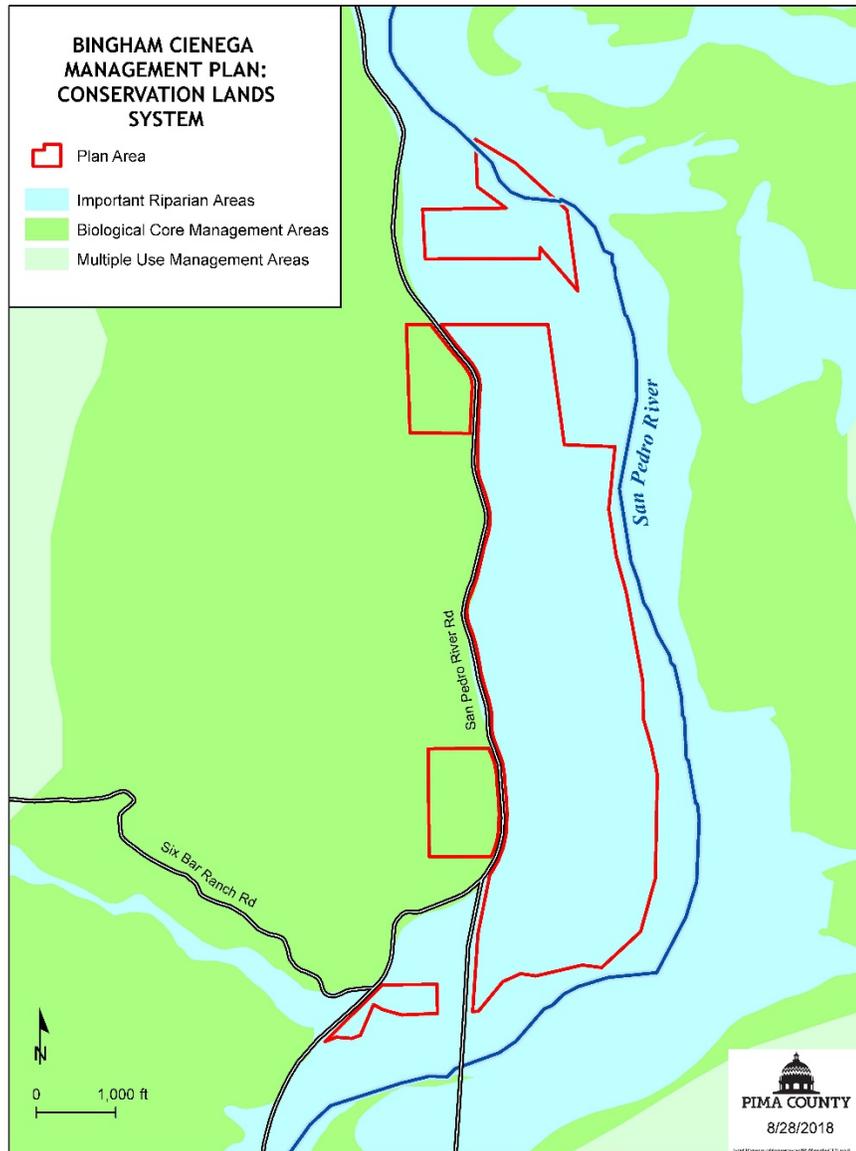


Figure 2.1

The Planning Area is located in the Important Riparian Area of the Maeveen Marie Behan Conservation Lands System. The Planning Area is primarily located in the Important Riparian Area of the Maeveen Marie Behan Conservation Lands System (Figure 2.1). There are also two tracts of land within the Biological Core that have Sonoran desert scrub located on old terraces west of the San Pedro River Road.

Planning Area.

located to MSCP compliance because of its size and location. These areas were chosen for the Planning Area.

adjacent parcels are likely to be needed to offset MSCP mitigation obligations through 2019².

Table 2.1 Parcels in the Planning Area

Parcel tax code	Owner
205-20-004D	Pima County Regional Flood Control District
205-17-002A	Pima County Regional Flood Control District
205-17-005L	Pima County Regional Flood Control District
205-17-005P	Pima County
205-17-005Q	Pima County
205-17-010H	Pima County
205-17-010J	Pima County Regional Flood Control District
205-17-010K	Pima County Regional Flood Control District
205-17-0120	Pima County
205-21-002D	Pima County Regional Flood Control District
205-21-002E	Pima County Regional Flood Control District
205-21-002F	Pima County Regional Flood Control District
205-22-002A	Jack and Lois Kelly Life Estate then to Pima County Regional Flood Control District

In 2017, Pima County developed a management plan framework to assure that new management plans for MSCP mitigation properties meet the mitigation requirements of the Section 10 permit. Land management actions under the Section 10 permit will (Pima County 2016; Chapter 5):

- “Work toward the long-term viability and sustainability of native ecosystem structure and function and natural processes;
- Protect biological resources from threats and other activities, while accommodating compatible uses;
- Enhance and restore Targets in appropriate locations to improve habitat for Covered Species and other species of interest;
- Respond to monitoring information in a timely manner and use adaptive management, where and when such an approach is warranted; and
- Directly address the management activities related to the maintenance of MSCP resources including, but not limited to, avoidance and minimization efforts to ensure protection, species and habitat needs, emerging threats, invasive species removal needs, ordinance enforcement activities, and anticipated future resource needs.”

² The amount of land needed for mitigation depends on a number of factors, most importantly the location and extent of impacts. Pima County will launch new management planning efforts elsewhere by 2019 to address future mitigation obligations.

Pima County staff developed an outline for the management plan, which included timeframes and a planning team (Team) comprised of staff members from the District, Office of Sustainability and Conservation (OSC), and NRPR. The directors of each department have since provided oversight of the planning effort.

2.2 Bingham Planning Framework

While the MSCP provides guidance for what must be addressed in management plans, it does not prescribe the approach to be used. In fact, it recognizes that planning can utilize a variety of mechanisms. For this plan, Pima County has employed aspects of the Conservation Action Planning framework developed TNC (The Nature Conservancy 2007). This framework was developed to help land managers conserve biological resources by providing guidance manuals and templates that have been used in similar planning exercises by the TNC for the San Pedro River basin and elsewhere.

2.2.1 Selection of Targets

A critical step in a land conservation program is to identify resources of interest that can be used to focus land management decisions. The Team evaluated and identified a host of important natural and cultural resources, known as Targets that occur—or have a high likelihood of occurring—within the Planning Area and surrounding lands. Targets can range from species to habitat and landscape-level elements. According to TNC (2007), targets should:

- Represent biodiversity at the site.
- Reflect existing conservation goals.
- Be viable or at least feasibly restorable.
- Be highly threatened.

Targets for the Middle San Pedro River were first identified by Harris (2000) and later refined based on conversations with Mr. Bob Rogers (TNC program manager for the San Pedro River) and internal Pima County discussions. The Team chose the following Targets:

- Wildlife habitat connectivity;
- Mesquite bosque and other distinct plant communities;
- Native aquatic species;
- Shallow groundwater and surface water discharge in the Planning Area;
- Tributary streamflow and recharge from outside the Planning Area; and
- Cultural resources.

Though the MSCP was the catalyst for the management plan, the plan's scope was expanded beyond natural to cultural resources to address SDCP goals related to ranch and cultural resources and to create a more holistic management framework. Additional topics selected for the plan by the team include fire management, public use, caretaking and visual resources, all of which tie the Planning Area into the larger landscape setting.

The targets chosen for this plan include a wide range of resources that vary with regard to the spatial scale of the threats and stressors and the potential management actions. Scale is an important consideration because it allows for an honest assessment of the range of

realistic actions (The Nature Conservancy, 2007). For example, shallow groundwater levels in the Planning Area have dropped precipitously in the last 15 years (see Background Report), but most of the key drivers of this phenomenon (drought, climate change, and groundwater pumping) are beyond Pima County's capacity to influence.

2.2.2 Stressors, Threats and Situation Analyses

Threats are human-caused disturbances to Targets, while stressors are attributes of a conservation target that are impaired directly or indirectly by human activities (Salafsky et al. 2008). A stress is not a threat in and of itself, but rather a degraded condition or "symptom" of the target that results from a direct threat. The Team compiled a list of 97 potential threats for the Planning Area.

The significant changes in the extent and condition of Targets in the Planning Area over the past two decades led to robust discussions of the relationship of threats and stressors to the identified Targets. The Team inventoried resources and infrastructure and reviewed existing information to better understand the conditions and relationships between stressors and Targets, and to develop potential recommendations. The Team is documenting the inventories and review in a separate background report.

One of the tools that we found to be useful to depict the relationship between stressors and threats is the situation analysis diagram. TNC staff shared generic situation analysis diagrams relative to Targets and stressors that we have in common. We then developed our own situation analysis diagrams to summarize the relationship between threats and stressors and Targets in the Planning Area (Figs. 2.1-2.5). Many changes to the condition of resources in the Preserve over the last 20 years of the District's tenure inform the fact that many stressors acting on the targets are beyond Pima County's ability to influence. As a result, many of the objectives in this plan reflect the need to better monitor and study conditions and chose management actions that are have the most influence to enhance the condition and persistence of the Targets.

Drought illustrates a phenomenon that is beyond the scope of Pima County’s influence and affects resources within the Planning Area. The current drought has gone relatively unimpeded since the late 1990s and has led to the extreme dieback of mesquite bosque and wetland forest. As a result, the Huachuca water umbel (*Lilaeopsis schaffneriana* spp. *recurva*) has not been observed at Bingham since 2001 and spring flow ceased in 2002. The drying of the open water was followed by the death of the obligate wetland woodland forest surrounding the springhead. These changes preceded Pima County’s receipt of the Section 10 permit, and drove a change in management from a focus on restoring the abandoned farm fields to managing the risk of fire.

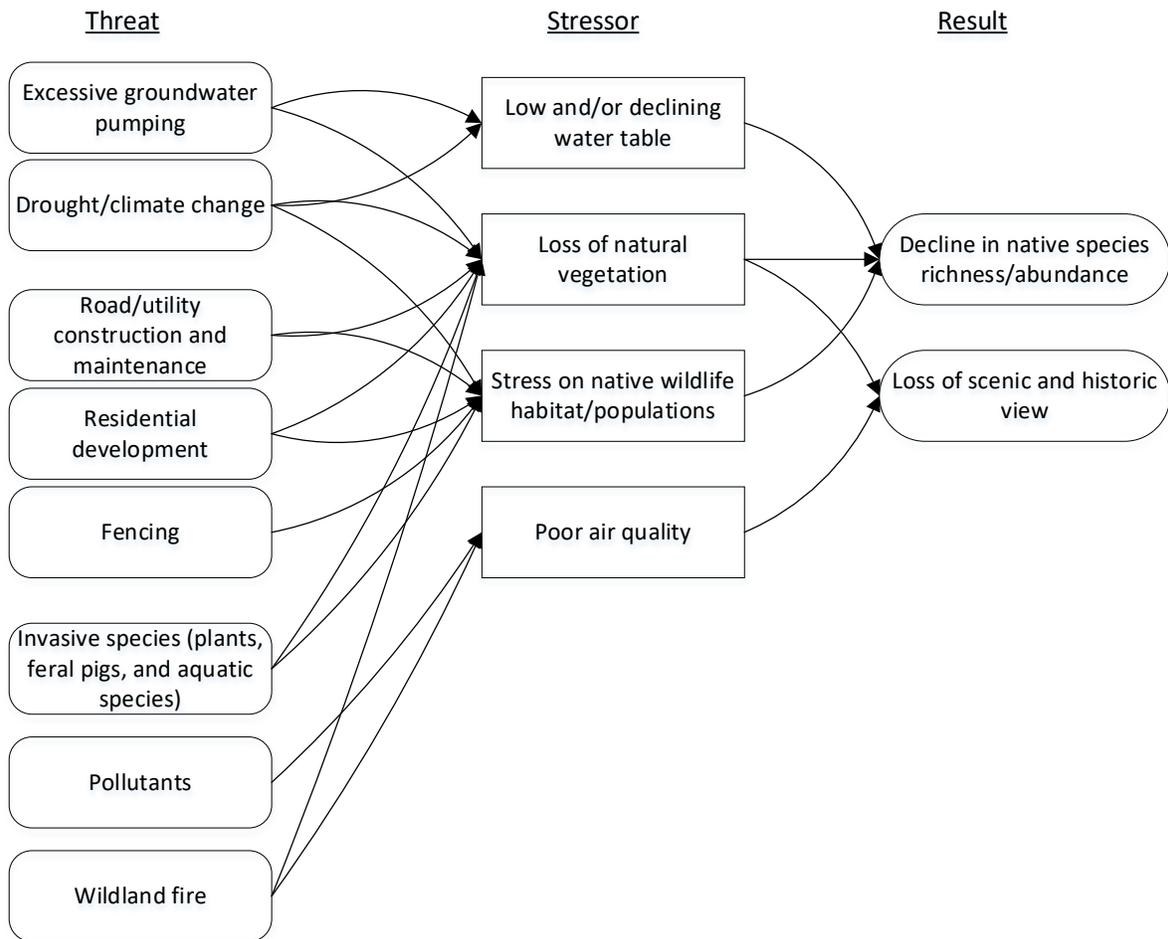


Figure 2.1. Situation analysis for landscape fragmentation and scenic resources.

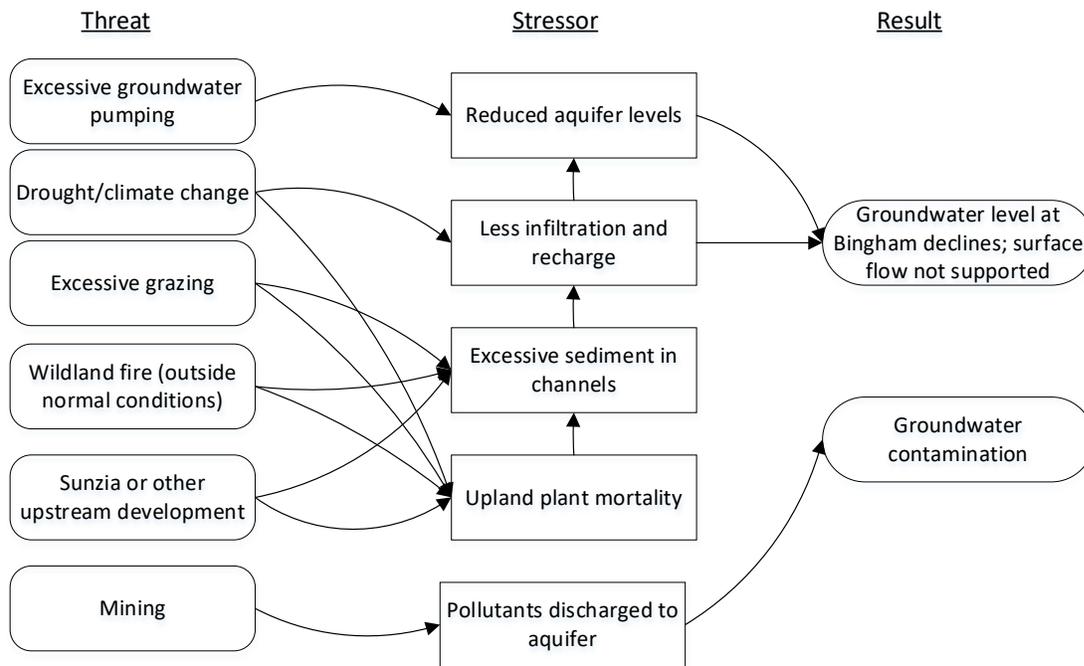


Figure 2.2. Situation analysis for tributary inflows into the Planning Area.

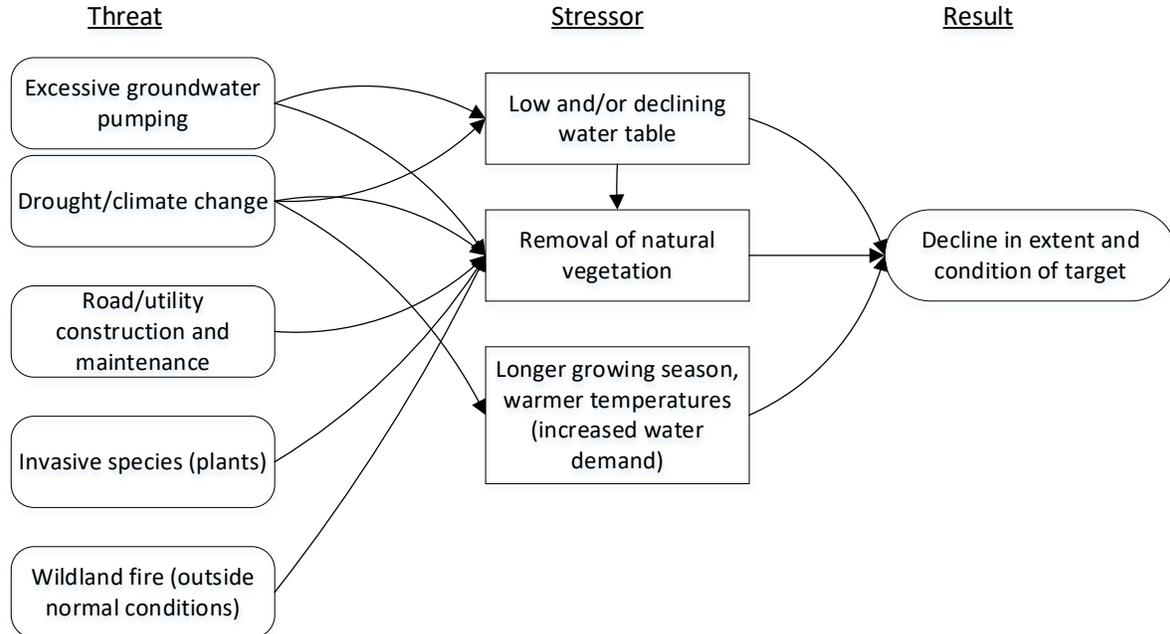


Figure 2.3. Situation analysis for mesquite bosque and wetland plant communities.

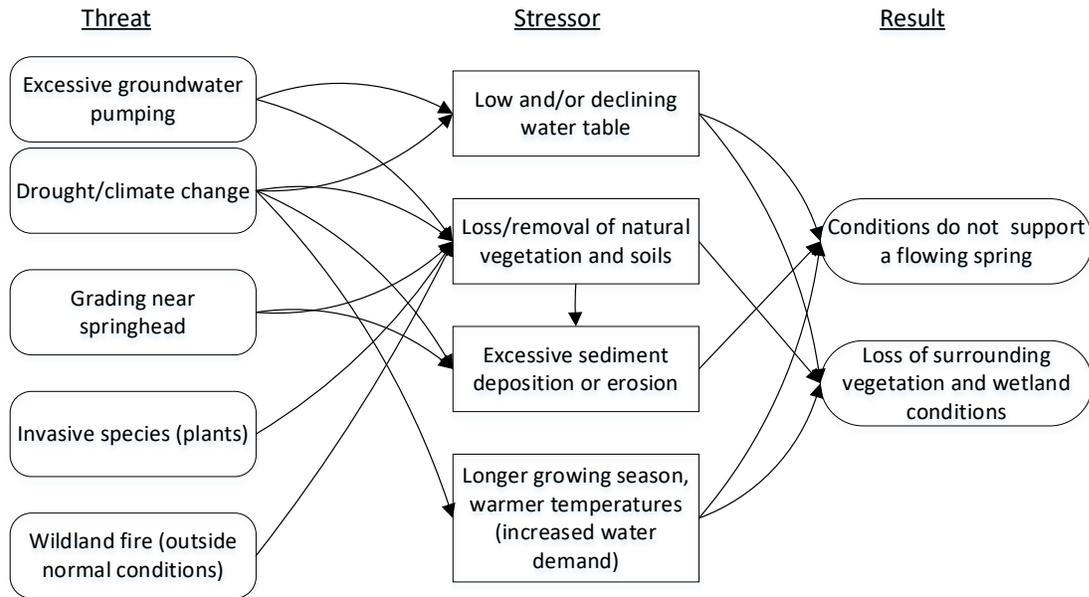


Figure 2.4. Situation analysis for the Bingham springhead.

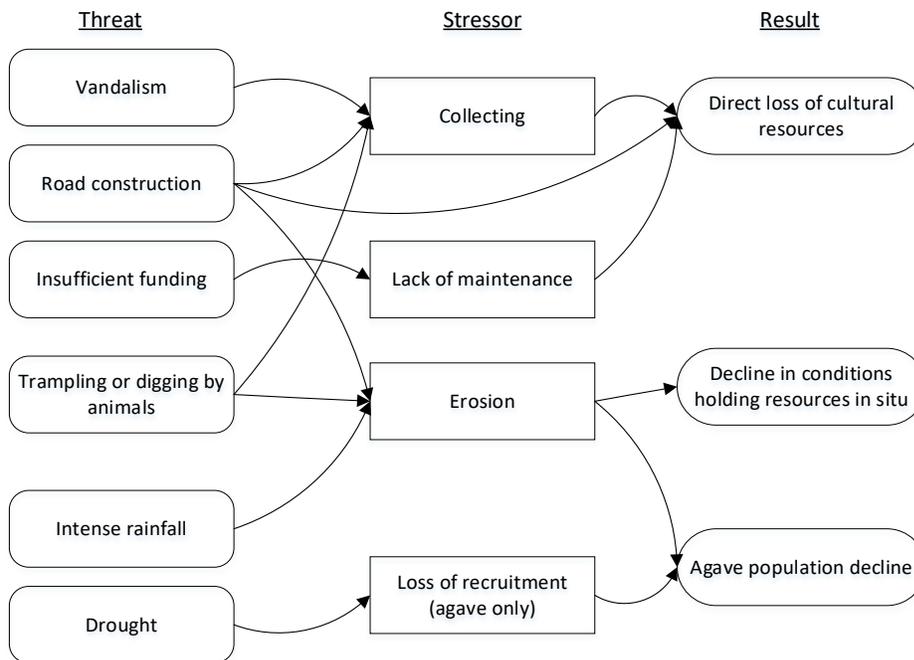


Figure 2.5. Situation analysis for cultural resources (Mormon homestead, agave and archaeological sites).

2.3 Plans for Adjacent Properties

As indicated by the situation analyses for the Targets (Figs. 2.1-2.5), most of the threats and stressors originated outside the Planning Area, but can affect its resources and management. Because of the interconnected nature of the Planning Area and adjacent and nearby lands, the team investigated plans (or land owner intentions) on some of these nearby properties and how actions there might affect the Planning Area:

- M Diamond Ranch. Because this property is managed by Pima County and contains most of the upland and tributary watersheds that debouch from the Catalina Mountains to the San Pedro River across the Planning Area, the team felt it has an important role in the Bingham Management Plan. Several of the Targets' objectives relate to management of the M Diamond. This property will eventually be grazed under a Range Management Agreement and is intended to be used for MSCP mitigation. Most of the fee lands are already restricted with covenants.
- Kelly Life Estate. When the Kellys sold their 19-acre residential inholding to the District, they retained a Life Estate on the property³. In the meantime, the Team decided to address only two general future scenarios in the management plan: (1) a tenant ranch employee related to the potential M Diamond ranch lease, or (2) a non-ranch caretaker.
- Archaeology Southwest Property. This undeveloped tract of land lies west of Bingham on terraces overlooking the San Pedro River. The owners do not have a management plan or known Conservation Easement for this property, but do not plan any development.
- Buehman Canyon Preserve. Buehman Canyon is adjacent and upstream of Bingham. The portions owned by the District are managed for long-term conservation under restrictive covenants and an instream flow water right. There is the potential for mining of the Korn Kob claim in the headwaters of Buehman Canyon. Recreation use is light.
- Furrow Bosque. Located just south of Bingham, this property will continue to be managed for conservation of the mesquite bosque by TNC.
- A7 Farm. The farm portion of A7 Ranch is south of Bingham and is owned by Pima County and leased to the Smallhouse family to be managed as a working farm in order to reduce grazing pressure on the upland areas of A7 Ranch. Groundwater is pumped to maintain irrigated pastures and water sources on the uplands. There are a number of buildings there that could be demolished or refurbished in future years. There is a Conservation Easement on the farm held by TNC. No restrictive covenants apply to these parcels.
- Bayless and Berkalew. Properties associated with this ranch and farm lie east, north and south of the Planning Area along the San Pedro River bottomlands where the

³ The parcel is owned in fee by the District, but the Kellys retain full rights to occupy and manage the property until the death of the last surviving spouse. At the time this plan was finalized, the Life Estate is currently in force.

Smallhouse family runs cattle and other livestock. Groundwater is pumped to maintain irrigated pastures on the family’s fee-owned land now that the San Pedro River no longer runs reliably at the historic ditch they operated. Though currently ranched and farmed, there is still potential for residential or other development on these properties. Future plans are unknown, but the family has a long history of agricultural enterprise.

- Miscellaneous Private Lots. There are a number of privately owned lots ranging from 10-40 acres located north and west of Bingham. Many are vacant, but some contain owner-occupied rural residences with some family livestock. Many of the properties are located in settings similar to Bingham Cienega, where fire risks are a concern. Some lots are vulnerable to flooding and erosion. During the term of this plan, the District acquired one such parcel in the San Pedro River floodplain. One upland lot just west of Bingham Cienega is on the market. Plans for these properties are unknown, but further lot splitting is expected to continue.

2.4 Foundation for Future Decision-Making

This management plan is intended to guide future decision-making in the Planning Area. The management for each resource area is separated into “recommended actions” that are within Pima County’s purview, and “management opportunities” that involve collaboration with others, usually for a common purpose that extends beyond the Planning Area. Both the actions and the opportunities are contingent on the availability of financial and staffing resources for Bingham, which must be balanced with other properties in the MSCP portfolio.

Fundamental uncertainties about the continued effects of climate change have required us to prioritize some resources over others. This 400+-acre Planning Area is part of a much larger dynamic system where the condition and/or extent of targets is influenced from forces acting at multiple scales. In fact, maintaining ecosystem structure and function—which are overarching goals of the SDCP—will not be possible without considering a broader geographic area of influence. As a result, Pima County intends to use the final list of planned actions and opportunities identified in this plan to guide future management within tributary watersheds that lie within Pima County management, particularly at M Diamond Ranch.

Most of the Planning Area was designated as Important Riparian Areas according to the County’s Conservation Land System (Pima County 2000a). The MSCP incorporated the following management principles and priorities for riparian and aquatic resources:

1. “Protect systems that are self-sustaining over those that need continual inputs;
2. Restore or enhance native riparian and aquatic ecosystems by releasing water to restore local aquifer conditions;
3. Sites which augment existing high-quality riparian areas are favored;
4. Enhance the ability of secondary effluent or reclaimed water to support aquatic life;
5. Manage riparian and aquatic ecosystems for native species; and
6. If plantings are to be used:
 - a. Revegetation is favored in areas where perpetual irrigation will not be needed;

- b. Conflicts with other public health and safety objectives (e.g., fire, flood, crime, aircraft safety, and disease) should be minimized before proceeding with these projects; and
- c. Native species appropriate to the site must be used.”

This management plan complies with these guidelines by emphasizing the maintenance and monitoring of system processes rather than artificially restoring past conditions, such as increasing groundwater pumping⁴ to sustain riparian forests.

An aquatic species management plan is another required element of the MSCP and is currently under development. The aquatic species plan prioritizes an array of covered aquatic species for establishment at sites within Pima County management. Section 4.3 of the Bingham Management Plan addresses the four covered species identified for Bingham, and coordinates those species’ opportunities for establishment with the site’s overall management. It is currently not possible to manage the pond within the Planning Area (located within the boundary of the Life Estate) for the benefit of native species until the Life Estate ends and a decision is made regarding the future caretaker. Pima County is weighing management scenarios in the plan that are consistent with obligations under the Aquatic Species Management Plan.

⁴ It is currently not possible to manage the pond within the Planning Area (located within the boundary of the life estate) for the benefit of native species, the County is weighing management scenarios in this plan that are consistent with obligations under the aquatic species management plan. That plan is another required element of the MSCP and is currently under development.

3 Rights and Constraints

There are a number of existing property rights, uses and other considerations affecting uses, which may occur within the Planning Area. This chapter describes the impact of these rights and constraints on future management opportunities.

3.1 Inholding Activities and Irrigation Agreement

Activities that take place within the 19-acre inholding (see Fig. 1.2) are private residential uses and are not under Pima County's management or guided by this plan. The inholding contains a residential structure, storage buildings, abandoned corrals, access routes and private fences and gates, a family garden, two small agricultural fields, an orchard, pond, and irrigation system. The inholding irrigation system includes two wells, pumps, aboveground and underground pipe, pond, and canals. The terms of the 2012 Life Estate make the life tenants responsible for maintenance of the inholding including insurance, utilities and taxes.

In 1989, an easement was granted by Jack and Lois Kelly to allow the District the use of the irrigation system to aid in restoration and management of the Preserve⁵. The agreement stipulated conditions of use, payment of electrical charges, and how to share the cost of system repair or replacement. The District recently paid to install a water supply standpipe on the piping of the shared well for fire safety preparedness. The shared Irrigation System Operation Easement Agreement will be honored for fire response use as well. The inholding also has an easement reserved for vehicular and livestock access that is 30-foot wide across the District's property.

3.2 Utility Easements

All deeds with easement language are on file with Pima County Real Property Services and Assessor's offices. There is a known 250' wide APS utility easement crossing the center of the Planning Area. In 2011, Arizona Public Service (APS) exercised their right of access to their power line easement and subsequently cleared their utility corridor through the Preserve. Since that time, that utility corridor has been regularly maintained—with permission from APS—by Pima County to reduce fire risk on the Preserve. There are no local sewer or water services, Communications easements lie along the San Pedro River road right of way, outside of private property.

3.3 Restrictive Covenants

Pima County has employed restrictive covenants to help ensure the underlying values of lands under Pima County's ownership are not impaired by future land managers or the Pima County Board. Restrictive covenants are also used to meet requirements of the MSCP regarding legal protection of any lands allocated as mitigation under the Section 10 permit. Restrictive covenants already constrain the potential future land uses on much of the Planning Area (Fig. 3.1, Appendix A). Pima County may choose to place restrictive covenants on the recent acquisition of the Durango Land and Cattle Company parcel in the future.

⁵ For example, it was thought that the recolonization of mesquite trees in the abandoned agricultural fields might be hastened by irrigating.

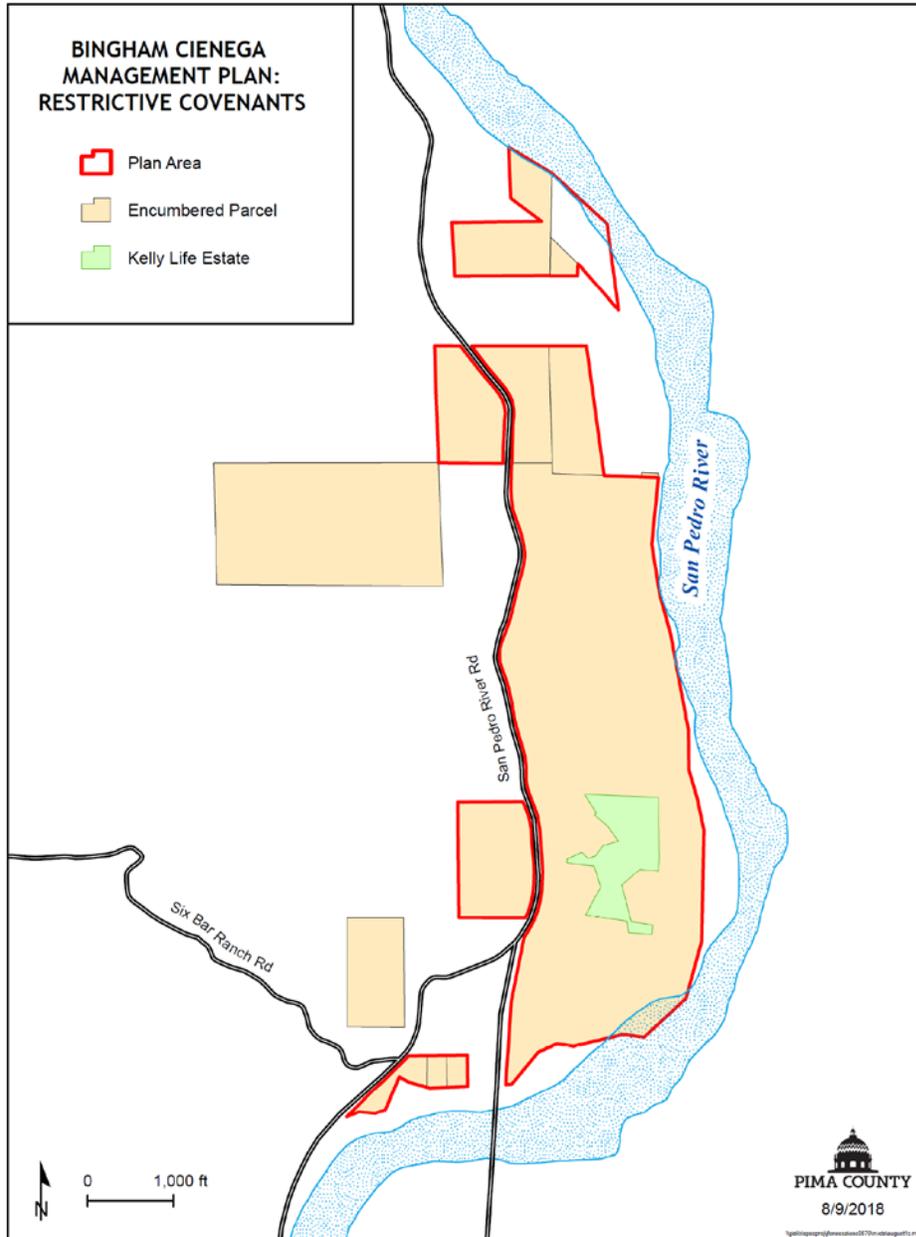


Figure 3.1. Restrictive covenants encumber most of the Planning Area, with exception of the Life Estate, where TNC holds a Conservation Easement, and a newly acquired Durango parcel at the north end.

The restrictive covenants constrain water use, removal of vegetation or minerals, subdivision and lot splitting and many other activities (Appendix A), thus providing a number of sideboards for future management of the properties. Another important function of the restrictive covenants is to require a continuing exchange of information among various parties to the agreement. Table 2 below shows the various roles of agencies in implementing the covenants. The restrictive covenants require a finding by the Pima County Board for any

health and safety exceptions not already covered in the covenants. The restrictive covenants require biennial inspection reports to Arizona Land and Water Trust.

Table 3.1. Roles and responsibilities for the restrictive covenants within the Planning Area.

Role	Name of Party	Duty	Frequency
Landowner	County (NRPR) or District	Inspect and report	Biennially, at a minimum
		Violation identification and reporting	As needed, but within 2 days of identifying
		Determine when Board action may be necessary for exceptions	As needed
Holder of Covenant	District or County	Review potential violation reports	As needed
		Review biennial inspection reports	As delivered
		Enforcing covenant	As needed
		Grant permission for release or alteration of covenants	As needed
Beneficiary	Arizona Land and Water Trust	Review biennial inspections	Biennially, at a minimum
		Decide when to enforce	At their discretion
Section 10 Regulator	USFWS	Grant permission for release or alteration of MSCP covenants	As needed
Funder	Office of Sustainability, District	Provide funding to ALWT, Oversee contract for payment	Over the next five years
Processor	Sustainability, District, NRPR, Real Property	Identify new properties to encumber, get Board approval	As needed
Recording	Real Property	Record documents with Assessor	After approval
	Office of Sustainability, IT, Department of Transportation	Update GIS layers and Pima County Government Property Rights	After approval

3.4 TNC Conservation Easement

As noted earlier, Jack and Lois Kelly retained a 19-acre inholding and conveyed a Conservation Easement (herein easement) to TNC (Appendix B), which is perpetual and restricts uses that may be incompatible with management of the adjacent Preserve. The later establishment of the Life Estate did not affect the easement.

The easement provides for residential and other uses that were deemed consistent with the conservation purposes of the adjoining land (i.e., the Preserve). Some of the rights granted to TNC as easement holder include monitoring for compliance with terms of the easement and ability to enter the property immediately, if necessary, to prevent damage to the conservation values protected by the Conservation Easement. Entry for monitoring is based on prior notice to the Kellys (Grantor) with an effort not to interfere with their use of the property. TNC currently monitors land uses in the inholding and provides an Annual Conservation Easement Report to the District.

When the Life Estate ends, the District will be the Conservation Easement Grantor. Therefore, the District will need to ensure that future occupants of the land covered under the Conservation Easement be knowledgeable of easement terms and be held accountable

through separate agreements. TNC will continue to retain the right to monitor and enforce Conservation Easement terms (Appendix B).

3.5 District and Pima County Relationships

The District owns the Preserve and NRPR manages the property including performing routine maintenance and implementation of special projects. NRPR activities at Bingham and other District properties is based on a Memorandum of Understanding (MOU) that was executed on June 23, 2016; it covered management for select portions including Bingham Cienega. Each site (or group of sites) in the MOU has assigned annual budgets, and there is an accounting of fund expenditures for land management activities. In accordance with the management agreement between the District and NRPR, field personnel at Bingham have the following responsibilities:

- **Quarterly reporting:** Photo monitoring, well monitoring (depth to water in two wells), and precipitation. NRPR staff provide reports including descriptions of any work that has been done on the preserve. Staff also report ecological data pertinent to the management of the preserve.
- **Annual (fiscal year) reporting:** Compile quarterly reporting data, update relevant maps, and summarize management activities.
- **Coordination of surveys and monitoring:** Coordinate with—and occasionally accompany—Pima County staff and outside organizations on biological, ecological and cultural resource surveys.
- **Fire prevention:** Fire lane maintenance including removing deadfall, mowing fire lanes, selective pruning, and coordinating with stakeholders on fire response preparedness.
- **Invasive species:** Monitor invasive plant and animal species and, if possible, work on solutions to eliminate or minimize impact on the preserve.
- **Fence maintenance:** Maintain interior and exterior fences.
- **Project management and supervision:** Facilitate and implement projects on the preserve, including contracting projects, overseeing and supervising crews to complete the work.
- **Security:** Provide security to the preserve and inholding residence by signage, locked gates, and keeping track of human activity on the Preserve. Assure that all visitors are familiar and compliant with entrance and egress rules.
- **Inholding residents:** Maintain a working relationship with the Kellys. Communicate with them regarding when personnel will be on the preserve and provide them with up-to-date information of any concerns such as fire hazards or trespassers on the Preserve. Allow them to voice their concerns and relay back to the District.
- **Neighboring properties communication:** Maintain an open line of communication with neighboring property owners.

3.6 Park Designation and Park Rules

The Pima County Board and the Board of Directors of the District adopted and approved Pima County and District lands including the Preserve, as Pima County parks in 2016⁶. Bingham's designation as a county park brought the property under current Pima County Parks Rules⁷. The sections of the Parks Rules that are most relevant to the Planning Area and Targets including: Vehicles must remain on designated roads; restrict collection of vegetation, wildlife, and rocks/minerals; affirm keeping all environmental settings in a natural state; and prohibit discharge of firearms, building fires, and domestic animals roaming at large. The Parks Rules are subject to change, and are currently undergoing review and revision.

3.7 M Diamond Ranch

Pima County owns fee land and holds ASLD grazing leases that compose the M Diamond, Six-Bar and A7 Ranches immediately outside of the Planning Area. Pima County staff monitor rangeland resources per Coordinated Resource Management Plans, Pima County Range Management Standards and Guidelines (Pima County 2010) and MSCP requirements. The M Diamond Ranch, specifically, is composed of 7,800 acres of ASLD leased land and 624 acres of Pima County owned fee land. Approximately 47 acres of the M Diamond Ranch fee lands are within the Planning Area.

The M Diamond is not currently operating under a Ranch Management Agreement. Former ranch owners Jack and Lois Kelly removed their livestock from the M Diamond Ranch and grazing lease in 2013 after selling the ranch to the District and Pima County. Historically, the Planning Area provided the ranch residence, headquarters with working facilities, wells, water and grazing land for the M Diamond Ranch. Because most of the M Diamond Ranch is composed of upland rangeland leased from the ASLD, the accompanying properties in the Planning Area with access to a residence, irrigation water and working corrals made raising livestock and crops much more feasible. Because water and fence infrastructure are very limited on the grazing lease, Pima County opted not to lease the ranch out immediately upon acquisition, but opted to let the land rest for a few years. That situation is likely to change in the next few years.

3.8 North San Pedro River Road

The North San Pedro River Road (also referred to as the North Cascabel Road or Redington Road on some maps), which runs from Pomerene to near San Manuel, is a dirt road that runs along the western boundary of the Planning Area. The segment of road at the Planning Area

⁶ Per joint Resolution No. 2016-65 / Resolution No. 2016-FC as allowed by A.R.S. Section 11-932. The Park Rules designation provides an additional layer of land management authority for the County and District to manage day-to-day activities on these properties. The current listing of parks and park boundaries are located on the NRPR website: www.pima.gov/nrpr.

⁷ Adopted by the Pima County Parks and Recreation Commission as the Code of Rules and Regulations for Pima County parks and recreation areas pursuant to A.R.S. 11-935(B)(2) and 11-936.

is maintained by Pima County as a dirt road within a 100-foot right-of-way. Pima County pays Cochise County approximately \$10,000 per year to maintain this unpaved road. An Intergovernmental Agreement (IGA) approved by the two Boards of Supervisors in June 2017 extended Cochise County's maintenance IGA through 2027. Pinal County paved their portion of the road in early 2017 and Cochise has steadily made upgrades to their portion. Pima County has no plans to upgrade road conditions (David Cummings, *personal communication* to Brian Powell, January 2018).

The existing roadbed is vulnerable to erosion from flooding and it is conceivable that there are a number of places where the roadbed may need to be modified or reconstructed to better convey water. If future realignments of the road are undertaken by Pima County, and the modifications or repairs encroach further into parts of the Planning Area that has restrictive covenants, the Pima County Board would need to certify that such alignment achieves public safety purposes based on "clear and convincing evidence."

In addition to the present roadway, a separate right-of-way runs parallel to the current road, but is higher on the mesa. This right-of-way remains undisturbed desert scrub. In 1988, the state of Arizona abandoned the right-of-way and dedicated it to Pima County because the proposed Benson-Mammoth highway was never constructed. The right-of-way is a total of 200 feet wide, and runs parallel to and separate from the existing road in the Planning Area. The portions that lie within the Planning Area are encumbered by restrictive covenants, which means that the right-of-way within the Planning Area could not be used without a decision that it is needed for public health and safety based on "clear and convincing evidence" presented to the Pima County.

4 Natural Resources Targets: From Threats to Potential Actions

Effective natural resources planning requires identification of management actions that directly address or improve the resources or issues of interest. Chapter 2 of this plan provides an overview of the framework used to identify Targets for the Planning Area. This chapter articulates eight key features of each target:

Target Scope

- This is the area where the Target is best expressed or where Pima County management actions may be most effective. For some Targets, the scope is larger than the Planning Area.

Justification

- Why the Target was chosen including its ecological role or special status.

Management Goal

- What is hoped to be achieved by way of improving the Target. Note: This is different from management objectives, which focus on *how* an outcome can be achieved.

Objectives

- How a conservation outcome can be achieved. In the context of this management framework, objectives can be broader than the host of management actions specific to Pima County's purview at Bingham. These broad objectives are meant to both provide context to the actions that Pima County can implement as well as a reminder that improvement of Targets often requires coordination with other entities. For some Targets, objectives for monitoring and management are separated.

Threats

- Human-caused disturbances to the Targets. Common threats include development, groundwater pumping, and habitat fragmentation.

Stressors

- Attributes of a Target that are impaired directly or indirectly by threats.

Recommended Actions

- These are actions that Pima County will—as resources permit—attempt to achieve during the term of the plan, and which are not contingent on the cooperation of agencies or individuals outside Pima County government

Management Opportunities

- These are actions, which are contingent on cooperation of agencies or individuals outside Pima County government.

4.1 Wildlife Habitat Connectivity

Target Scope

- Lower San Pedro River Valley, but focused on a buffer around the Planning Area.

Justification

- Wildlife habitat connectivity is a key conservation Target for Pima County and fragmentation of natural areas near to the Planning Area could impact this Target.

Management Goal

- Maximize wildlife habitat connectivity to and through the Planning Area (Fig. 4.1).

Management Objective

- Preserve and enhance sustainable ecosystem functions within the Preserve and connectivity to surrounding open space for endemic local wildlife.

Monitoring Objective

- Monitor activities that conflict with the restrictive covenants.

Threats

- Subdivision and development (including road building, and utility lines or other infrastructure);
- Groundwater pumping; and
- Fencing.

Stressors

- Lower and rapidly fluctuating groundwater levels;
- Loss of wildlife habitat and movement corridors; and
- Changes in hydrology.

Recommended Action

- Complete inventory of fencing in and around the Planning Area, including new acquisitions;
- Remove or modify hindrances to wildlife movement in the Planning Area:
 - Ensure correct fencing wire spacing and type (i.e., smooth wire on top and bottom) to meet wildlife-friendly fence standards;
 - Remove unneeded fencing to improve permeability for wildlife movement.
- Maintain diversity of sustainable vegetation cover types including open woodland and bosque, to provide migratory bird stopover habitat (see vegetation objectives and actions); and
- Maintain wildlife access to one or more ephemeral or perennial ponds.

Management Opportunities

- Work with adjacent large land owners to explore Conservation Easements;
- Stay engaged with the conservation entities in the area (e.g., Cascabel Conservation Association, NRCO, TNC, etc.) through continued Pima County participation in the Lower San Pedro Collaborative Group;
- Oppose efforts to pave the Redington Road;
- If San Pedro River Road. is proposed to be modified, comment on proposals, solicit avoidance, minimize and mitigate impacts in the Planning Area, and monitor effects, per the MSCP; and
- Consider purchasing additional land with high-value cuckoo habitat along the San Pedro River if it can improve durability of connectivity through the existing properties.

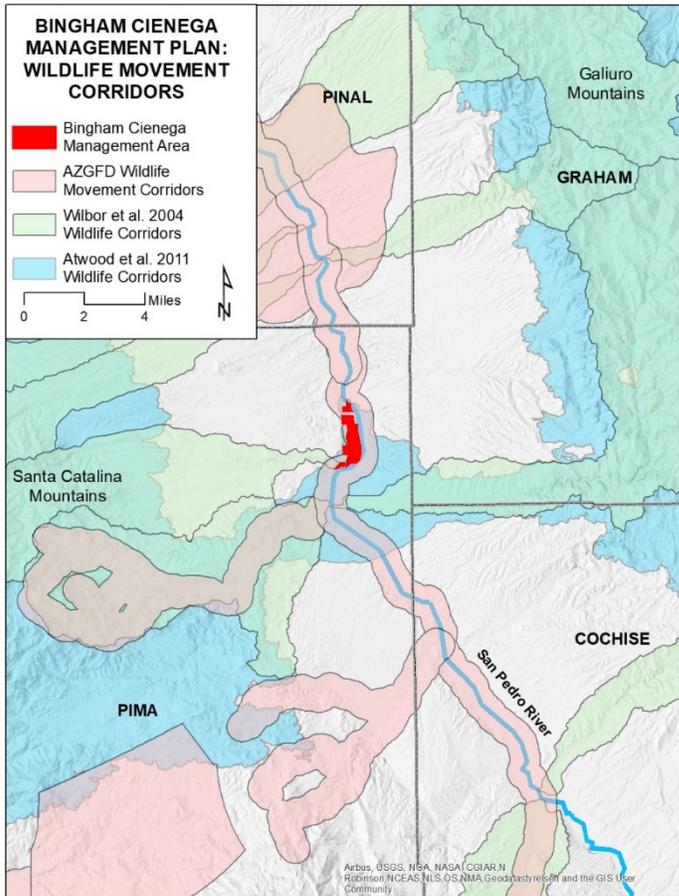


Figure 4.1 Wildlife movement corridors in the San Pedro Valley (Atwood et al. 2011; Wilbor 2014).

4.2 Mesquite Bosque and Other Priority Plant Communities

Target Scope

- Planning Area.

Justification

- Mature and/or dense mesquite dominated woodlands, broadleaf riparian forests, remnant wetland areas, and certain nesting trees provide critical habitat for a variety of MSCP covered species. For this plan, connectivity for the yellow-billed cuckoo was used to prioritize areas of mesquite for conservation. Other areas support buttonbush, a rare wetland plant, and yerba mansa, an uncommon riparian obligate (Figure 4.2). The buttonbush population contains some of the largest observed individuals known in the region. These priority areas provide both important habitat resources and connectivity for many species of wildlife in Bingham Cienega.

Goal

- Maintain native plant communities appropriate to the site’s hydrological conditions. Promote management actions around priority plant communities in light of site protection concerns.

Threats

- Groundwater pumping;
- Climate change; and
- Development and habitat fragmentation.

Stressors

- Lower and rapidly changing groundwater levels;
- Wildland fire; and
- Fire management activities (brush clearing, tree removal);
- Invasive species.

Management Objectives

- Maintain priority areas of mesquite bosque (Fig. 4.2);
- Maintain and support buttonbush and yerba mansa population at the Bingham Cienega wetland (Fig. 4.2);
- Minimize impacts to nesting birdlife by maintaining trees including snags, as defined through mapping; and
- Maintain priority isolated broadleaf riparian and cienega patches.

Monitoring Objectives

- Monitor acres of live mesquite and dead mesquite-dominated areas;
- Monitor change in gallery riparian trees: spatial extent, structure, and condition;
- Monitor extent of yerba mansa populations; and
- Monitor extent of buttonbush at the cienega.

Recommended Actions

- Authorize research as it relates to a potential technique for improving bosque condition, history, or management (ongoing);
- Complete the baseline vegetation community extent and condition (ongoing);
- Describe condition/viability of mesquite-dominated areas (ongoing);
- Complete the plant list for the Planning Area (ongoing);
- Analyze imagery for change in vegetation (planned);
- Conduct field inventory of nesting trees (ongoing);
- Map any isolated riparian species sites or patches (ongoing); and
- Incorporate nest-avoidance measures into existing fire management activities (see fire).

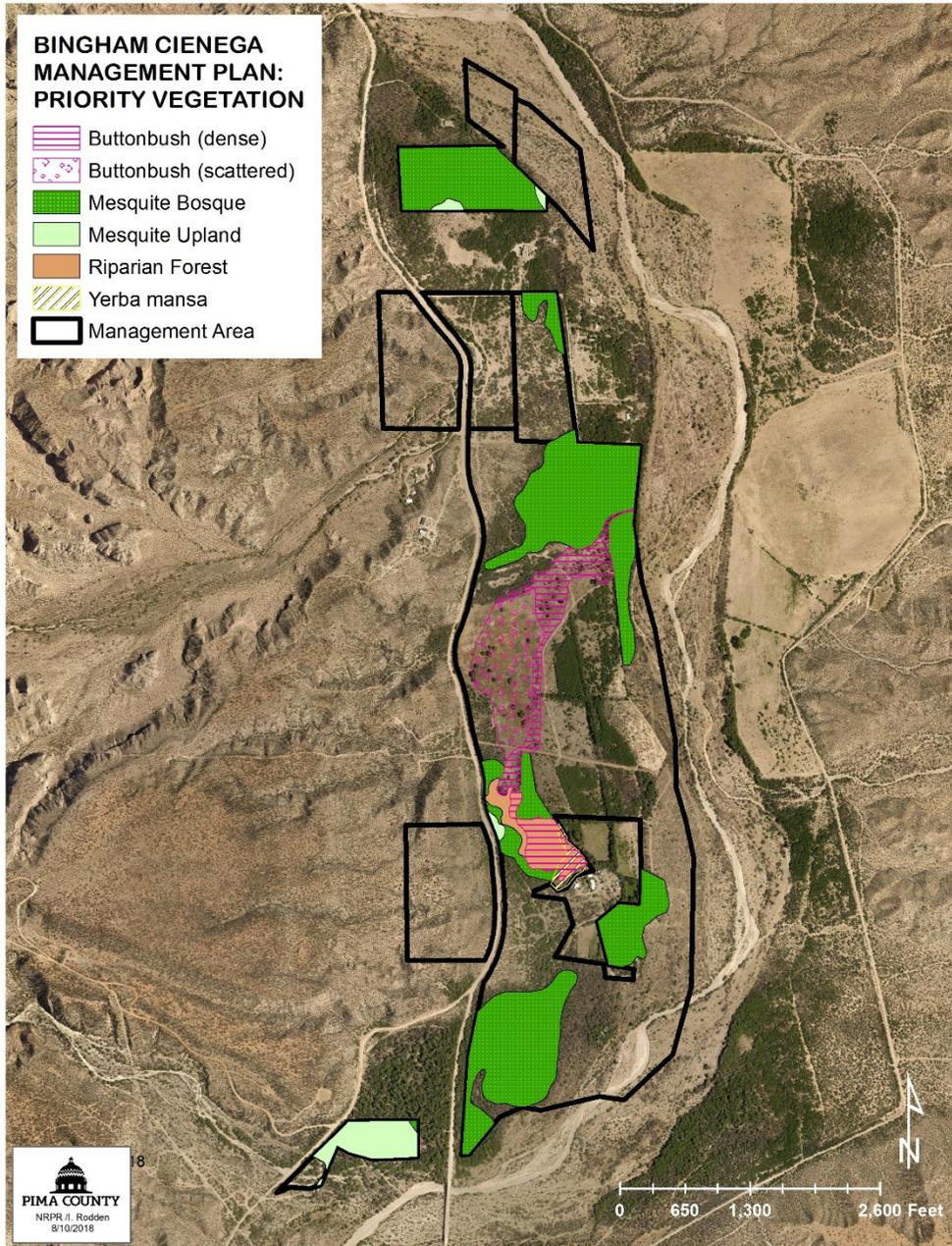


Figure 4.2. Priority vegetative areas for conservation.

4.3 Native Aquatic Species

Target Scope

- Suitable habitat in the Planning Area.

Justification

- Aquatic species are an important element in the MSCP and the Planning Area provides opportunities to create breeding habitat for select species.

Goal

- Maintain or improve habitat in the Planning Area for four MSCP covered species: Huachuca water umbel, lowland leopard frog, Mexican garter snake, and Gila topminnow (target species).

Management Objective

- Provide perennial aquatic habitat for the four species at locations to be determined in the future. Opportunities for the garter snake are dependent upon first having a robust lowland leopard frog population;
- Leave downed woody debris in locations close to standing water to provide habitat for the Mexican garter snake, where such actions do not appreciably increase fire risk; and
- Reduce non-native species threats to lowland leopard frogs and other target species.

Monitoring Objective

- Monitor water quality and quantity and presence of non-native aquatic species to ensure it's appropriate for the target species;
- Evaluate the pond for size, capacity and water retention.

Threats

- The privately managed artificially sustained pond could be breached, washed out, or abandoned. The pond is not yet Pima County-managed because of the Life Estate status;
- Bullfrogs and other non-native species (e.g., bass) using the existing open waters.

Stressors

- Continued groundwater decline, prohibiting access to groundwater needed to fill the pond.

Recommended Actions

- Re-evaluate pond use after Life Estate is served;
- Investigate feasibility and desirability of maintaining an additional or alternate pond, perhaps near the springhead, near the yerba mansa, or other sites where water could be maintained;
- Consider how pumping at onsite wells and water spreading at orchard impacts aquatic species Targets;
- Evaluate habitat needs for Huachuca water umbel at the pond and former springhead. If conditions for reintroduction are present, work with the USFWS;
- Manage non-native species that impact lowland leopard frog and other target species; and

- Consider native aquatic species habitat needs and introduce native aquatic species as permissions, needs, and resources permit.

4.4 Shallow Groundwater and Surface Water Discharge in the Planning Area

Target Scope

- The shallow groundwater system of the lower San Pedro River in and around the Planning Area, as distinct from the tributary watersheds coming from the Catalina Mountains.

Justification

- Recharge and pumping along the San Pedro affect groundwater levels at Bingham, which in turn drive aquatic and riparian features and functions. The shallow groundwater system could again support base flows in the river and at the Bingham Cienega wetland.

Goal

- Help create conditions for restoration of shallow groundwater levels in and around the former wetland, and for an increased extent of moist soil in the Bingham Cienega wetland.

Management Objectives

- Where possible, increase the extent or duration of moist soil conditions at the Bingham Cienega wetland over baseline; and
- Minimize stressors that Pima County has control over as in minimize groundwater pumping where such pumping is not needed to maintain the Targets.

Monitoring Objectives

- Monitor changes in groundwater levels near the former wetland that could signal change in vegetation communities;
- Monitor the extent and location of moist soil and surface extent onsite during the winter when evapotranspiration is lowest;
- Quantify seasonal, onsite water uses (after end of Life Estate);
- Monitor or record irrigation practices at the orchard. Attempt to understand if irrigation at the orchard contributes or detracts from moist soil conditions at the springhead; and
- Periodically re-evaluate natural recharge trends on San Pedro River based on Redington gage records in relation to moist soil and surface water extent, if any.

Threats

- Groundwater pumping;
- Impairment of recharge functions along the San Pedro River due to fine sediment and ash; and
- Road construction cutting off tributary flow.

Stressors

- Declining and low groundwater table;
- Historic incision, caused reduction of frequent overbank flows;

- Inappropriate sediment balance;
- Increased water demands due to warm temperatures, longer growing season (climate); and
- Decreased precipitation in upstream riverine and mountainous watersheds.

Recommended Actions

- Better understand role of nearby groundwater pumping in the San Pedro River in affecting on-site shallow groundwater levels; and
- Continue monitoring to determine if shallow groundwater trends are reversed.

Management Opportunities

- Purchase and retire water rights or reduce pumping in collaboration with others;
- Evaluate the potential for water-spreading in the San Pedro River to enhance recharge, in cooperation with others;
- Install water meters on existing wells.

4.5 Tributary Streamflow and Recharge from Outside the Planning Area

Target Scope

- Contributing secondary watersheds (Edgar, those along Six-Bar Ranch Road, Buehman, A7 Ranch [Fig. 4.3]) outside the Planning Area that are managed by Pima County.

Justification

- Tributaries have been shown through isotope analyses to contribute a large percentage of surface water and subflow to groundwater levels at Bingham.

Goal

- Protect tributaries known to contribute groundwater recharge to Bingham Cienega (Buehman, Edgar, Soza, Youtcy and Espiritu in A7 Ranch).

Management Objectives

- Provide the optimal conditions for shallow groundwater recharge in the Planning Area by employing sound management in the contributing watersheds including protection of tributaries; and
- Minimize impacts of any future road activities on tributary on-flows to the Planning Area.

Monitoring Objectives

- Monitor miles of streamflow (June in Edgar, Youtcy, Buehman), and rainfall; and
- Depth to groundwater levels at key wells in the Planning Area: Edgar, Youtcy, and Buehman watersheds.

Threats

- Catastrophic wildfires followed by floods (scour, sedimentation, ash);
- Climate change (high temperatures, lower precipitation, particularly winter with loss of snowpack);
- Excessive grazing removing watershed cover and increasing erosion;
- Loss of funding from the Coronado National Forest for restoration and management activities in upper tributary watersheds; and
- Excessive groundwater use;

- Mining.

Stressors

- Drought;
- Lower infiltration rates due to fine sediment moving into tributaries, impeding recharge; and
- Increased fine sediment or reduced water supply due to road repairs or reconstruction.

Recommended Actions

- Identify the potential to improve water infiltration and inflow to the former Bingham Cienega wetlands in the small watersheds along the Six Bar Ranch Road that flow across San Pedro River Road and Edgar Canyon watershed (Fig. 4.3);
- Identify in-channel treatments in tributaries to Bingham Cienega to slow flows and promote infiltration;
- Consider measures to minimize loss of soil on highly erodible portions of M Diamond and other Pima County-managed ranch lands in grazing management planning; and
- Consider installing flow- or soil-moisture sensors in key tributaries under Pima County management, with objectives to measure progress.

Management Opportunities

- Communicate with Coronado National Forest regarding land management planning and actions (e.g., firescape, prescribed fire) in upper tributary watersheds designed to minimize catastrophic fires and improve watershed infiltration;
- Support management efforts in maintaining appropriate fire intervals in the respective tributary watersheds to reduce impacts from catastrophic flooding;
- Work with Cochise County Transportation Planning and their contractor to minimize impacts of road repairs along San Pedro River Road; and
- Consider acquiring land if this will protect important tributary water supplies for the Planning Area.

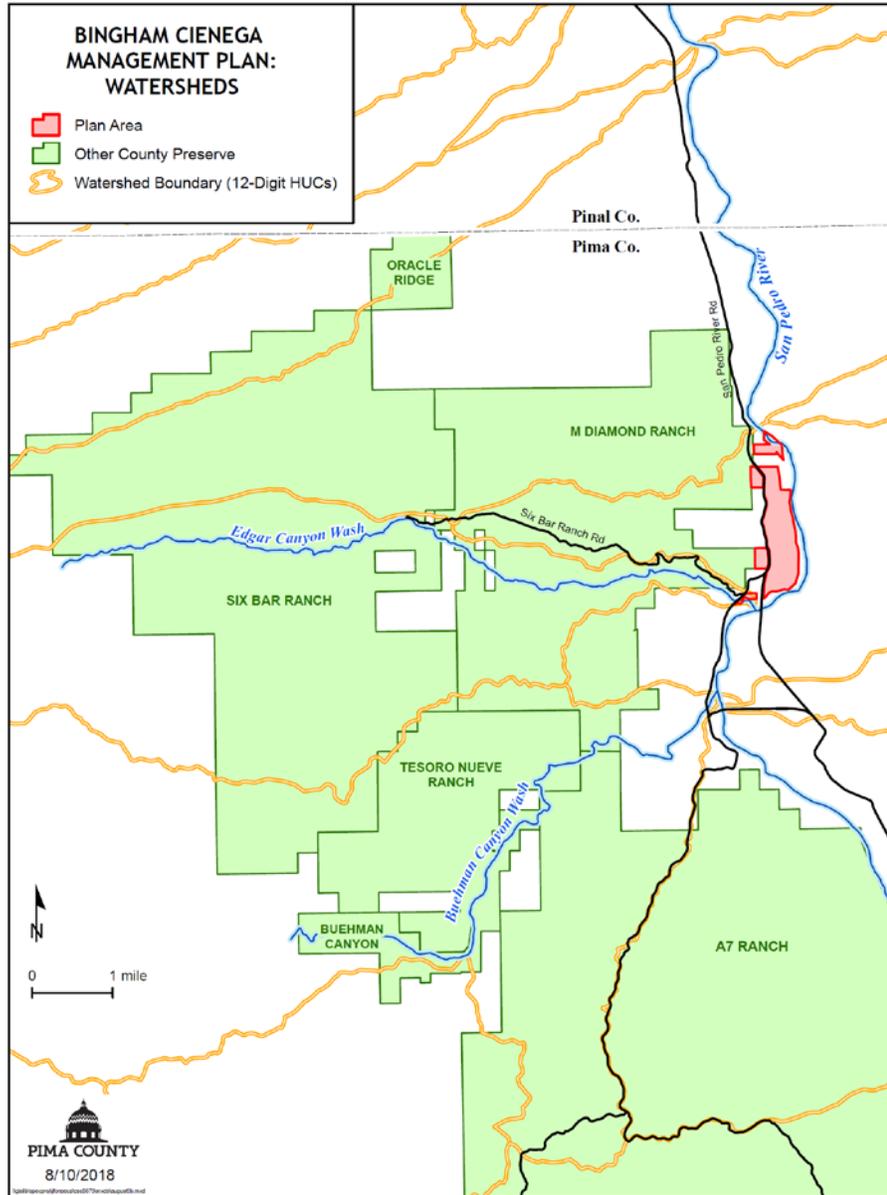


Figure 4.3. Tributary watersheds under Pima County management include small watersheds along the Six Bar Ranch Road that flow directly toward Bingham, as well as Edgar and Buehman canyons. On A7 Ranch, Espiritu, Youtcy and Soza canyons also contribute inflows to the San Pedro River upstream of the Planning Area.

5 Other Management Topics

5.1 Fire Management

Target Scope

- Planning Area.

Justification

- The current drought has created conditions that threaten public safety, residential infrastructure and key natural and cultural resources.

Goals

- Ensure public and caretaker safety;
- Protect historic structures; and
- Prevent catastrophic fire to maintain vegetation and cultural resources.

Threats

- Fires related to non-permitted use;
- Accidental fires originating from mechanical devices or other equipment operated by caretaker(s), managers, or permitted visitors;
- Lightning; and
- Electrical utility line breakage.

Stressors

- Drought, heat, wind; and
- Increasing fuel loads/deadfall vegetation.

Management Objectives

- Ensure conformance with TNC Conservation Easement terms for fire breaks on the residential inholding;
- Ensure conformance with the MSCP Restrictive Covenants regarding alteration of natural vegetation outside the Life Estate;
- Assure managers and caretakers prioritize fire awareness and preparation;
- Emphasize maintaining safety as well as site management objectives for habitat and connectivity; and
- Provide water source(s) for as-needed local fire fighting within and adjacent to the Planning Area.

Inventory/Monitoring Objectives

- Identify vegetation conditions that could lead to wildfires using periodic evaluation of vegetation conditions around buildings and along fire breaks (Figure 5.1).

Recommended Actions

- Determine how structures in the Life Estate will be integrated into public safety;
- Provide quarterly visual inspections and bi-annual vegetation assessments for fine and coarse fuels (ongoing);
- Periodic inspection of the inholding for storage of flammables and other safety practices (ongoing);
- Manage vegetation overgrowth within 50 feet of historic structures per TNC Conservation Easement (at fruition of Life Estate);

- Maintain existing fire breaks based on need, up to a 50-foot width in highest risk areas and more typically 12-foot to 25-foot width in lower within the risk areas, depending on site conditions and property limits (see orange lines on Fig. 5.1 and monitoring objectives above);
- Identify emergency access and/or evacuation routes and location of available water sources for suppression activities;
- Educate future caretakers on fire risk reduction and safety practices;
- Designate parking areas to minimize fire risks;
- Maintaining utility line by clearing woody limb grow-ins;
- As necessary, fuels treatment within existing fuel breaks (orange on map below), which could include targeted grazing to reduce fine fuel levels;
- Identify any new fuel breaks outside the Life Estate for approval by the Board; and
- Consult with qualified experts on fire management, as appropriate.

Management Opportunities

- Incorporate Bingham fire management strategies into multi-partner, landscape-level plan(s).

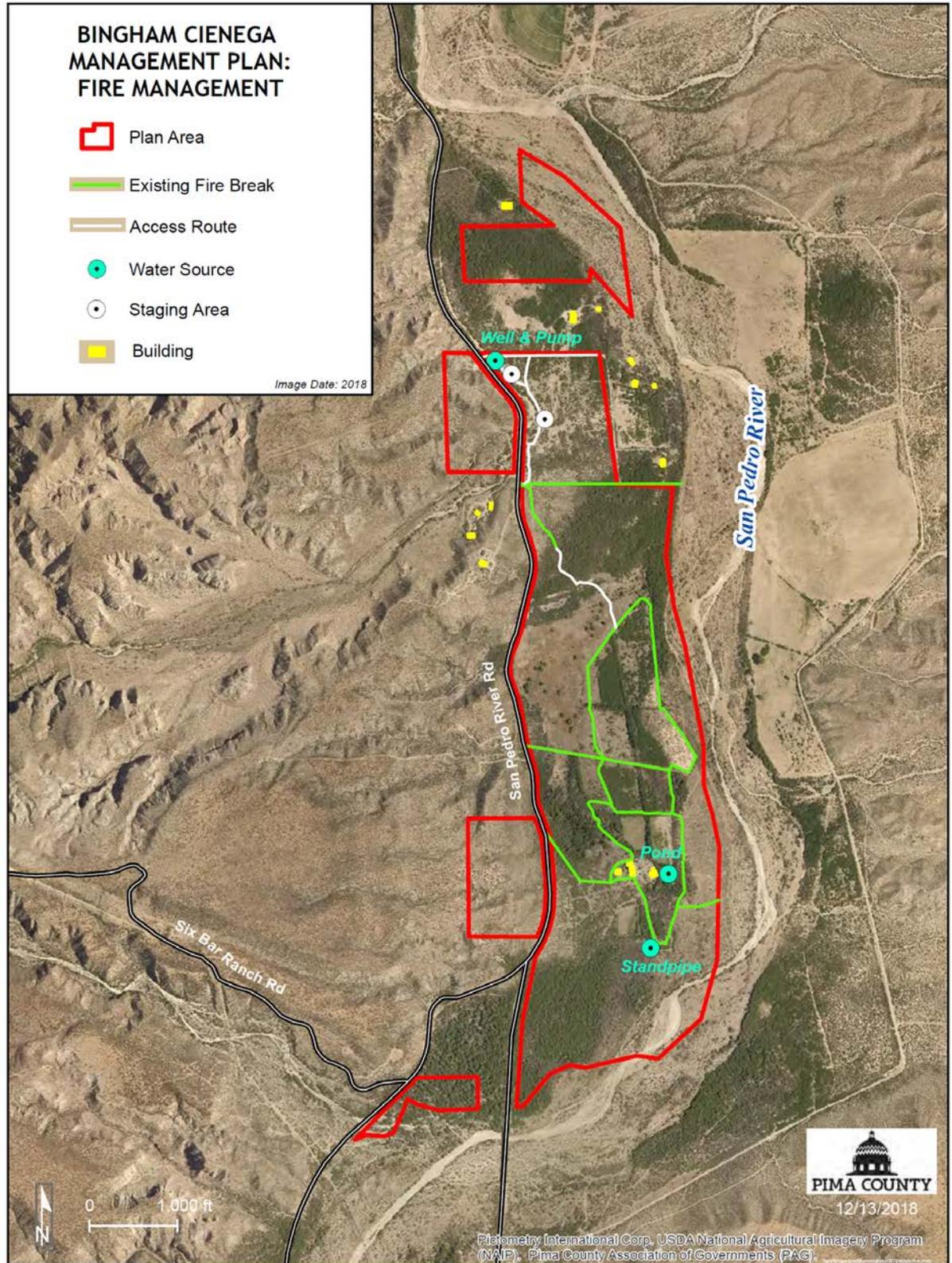


Figure 5.1. Fire infrastructure within the Planning Area

5.2 Site Protection

Target Scope

- Planning Area.

Justification

- Provide for protection of resources at this remote site.

Goals

- Ensure future uses are consistent with Conservation Easement or Restrictive Covenants, where applicable; and
- Provide for care of on-site resources and facilities by future caretakers or other Pima County agents

Threats

- Disturbance to covered species occupying the site;
- Vandalism, especially if there are periods of non-occupancy; and
- Woodcutting or other resource damage by unauthorized uses.

Management Objectives

- Ensure continuous occupancy of residence by persons with caretaking responsibilities;
- Discourage inappropriate use by caretakers and other authorized agents such as utilities, contractors, other Pima County departments, scientists;
- Ensure conformance with MSCP Restrictive Covenants regarding the prohibition against off-road vehicular travel outside the Life Estate, except to facilitate permitted activities; and
- Ensure conformance with MSCP Restrictive Covenants and TNC Conservation Easement regarding the granting of access, rights-of-way, or easements for new roads or new utilities, except where Pima County has no discretion to prohibit the activity.

Recommended Actions

- Identify expectations for caretaker responsibilities on the property and write those into the caretaker agreement; define scope of minimum and desired caretaker responsibilities with respect to site protection and conformance with the Conservation Easement;
- Maintain access control by gates, fences and informational signage;
- Repair wildlife-friendly fencing as needed (Fig. 5.2);
- Periodically inspect the gates, fences, and signage;
- Provide biennial inspection reports for parcels with Restrictive Covenants;
- Consider encumbering additional parcels located in the Planning Area with Restrictive Covenants; and
- Review proposals for new uses for consistency with Conservation Easement or Restrictive Covenants.

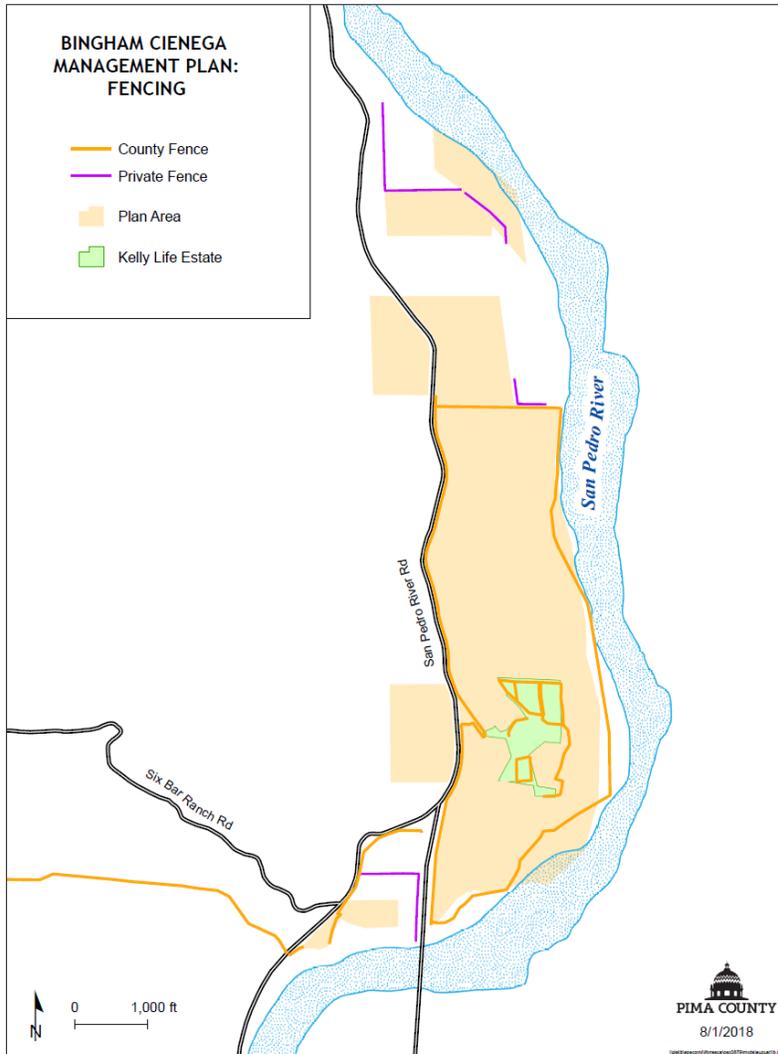


Figure 5.2. Fencing in the Planning Area.

5.3 Public Use

Target Scope

- Planning Area.

Justification

- Protect resources at this remote site and be prepared to respond to requests from the public demand to visit the site for passive recreation or tours.

Goals

- Ensure that any public use does not interfere with best land management practices, MSCP goals, habitat functions, and security;
- Ensure that any public use does not interfere with our agreements regarding the Life Estate or their right to privacy;
- Encourage public awareness of natural and cultural resources along the Middle San Pedro River; and
- Ensure public adherence to Park Rules.

Threats

- Disturbance to covered species occupying the site from unauthorized public use;
- Woodcutting, vandalism or other resource damage.

Management Objectives

- Discourage inappropriate use by public, vehicles, and livestock; and
- Ensure conformance with MSCP Restrictive Covenants and TNC Conservation Easement regarding public use.

Recommended Actions

- Do not open or facilitate access to the river bottom;
- Access to District land is by permit/written permission only;
- Access to Pima County parcels west of the San Pedro River on the mesa should not be encouraged due to resource sensitivity and lack of staffing;
- Provide users with information about use restrictions that may derive from park rules, Restrictive Covenants and/or the Conservation Easement;
- Identify public safety needs that related to public use; and
- Adhere to avoidance and minimization measures in MSCP Section 5.1.4.

Management Opportunities

- Periodically evaluate the opportunity and need to improve the safety of residents, staff and visitors from recreational firearms use.

5.4 Non-Native Species

Target Scope

- Planning Area.

Justification

- Non-native species can threaten the structure and function of biological communities within the Planning Area.

Key Threats

- Tumbleweed, Johnson grass, bur bristle grass, shrubby tamarisk, feral pigs, bullfrogs, and non-native fish.

Goals

- Manage or minimize the impacts of non-native species that threaten Targets;
- Integrate management of relevant non-native species into fire management; and
- Integrate management into the aquatic species plan in the case of bass, carp and sunfish.

Management Objectives:

- Periodically re-evaluate the threats and any apparent impacts of existing non-native plants and animals on the Targets.

Inventory/Monitoring Objectives

- Implement a non-native plant early detection protocol tied to routine site inspections; and
- Monitor for new non-native aquatic species.

Recommended Actions

- Control non-native plants that threaten the Targets, where feasible; and
- Manage non-native species that impact lowland leopard frog, native fish, and Mexican garter snake (after Life Estate is served).

Management Opportunities

- Cooperate with San Pedro landowners and with state and federal agencies on feral pig control.

5.5 Cultural Resources

Target Scope

- Planning Area.

Justification

- The cultural resources survey has verified the locations and provided updates on the conditions of five previously recorded archaeological and historic sites. This survey has identified six additional archaeological or historic sites on the property. In total, 11 archaeological and historic sites have been identified. In many cases, the current conditions of each site have been recorded and indicate changing conditions creating negative impacts to cultural resources on this property. These conditions include evidence of pothunting, modern land use, and erosion. Measures to protect these sites from further damage should be considered and implemented in the management of cultural resources. The protection of cultural resources can help perpetuate a sense of place and significance of land use through time.

Goals

- Maintain the integrity of historic, standing structures and other features (e.g., irrigation features, wells, corrals, windmill);
- Preserve archaeological sites and traditional places of significance;
- Preserve oral history (historical ranching families); and
- Preserve ethnographic knowledge (Tribal input) relevant to the Planning Area.

Management Objectives

- Preserve a sense of place in terms of cultural landscape for Native Americans and families who value perpetuation of ranch traditions;
- Identify and preserve historical structures that contribute to the historic significance of the landscape and to keep these buildings from falling into disrepair; and
- Preserve archaeological sites.

- Inventory/Monitoring Objectives:

- Understand how the land was used in the past and how land use changed through time;
- Understand the cultural history of the land and how Tribes currently characterize the landscape;
- Identify potential for *Agave sanpedroensis* and, if identified, inventory and monitor;

- Monitor physical changes in the landscape;
- Identify sensitive areas that may be susceptible to natural or human threats;
- Monitor significant historical structures;
- Monitor archaeological sites; and
- Identify low-impact ways to minimize threats to the cultural resources.

Threats

- Mechanical land disturbance including road or path widening, new utilities and other site development activities;
- Pedestrian/ATV traffic;
- Loss of traditional knowledge;
- Vandalism of archaeological sites or theft of artifacts; and
- Erosion.

Stressors

- Excessive runoff from the road;
- Ground disturbance (e.g., from utilities, roads, etc.);
- Neglect or vandalism of historical structures and features; and
- Flooding, erosion and geological processes.

Recommended Actions

- Archival research and organizing/transcribing oral histories of past land use practices (ongoing);
- Identify cultural resources through pedestrian survey, archival research, oral history, ethnographic studies and Tribal collaboration (ongoing);
- Continue evaluating and monitoring structures identified as historically significant;
- Consider rehabilitation of historically significant structures; and
- Recommend practices and priorities for minimizing activities that may cause cultural resources damage in or near the sites.

5.6 Visual Resources

Target Scope

- Planning Area and San Pedro River Road corridor.

Justification

- Maintain a sense of place and scenic values. Visual resources are also important factors affecting wildlife use.

Key Resources

- Residence and homestead area, bosque, wetland, traditionally significant areas.

Goals

- Protect and maintain the visual character of the landscape that contributes to a sense of place; and
- Minimize visual alterations that would impair wildlife use or connectivity.

Threats

- Adjacent or onsite land uses that introduce new elements inconsistent with the predominantly natural or rural character;
- Nighttime lighting that impairs wildlife use or connectivity;
- San Pedro River Road corridor activities that affect natural or rural character; and
- Large fires, drought-induced mortality, or clearings that affect natural or rural character.

Management Objectives

- Minimize nighttime lighting impacts to wildlife;
- Minimize visual impacts from San Pedro River Road corridor activities; and
- Minimize visual impacts to views of natural vegetation from San Pedro Road.

Inventory/Monitoring Objectives

- Identify sensitive areas that may be threatened and evaluate needs and ways those visual resources can be maintained;
- Monitor low-impact land uses over time; and
- Monitor adjacent land use over time and how it affects visual characteristics.

Recommended Actions

- Create a map locating visual resources (buildings and natural elements) that are physically represented on the landscape and a radius (yet to be determined) showing adjacent land uses and current infrastructure;
- Review nighttime lighting fixtures after Life Estate is served; and
- Review new proposals for buildings or other infrastructure at the site to minimize changes to natural or rural character, consider use of screening vegetation, paint colors that blend into landscape. Modifications to natural and physical elements (i.e. ponds, structures, vegetation, and species) should harmonize with the visual resource goals.

5.7 Ranch Resources

Target Scope

- Planning Area in relation to contributing watersheds of M Diamond, Six Bar and A7 ranches.

Justification

- Maintain working landscape, food production and a presence on the land and in the community.

Key Resources

- The two M Diamond parcels west of San Pedro River Road, the residence and homestead area, working livestock facilities, wells and water.

Goals

- Support NRPR's need for a ranch lessee for M Diamond ranch by looking to make portions of the Planning Area available to support ranch activities;
- Respect the Life Estate on the 19-acre inholding, and continue to manage and occupy the residence after the completion of the Life Estate; and

- Manage farm and ranch operations to meet all targets, goals and objectives in the Planning Area including the future associated Ranch Resource Management Plans.

Threats

- Loss of M Diamond, A7, or Six Bar state trust lease could adversely affect water and sediment conditions affecting Bingham Cienega;
- Loss of maintenance to existing infrastructure at Bingham if ranch use is discontinued;
- Loss of potential community members, food production and presence on the land; and
- Increased adverse grazing from adjacent ranches.

Management Objectives

- Implement grazing plans for contributing watersheds that provide for the Planning Area goals;
- Incorporate targeted grazing, where livestock can be used to achieve vegetation and fuels management objectives, in the Planning Area where and when appropriate, and integrate relevant information into the fire and fuels management plan;
- Limit or discontinue commodity crop production on irrigated areas and allow irrigation for low water use niche crops, vegetables, and orchard for the house residents. Do not expand the orchard or field areas.
- Monitor permanent water sources to determine how much is available to meet livestock and Planning Area objectives without increasing pumped water per MSCP restrictive covenants;
- Monitor utilization and long-term vegetation trend in actively grazed areas of the Bingham Planning Area using the Pima County Range Management Standards and Guidelines;
- Work closely with the future M Diamond Ranch lessee to ensure that livestock grazing plans are coordinated with all other Planning Area management activities;
- Residence occupant will care take all buildings, farm, ranch and conservation infrastructure, and is permitted to use the small field and orchard for food. This individual or organization could be the ranch lessee or the Bingham caretaker; and
- Avoid impacts to cultural resources from ranch activities in the Planning Area.

Inventory/Monitoring Objectives

- Monitor effectiveness of any prescribed grazing to minimize fine fuels at Bingham Cienega; and
- Compare alternative means of hazard reduction for fine fuels to prescribed grazing for fuels management.

Recommended Actions

- Complete fence condition inventory;
- Maintain ranch inventory data;
- Establish monitoring transects based on soil types and ecological sites for Planning Area as part of the M Diamond Ranch, and determine extent of departures from reference condition, if any, to learn current states of ecological sites;

- Make available the two parcels west of San Pedro River Road for grazing as part of M Diamond Ranch;
- Identify appropriate livestock holding and grazing methods in the Planning Area, including seasons of use and planning efforts;
- Include the Planning Area, the M Diamond Ranch State Lease and associated Pima County-owned fee lands in future M Diamond Ranch planning; and
- Carefully plan how the Life Estate area will be occupied and managed as part of, or not part of, the M Diamond Ranch.

6 Acknowledgements

Pima County would like to thank Jack and Lois Kelly, who have provided Pima County with the opportunity to provide stewardship to this area. The Kelly family provided a great deal of information that improved our understanding of the resources and their relationships to past and present uses, and they continue to care for the land. Jess Barry of Pima County has been an essential part in the transfer of this intergenerational knowledge.

The authors thank TNC for their past site management efforts with special thanks to Barbara Clark for many years of service; Bob Rogers for his expertise in fire preparedness; Bob Rogers and Dale Turner for sharing their knowledge about the San Pedro watershed and TNC's framework for conservation planning; and Dale Turner for completing field work at Bingham Cienega that provided insights about young mesquite forests. Diana Imig and Celeste Andresen also provided background information. Carolyn Leung at Pima Association of Governments kindly provided census data.

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Appendix A. MSCP Master Restrictive Covenant

Master Restrictive Covenant for Pima County MSCP Mitigation Land

This Master Restrictive Covenant ("**MSCP Master Covenant**") is entered into by Pima County, a political subdivision of the State of Arizona ("**County**"), the Pima County Regional Flood Control District, a political taxing subdivision of the State of Arizona ("**District**"), and the Arizona Land and Water Trust, Inc., an Arizona nonprofit corporation ("**Beneficiary**") (County, District, and Beneficiary being collectively the "**Parties**").

1. Background and Purpose

1.1. The United States Fish and Wildlife Service issued permit #TE84356A to County (the "**Permit**") for the incidental take of threatened and endangered species caused by specific, lawful activities within Pima County. To direct the mitigation of these incidental takes and ensure compliance with the permit, the County has established its Multi-Species Conservation Plan ("**MSCP**"). The objectives of the MSCP (the "**Objectives**") include managing mitigation lands to prioritize conservation of Covered Species and their habitats, prevent landscape fragmentation, and support species establishment or recovery.

1.2. The County owns the real property listed in Exhibit A (the "**Restricted Property**" or "**Restricted Properties**"). A map identifying the Restricted Property is attached hereto as Exhibit B. Individual maps of each of the Restricted Properties are attached hereto as Exhibit C. The Restricted Property contains significant undisturbed natural open space that the County wishes to preserve and protect for the mitigation of incidental take covered by the County's incidental take permit.

1.3. The Parties intend this MSCP Master Covenant to prohibit uses of the Restricted Properties that would impair or interfere with the mitigation efforts of the County, except for any pre-existing uses as shown on imagery by Pictometry or Pima Association of Governments dated 2015 or 2016, whichever is more recent (the "**Pre-existing Uses**").

1.4. The Parties intend that this MSCP Master Covenant assure that the Restricted Properties will be forever preserved as natural open space for the conservation of natural habitat for wildlife, the protection of rare and unique native plants and animals and the scenic enjoyment of the general public.

2 Recording of Site Specific Restrictive Covenants

2.1. The Parties intend that a site specific agreement ("**Site Specific Agreement**") be recorded for each individual property listed on Exhibit A and depicted on Exhibits B and C. The Site Specific Agreement shall be in the form of Exhibit D attached hereto. The Parties intend that each Site Specific Agreement incorporate all of the terms and conditions contained in this MSCP Master Covenant. Each Site Specific Agreement will contain the legal description of the referenced property, and recordation of a Site

Specific Agreement will subject the real property described therein to the terms of this MSCP Master Covenant and cause such property to be a Restricted Property.

2.2. County hereby delegates to the County Administrator or his designee the authority to sign each of the Site Specific Agreements on behalf of County. District hereby delegates to the General Manager of the District or his designee the Authority to sign each of the Site Specific Agreements on behalf of District.

3. Nature of MSCP Master Covenant

3.1. This MSCP Master Covenant runs with each Restricted Property and binds the County and its successors and assigns.

3.2. This MSCP Master Covenant remains in perpetuity with respect to each Restricted Property, unless released by written consent of County, District, and Beneficiary, with the written concurrence of the U. S. Fish & Wildlife Service. Any release will specify if it relates to a specific Restricted Property or to this Master Agreement and, therefore, all the Restricted Properties.

3.3. The uses of the Restricted Properties prohibited by this MSCP Master Covenant remain in effect notwithstanding any future annexation of all, or any portion, of a specific Restricted Property by a municipality.

3.4. This MSCP Master Covenant may not be amended or modified except upon written agreement of County, District, and Beneficiary, and written concurrence from the U.S. Fish and Wildlife Service.

3.5. This MSCP Master Covenant may be enforced by District or Beneficiary as provided in Section 9 below.

4. **The Restrictions.** Except as provided in Section 5 of this MSCP Master Covenant, the following uses of the Restricted Properties are prohibited (collectively the "Restrictions"):

4.1. Development of the Restricted Properties, including subdividing or lot splitting of a Restricted Property;

4.2. Construction or placement of new or additional buildings or structures on a Restricted Property, unless the construction supports the purposes for which the Restricted Property was originally intended including any adopted master plan, and does not degrade the Restricted Property's values as expressed in the purpose statement;

4.3. Alteration of the ground surface or natural vegetation, except as may be needed for ranch, range improvement, or trail-based recreational uses, and only if such alterations are consistent with other provisions of the Multi-species Conservation Plan;

4.4. Impoundment, diversion or alteration of any natural watercourse unless for watershed enhancement to improve species habitat or to maintain a Restricted Property's mitigation values;

4.5. Development of, or the granting of, access, rights-of-way or easements for new roads or new utilities, including telecommunications facilities, except where County has no discretion to prohibit the activity;

4.6. Filling, excavation, dredging, mining, drilling, exploration, or extraction of minerals, hydrocarbons, soils, sand, gravel, rock or other materials on or below the surface of the Restricted Property, except where County has no discretion to prohibit the activity;

4.7. Storage, accumulation or disposal of hazardous materials, trash, garbage, solid waste or other unsightly material on the Restricted Property;

4.8. Introduction of non-native fish or amphibians or other non-native animals to or from catchments, tanks, springs or creeks. Other non-native species that might adversely affect the mitigation of permitted activities are also prohibited except for the purposes of supporting existing ranching operations, if any, and limited to those areas identified that have historically been devoted to the growing of such species, as shown on 2015 or 2016 aerial photographs;

4.9. Storage and use of biocides and chemical fertilizers except for residential and agricultural purposes. Aerial application of biocide or other chemicals is prohibited except where County and District concur that it is an appropriate and necessary management technique to promote the recovery and re-establishment of native species, to reduce threats to ecosystem structure and function, or to protect public health, safety and welfare;

4.10. Pumping of water from existing diversions for purposes other than on-site residential, wildlife, recreational, habitat enhancement and agricultural uses associated with livestock grazing on the Restricted Property. Increases in the pumped amounts of surface or subsurface water as allowed by the Arizona Department of Water Resources are not permitted without joint approval from the County and District and concurrence from the U.S. Fish and Wildlife Service;

4.11. Installation of underground storage tanks for petroleum or other polluting substances, except for already existing or permitted septic tanks;

4.12. Confinement of livestock where animals are permanently located in enclosures and the majority of their feed supplied from outside sources. This includes feeder cattle, dairy, pig, poultry and exotic animal farm operations;

4.13. Commercial enterprises inconsistent with the Objectives, excluding farming and ranching. The County and District may jointly approve commercial enterprises, other

than farming or ranching, that provide for ecotourism or wildlife-related recreation provided that it is consistent with the Objectives and does not degrade the Restricted Property's mitigation value;

4.14. Residential use for mobile homes, travel trailers, tent trailers, self-propelled recreational vehicles and like structures or vehicles, except temporary use as permitted by County Park Rules or reasonable use as needed to support the protection or enhancement of the Restricted Property's mitigation value;

4.15. Paving of roads using asphalt or concrete except where required by County ordinance;

4.16. Any modification of the topography of the Restricted Property through the placement of soil, dredging spoils, or other material, except for those uses permitted under this document, or to reduce soil erosion or to protect public health, safety and welfare;

4.17. Severance of water rights appurtenant to the Restricted Property including the transfer, encumbrance, lease and sale of water rights;

4.18. Off-road vehicular travel except to facilitate permitted activities on the Restricted Property; and

4.19. Removal of natural, mineral, or cultural resources that is not authorized by County.

5. Exceptions to Restrictions. Notwithstanding any other provision of this MSCP Master Covenant, the following uses of the Restricted Properties are not prohibited:

5.1. Any use of the Restricted Property which the County Board of Supervisors in its reasonable discretion determines is necessary to retain, restore, or enhance the mitigation of incidental take covered by the Permit;

5.2. Any Pre-existing Use of the Restricted Property;

5.3. Any use of the Restricted Property expressly permitted by a contract in effect between the County and a third party as of the date this MSCP Master Covenant is recorded; and

5.4. Any use of the Restricted Property which the County Board of Supervisors determines, based on clear and convincing evidence presented to said Board, is necessary to protect the public health, safety or welfare.

6 Obligations of County

6.1. County, through its employees, agents and contractors, retains all responsibilities and will bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance of the Restricted Properties. County remains solely responsible for obtaining any applicable governmental permits and approvals for any activity or use undertaken on the Restricted Properties. All such activity shall comply with all applicable Federal, state, and local laws, regulations, and requirements.

6.2. County, through its employees, agents and contractors, at County's expense, will conduct an inspection of the Restricted Properties at least biennially to determine if there are any violations of the Restrictions. The inspection will be completed by either examination of aerial photographs or by physical inspections with onsite photographs taken at the time of the inspections. The County will prepare and deliver copies of biennial reports ("Reports") of its inspections, which reports will describe the then current condition of the Restricted Properties inspected and note any violations of the Restrictions. Copies of the Reports will be provided to District and Beneficiary upon completion, and in no event later than October 15 of each biennial reporting year. County will maintain the Reports as County records in accordance with Arizona state law.

6.3. County shall report any violations of the terms of this MSCP Master Covenant to District and Beneficiary within 2 working days of County discovery and confirmation of any such violation. For purposes of this Section 6.3, the determination of what shall constitute a reportable violation of this MSCP Master Covenant shall be at County's reasonable discretion. However, County's determination of what is reportable pursuant to this Section 6.3 will not limit District or Beneficiary's right to enforce this MSCP Master Covenant as provided for in Sections 7, 8, and 9 of this MSCP Master Covenant.

6.4. The parties acknowledge that Beneficiary has no legal ownership interest in the Restricted Properties, and it is the parties' intent that the Beneficiary not undertake any responsibility or liability with respect to the Restricted Properties, other than liability related to Beneficiary's negligence ("Beneficiary's Negligence"), as more specifically limited below. Therefore, County agrees:

6.4.1. County (as indemnifying party) shall indemnify, defend and hold harmless, Beneficiary and its officers, directors, employees, agents, affiliates, successors and permitted assigns (collectively, "**Indemnified Party**") against any and all losses, damages, liabilities, deficiencies, claims, actions, judgments, settlements, interest, awards, penalties, fines, costs, or expenses of whatever kind, including attorneys' fees, that are incurred by Indemnified Party (collectively, "**Losses**"), arising out of or related to any third-party claim alleging:

6.4.1.1. breach or non-fulfillment of any provision of this Agreement by County, District, or County or District's personnel;

6.4.1.2. any negligent or more culpable act or omission of County, District, or County or District's personnel (including any reckless or willful misconduct) in connection with the performance of County, District, or County or District's personnel under this Agreement;

6.4.1.3. any bodily injury, death of any person or damage to real or tangible personal property caused by the negligent or more culpable acts or omissions of County, District, or County or District's personnel (including any reckless or willful misconduct);

6.4.1.4. any failure by County, District, or County or District's personnel to comply with any applicable federal, state or local laws, regulations or codes, including any failure related to their performance under this Agreement; or

6.4.1.5. any claim by any third party asserting a failure of Beneficiary to enforce Beneficiary's rights, or perform Beneficiary's duties, under this Agreement. County's obligation to indemnify Beneficiary against third party claims related to any failure of Beneficiary perform Beneficiary's duties, under this Agreement will not preclude County from replacing Beneficiary as provided in Section 8.5. Replacement of Beneficiary will be County's sole remedy for Beneficiary's breach of its obligations under this Agreement.

6.4.2. Beneficiary must give notice to County (a "**Claim Notice**") of any claim filed which may give rise to a Losses. Indemnified Party's failure to provide a Claim Notice does not relieve County of any liability, but in no event shall County be liable for any Losses that result directly from a delay in providing a Claim Notice, which delay materially prejudices the defense of the claim. County's duty to defend applies immediately after receiving a Claim Notice.

6.4.3. County may select legal counsel to represent Beneficiary in any action for which County has an obligation to indemnify, defend and hold harmless Beneficiary, and County shall pay all costs, attorney fees, and Losses.

6.4.4. County shall give prompt written notice to Beneficiary of any proposed settlement of a claim that is indemnifiable under this Agreement. County may settle or compromise any claim without Beneficiary's consent, so long as Beneficiary is not responsible for paying any Losses.

7 Obligations of District

7.1. District shall review any and all reports on potential violations of the Restrictions provided by County to District as required by this MSCP Master Covenant, at District's expense.

7.2. If the event of any action that may constitute a violation of the terms of this MSCP Master Covenant, District shall determine, in its reasonable discretion, whether to take any action to enforce the terms of this MSCP Master Covenant.

7.3. In the event that County desires to take action with respect to the Restricted Properties that may constitute a violation of this MSCP Master Covenant, County will obtain District's prior approval of such action, and District shall respond to any such request from County in a timely manner.

7.4. District and County will advise Beneficiary in writing of any non-privileged communications between County and District with regard to the matters referred to in Sections 7.2 and 7.3. District and County will also provide Beneficiary with copies of any written communications, in whatever form, between District and County with regard to the matters referred to in Sections 7.2 and 7.3.

8. Obligations of Beneficiary

8.1. Beneficiary shall review any and all reports provided by County to Beneficiary as required by this MSCP Master Covenant, at County's expense. County shall compensate Beneficiary for performing its actions under this Section 8.1 on a time and materials basis, pursuant to the terms of professional services contract entered into between County and Beneficiary (the "Services Agreement"). In the event (i) County and Beneficiary cannot agree upon the Services Agreement; (ii) the Services Agreement is terminated, for any reason; (iii) County fails to timely pay Beneficiary under the Services Agreement; or (iv) County materially breaches any other term of the Services Agreement, then Beneficiary will have the right to terminate its obligations under this MSCP Master Covenant by providing County and District ten days prior written notice.

8.2. If the event of any action that may constitute a violation of the terms of this MSCP Master Covenant, Beneficiary shall determine, in its reasonable discretion, whether to take any action to enforce the terms of this MSCP Master Covenant. Beneficiary shall be reimbursed for any expenses incurred by Beneficiary to enforce this Master Agreement in accordance with the Services Agreement.

8.3. In the event that County desires to take action with respect to a Restricted Property that may constitute a violation of this MSCP Master Covenant, County will obtain Beneficiary's prior approval of such action, and Beneficiary shall respond to any such request from County in a timely manner. Beneficiary shall be compensated for any services performed in response to any such request in accordance with the Services Agreement.

8.4. In the event Beneficiary is no longer able to perform its obligations under this MSCP Master Covenant, or no longer desires to serve as Beneficiary, then Beneficiary shall provide not less than sixty (60) days' notice to County. Beneficiary may designate a replacement Beneficiary subject to County's approval. In the event Beneficiary does not designate a replacement Beneficiary within 45 days' after delivery of the notice, then

period, or County fails to continue diligently to cure such breach until finally cured, the Enforcing Party may in any such event bring an action at law or equity to enforce the terms of this MSCP Master Covenant or to enjoin the breach by temporary or permanent injunction, and to recover any damages caused by the breach of the terms of this MSCP Master Covenant or injury to any protected uses or mitigation, including damages for any loss, and to require the restoration of any Restricted Property to the condition that existed prior to the injury.

9.7. In the event any action, suit or proceeding at law or in equity is instituted with respect to this MSCP Master Covenant, the Enforcing Party shall be entitled to reasonable attorneys' fees, expenses and court costs incurred if it is the prevailing party.

9.8. Nothing contained in this MSCP Master Covenant can be construed to entitle the Enforcing Party to bring any action against the County for any injury to or change in the Restricted Property resulting from causes beyond the County's control including unforeseeable acts of trespassers, fire, flood, storm, drought, pests, natural earth movement, vegetative disease, or resulting from any action taken by the County under emergency conditions to prevent, abate or mitigate significant injury to any Restricted Property resulting from such causes.

10. General Provisions

10.1. The laws and regulations of the State of Arizona govern this MSCP Master Covenant. Any action relating to this MSCP Master Covenant must be brought in a court of the State of Arizona in Pima County.

10.2. Unless the context requires otherwise, the term "including" means "including but not limited to".

10.3. Each provision of this MSCP Master Covenant stands alone, and any provision of this MSCP Master Covenant found to be prohibited by law is ineffective only to the extent of such prohibition without invalidating the remainder of this MSCP Master Covenant.

10.4. This instrument sets forth the entire Agreement of the County, District and Beneficiary with respect to this MSCP Master Covenant.

10.5. Any notice given under this MSCP Master Covenant must be in writing and served by delivery or by certified mail upon the other Parties as follows:

If to County: Office of Sustainability and Conservation
Attn: Director
Pima County Public Works
201 N Stone Ave., 6th FL
Tucson Arizona 85701

Bingham Management Plan

If to District: Regional Flood Control District
Attn: Director
Pima Works Building
201 N Stone Ave., 9th FL
Tucson, Arizona 85701

If to Beneficiary: The Arizona Land and Water Trust
Attn: Diana Freshwater, President
3127 N. Cherry Ave.
Tucson, Arizona 85719

The Parties have executed this MSCP Master Covenant by their duly authorized representatives.

COUNTY: PIMA COUNTY, a political subdivision of the State of Arizona:

Chair, Board of Supervisors

Date

ATTEST:

Robin Brigode, Clerk of Board of Supervisors

Date

DISTRICT: The Pima County Regional Flood Control District

Chair, Board of Directors

Date

ATTEST:

Robin Brigode, Clerk of Board of Directors

Date

Appendix B. 1989 Conservation Easement

TICOR TITLE INSURANCE COMPANY

J.K.
L.K.
Bingham Cienega (Kelly), AZ
3/12/90
(orig. on file)

DEED OF CONSERVATION EASEMENT

THIS GRANT DEED OF CONSERVATION EASEMENT, by and between JACK KELLY and LOIS BINGHAM KELLY, husband and wife, hereinafter referred to as the "Grantors," and THE NATURE CONSERVANCY, a non-profit corporation of the District of Columbia, hereinafter referred to as the "Conservancy."

WITNESSETH:

WHEREAS, the Grantors are the owners of certain real property in Pima County, Arizona, more particularly described in Exhibit "1" attached hereto and incorporated herein by reference, hereinafter referred to as "Grantors' Land"; and

WHEREAS, Grantors' Land currently remains in a relatively natural state and has significant ecological and open space values; and

WHEREAS, Grantors' Land adjoins the Bingham Cienega Nature Preserve owned by Pima County, and is a valuable element of the San Pedro River Drainage, which includes Grantors' Land, and its ecological values, including flora, fauna, hydrology and soils; and

WHEREAS, Grantors' Land provides significant relatively natural habitat, including mature mesquite woodland which provides important habitat for native wildlife and plants; and

WHEREAS, protection of the Grantors' Land will contribute to the ecological integrity of the Bingham Cienega Nature Preserve and thus protect a globally significant, relatively natural habitat for wildlife and plants;

WHEREAS, all of the natural elements and ecological values on Grantors' Land are of great importance to Grantors and the Conservancy, and to the people of Pima County and the State of Arizona, and are worthy of preservation; and

WHEREAS, Grantors, as owners in fee of Grantors' Land, own the affirmative rights to identify and preserve and protect in perpetuity its natural ecosystems and other significant relatively natural features; and

WHEREAS, Grantors desire and intend to transfer such rights to the Conservancy; and

EXEMPT FROM AFFIDAVIT OF PROPERTY VALUE PER ARS 42-1614, A-2.

1
THIS DOCUMENT IS BEING RECORDED TO REPLACE AND SUBSTITUTE THAT CERTAIN INSTRUMENT RECORDED IN DOCKET 8538 AT PAGE 2495 ON MAY 16, 1989.

Jh.
L.K.

WHEREAS, the State of Arizona has recognized the importance of private efforts towards preservation of natural systems in the state by the enactment of ARS Sections 33-271 to 33-276; and

WHEREAS, the Conservancy is a private organization organized to preserve and conserve natural areas and ecologically significant land for scientific, charitable and educational purposes, and is qualified under ARS Section 42-271 and under Section 170 (h) (3) of the Internal Revenue Code of 1954, as amended, to acquire and hold Conservation Easements;

NOW, THEREFORE, in consideration of the mutual covenants contained herein, based upon the common law, and, further, pursuant to ARS Sections 33-271 to 33-276, Grantors do hereby convey to The Nature Conservancy, a District of Columbia non-profit corporation with offices at 1815 North Lynn Street, Arlington, Virginia 22209, its successors and assigns, a conservation easement consisting of the rights and restrictions hereinafter enumerated, on, over and across Grantors' Land.

A. Purposes. It is the purpose of this Conservation Easement to preserve and protect in perpetuity and to enhance and restore the significant relatively natural features and open space values of Grantors' Land. Specifically, and without limitation of the general purposes, it is the purpose hereof to preserve, protect and enhance the open space and natural features on Grantors' Land and the adjoining Bingham Cienega Nature Preserve. In so doing, it is the purpose of this Conservation Easement to permit the continuation on Grantors' Land of such residential and other uses set forth herein as are consistent with the conservation purposes of this Conservation Easement.

B. Rights Granted. The rights conveyed by the Conservation Easement are the following:

1. To identify, preserve and protect in perpetuity, and to enhance by mutual agreement, the ecological features and the native flora and fauna on the Grantors' Land.
2. To enter upon the Grantors' Land to enforce the rights herein granted, to study and make scientific observations of its ecosystems, and to determine that the uses made of Grantors' Land by Grantors are in compliance with the terms of this easement, all upon prior notice to Grantors, and in a manner that does not unreasonably interfere with the use being made of Grantors' Land, consistent with this Conservation Easement, at the time of such entry. The Conservancy shall also have the right of immediate entry to Grantor's Land if, in its sole judgment, such entry is

*J.K.
L.K.*

necessary to prevent damage to or the destruction of the conservation values protected by this easement.

3. To enjoin any activity on, or use of, the Grantors' Land which is inconsistent with the conservation purposes of this easement, and to enforce the restoration of such features of the Grantors' Land as may be damaged by such activities.

C. Reserved Rights. The following uses and practices on Grantors' Land, though not an exhaustive recital of consistent uses and practices, are consistent with this Conservation Easement, and these practices shall not be precluded, prevented or limited by this Conservation Easement, except for the requirement of the Conservancy's prior consent, as provided herein:

1. To maintain, repair and in the event of their destruction, to reconstruct the existing residential structures and associated outbuildings that are described in the Easement Documentation Report, which is attached to this Conservation Easement as Exhibit 2 and made part hereof by this reference.

2. To construct, maintain, repair and in the event of their destruction, to reconstruct a double carport, equipment shed and single-story, attached additions to the two existing residences and provided each attached addition does not exceed the size of the existing residence.

3. To construct, maintain and repair utilities as are necessary in connection with the residential and agricultural use of Grantors' Land permitted herein.

4. To build, maintain and repair perimeter and interior boundary fences.

5. To maintain and repair the existing vehicleways.

6. To institute and carry on any agricultural activity provided that such activities are limited to the maintenance of a domestic garden and orchard and farming those portions of Grantor's Land presently utilized for grain and livestock feed production as more particularly described in the Easement Documentation Report.

7. To graze domestic livestock.

8. To use biocides and fertilizers only for residential landscape purposes, native revegetation, agricultural purposes and control of noxious weeds and insect pests and only in those

J.R.K.

amounts and with that frequency of application which constitutes the absolute minimum necessary to accomplish those purposes; provided that no aerial applications of agrichemicals shall be permitted, and that all agrichemicals shall be used in strict accordance with label directions and restrictions.

9. To cut and remove vegetation within 50 feet of existing residences and outbuildings and to maintain existing pasture.

Pursuant to the terms of ARS Sections 33-271 to 33-276, the Grantors' Land preserved hereby as natural land may not be converted or directed to any uses other than those provided herein.

D. Prohibited Uses. Grantors state that the following uses and practices on Grantors' Land, though not an exhaustive recital of inconsistent uses and practices, are inconsistent with the purposes of this Conservation Easement, and shall be prohibited:

1. Construction or placing of any buildings, camping accommodations, mobile homes, billboards or other structures except the double carport, equipment shed, attached additions, and perimeter and interior boundary fences permitted herein.
2. The division, subdivision or de facto subdivision of the property.
3. Building of new roads, vehicleways or trails, with the exception of a new driveway from house to county road.
4. The operation of any mechanized vehicle off permitted roads/trailways.
5. Dumping of refuse, human foods, garbage or other unsightly offensive or toxic materials including, without limitation, livestock carrion.
6. The storage or use of biocides and chemical fertilizers except as permitted herein.
7. Removal or destruction of any native vegetation, whether dead or alive, except deadwood which poses safety hazard and a provided for herein.
8. The introduction of non-native plant or animal species, except as provided for herein.

J. L. K.

9. Manipulation or alteration of natural water courses, stream banks and associated flood terraces, and any activity which would pollute or degrade any surface or subsurface waters.

10. The exploration or extraction of minerals, hydrocarbons, soils, sand, gravel, rock or other materials on or below the surface of the Grantors' Land.

11. The establishment of any commercial or industrial uses.

12. The installation of utility structures or lines upon or within Grantors' Land, except those provided for herein.

13. Changing of the topography through the placing on the Grantors' land of soil, dredging spoils, landfill and other materials.

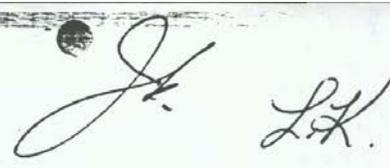
14. Transfer of any water right off the property.

15. Pumping of groundwater for other than on-site domestic and agricultural uses; permitted uses include the restoration of native vegetation.

E. Remedies. Should Grantors, the heirs, successors or assigns of Grantors, undertake any activity requiring approval of the Conservancy without or in advance of securing said approval, or undertake any activity in violation of the terms of this Conservation Easement, then the Conservancy shall have the right to compel the restoration of that portion of the Grantors' Land affected by such activity to the condition that existed prior to the undertaking of such unauthorized activity. In such case, the cost of such restoration and the Conservancy's cost of suit, including attorney's fees, shall be borne by Grantors or those of their heirs, successors or assigns against whom a judgment is entered, or, in the event that the Conservancy secures redress without a completed judicial proceeding, by Grantors or those of their heirs, successors or assigns who are otherwise determined to be responsible for the unauthorized activity. Nothing herein contained shall be construed to preclude Grantors from exhausting their legal remedies in determining whether a proposed activity to which the Conservancy has objected is consistent with the Conservation Easement.

Enforcement of the terms and provisions of this Conservation Easement shall be at the discretion of the Conservancy and any forbearance on behalf of the Conservancy to exercise its rights hereunder in the event of any breach hereof by Grantors, their heirs, personal representatives or assigns, shall not be deemed or construed to be a waiver of the Conservancy's rights hereunder

in the event of any subsequent breach.



F. Taxes and Costs. Grantors agree to pay any and all real property taxes and assessments levied by competent authority on Grantors' Land including any tax or assessment on the easement herein granted, and to bear all costs of their use, upkeep and maintenance of the Grantors' Land, and do hereby indemnify the Conservancy therefrom.

G. Access. Nothing herein contained shall be construed as affording the public access to any portion of the land subject to this Conservation Easement.

H. Assignment. The parties hereto covenant and agree that the Conservancy may assign or otherwise transfer its interest in this Conservation Easement, provided that (1) the Conservancy requires, as a condition of any transfer, that the conservation purposes of this easement continue to be carried out; and (2) any assignment shall be made only to an organization qualified at the time of transfer as an eligible donee under Internal Revenue Code Section 170 (h) (3), or its successor, or any regulations issued thereunder.

I. Changed Circumstances. It is the unequivocal intention of the parties that the conservation purposes of this easement shall be carried out in perpetuity. The Conservancy hereby covenants and agrees that in the event that a later unexpected change in the conditions of or surrounding the Grantors' Land makes impossible or impractical any continued use of the Grantors' Land for the conservation purposes described herein, and the restrictions are extinguished by judicial proceeding, then, upon subsequent sale, exchange or condemnation of the Grantors' Land, the Conservancy will apply its share of any proceeds received from such sale, exchange or taking in a manner consistent with the conservation purposes of this easement, or for the protection of a "relatively natural habitat of fish, wildlife or plants or similar ecosystem," as that phrase is used in P.L. 96 - 541, 26 U.S.C. 170 (1)(4)(a)(ii), as amended, and in regulations promulgated thereunder. The understanding and agreement of the Grantors and the Conservancy regarding their respective rights and obligations under the foregoing circumstances has been reduced to writing, and a copy of such agreement may be obtained, for any legitimate purpose, upon written request directed to The Nature Conservancy at its principal office, 1800 North Kent Street, Arlington, Virginia 22209. In the event of any sale, exchange, devise, or gift of any property subject to this Conservation Easement, Grantors

agree to furnish a copy of such agreement to the party who acquires the property.

J. Easement Documentation Report. The parties hereto acknowledge that an Easement Documentation Report, attached hereto as Exhibit 2, has been completed by a competent biologist familiar with the environs. The parties have reviewed the Report and acknowledge that it is an accurate description of the physical and biological condition of Grantors' Land at the time of this grant. In the event a controversy arises with respect to the nature and extent of the biological and/or physical condition of the property, the parties shall not be foreclosed from utilizing all other relevant or material documents, surveys, reports, and other information to assist in the resolution of that controversy.

K. Covenant. The terms of this Conservation Easement shall run with and burden title to the Grantors' Land in perpetuity, and shall bind the Grantors, their heirs, successors, personal representatives and assigns.

L. Definition. Except where otherwise expressly stated, the terms "Grantors" and "Conservancy" as used herein, shall be deemed to include, respectively, the Grantors, and the heirs, successors, personal representatives and assigns of each of them, and the Conservancy, its successors and assigns.

M. Severability. If any provision of this deed of Conservation Easement or the application thereof to any person or circumstance is found to be invalid, the remainder of the provisions of the deed of Conservation Easement and the application of such provisions to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

J.K.

IN WITNESS WHEREOF, the Grantors have hereunto set their hand this 16th day of May, 1988.

Jack Kelly
Jack Kelly

Lois Bingham Kelly
Lois Bingham Kelly

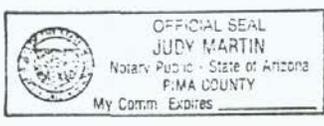
STATE OF ARIZONA This instrument was acknowledged before me this 16th day of May, 1989.

County of PIMA, 19 , by

Jack Kelly and Lois Bingham Kelly

Judy Martin
Notary Public

My Expiration Date is: 12-10-92



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