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# MEMORANDUM

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Date: April 29, 2014

To: The Honorable Chair and Members  
Pima County Board of Supervisors

From: C.H. Huckelberry  
County Administrator 

Re: **Conservation Land System Mitigation and Consistency Review for the Rosemont Copper Project**

Rosemont Copper has proposed a number of specific actions regarding mitigation, including purchase of lands, water rights, and other conservation measures. In order to determine the adequacy of the proposed mitigation and how this mitigation compares with impacts under the County-adopted Conservation Land System (CLS), the attached report has been prepared by staff.

While Rosemont is proposing 4,599 acres of protected lands, the mitigation required based on the aggregate impacts of Rosemont, including the utility corridors, would be approximately 13,700 acres. Hence, the amount of mitigation now proposed is 34 percent of what would be in conformance with the County's CLS. Rosemont could provide additional mitigation, if desired.

The County has set forth a series of principles regarding mitigation. These principles were highlighted in a December 23, 2009 letter to the US Forest Service and the US Army Corps of Engineers. Eight principles were identified and are listed below. Also provided is a highlighted map showing the County's priority additional mitigation lands that would be desirable for conservation and acquisition by Rosemont.

#### Principles of Mitigation

1. In the area of direct effect or as close as possible to the area of direct effect; and
2. Adjacent to other protected lands; and
3. Protected in perpetuity with legal instruments that secure minerals and water and other land interests; and
4. Managed for protection of land and water; and
5. Monitored to assure the mitigation intent is being met; and
6. Accessible to the public (at least by means of foot); and
7. Located within the CLS; and
8. A total acreage consistent with the CLS guidelines for mitigation.

The Honorable Chair and Members, Pima County Board of Supervisors  
**Re: Conservation Land System Mitigation and Consistency Review for the Rosemont  
Copper Project**

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As can be seen, all of the priority mitigation areas identified by the County, are downstream of the Rosemont impacts, in the same Cienega Basin Watershed, and would contribute to conservation of the important natural resources now protected along Cienega Creek and Davison Canyon by the County. Conserving upland watershed areas is an essential conservation measure, particularly since the Rosemont Copper Project would intercept high-elevation portions of the watershed contributing to Davidson Canyon. At least 16 percent of the watershed would be diverted by the Rosemont proposal.

We are pleased that Rosemont Copper recognizes the importance of conserving water resources in the Cienega Basin. While their measures are beneficial, they could be better. We will continue to explore with Rosemont Copper, the US Forest Service, and the US Army Corps of Engineers, mitigation measures that are effective and permanent. The mitigation proposed by Rosemont Copper is a step in the right direction but is presently inadequate.

CHH/anc

Attachment

c: Jim Upchurch, Forest Supervisor, US Forest Service  
Colonel Kimberly Colloton, Los Angeles District Engineer, US Army Corps of Engineers  
Jane Diamond, Water Division Director, Region 9, US Environmental Protection Agency



## Memorandum

**Date:** April 21, 2014

**To:** Chuck Huckelberry, County Administrator

**From:** Julia Fonseca  Environmental Planning Manager, OSC

**RE:** CLS Mitigation and Consistency Review, Rosemont Copper Project

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This memorandum responds to your request to review Rosemont's land-based mitigation relative to guidelines of the Maeveen Marie Behan Conservation Lands System (CLS). The CLS is the regional "road map" for protecting biodiversity that came out of the Sonoran Desert Conservation Plan. It is also part of Pima County's Comprehensive Plan for land use that applies to discretionary decisions of the Board of Supervisors. While the Board has no regulatory power over mining, Pima County has received CLS mitigation from the Oracle Ridge mine and continues to request that mining be consistent with local practice for mitigating the effects to the biological integrity of the landscape. This memorandum will consider all of the proposed land-based mitigation that Rosemont is offering relative to the CLS guidelines as adopted by the Board. This memorandum also addresses the role of water-based compensatory mitigation relative to your previous letters on that subject.

### CLS impacts

To respond to your request, Pima County Information Technology re-calculated impacts to the CLS using the Forest Service's digital files representing the Barrel Alternative from Figures 17 and 20 of Final Environmental Impact Statement (FEIS) and the disturbance elements as listed in Table 11 of the FEIS. The Barrel Alternative is the Forest Service's preferred alternative.

Where the digital files were not explicit, Pima County used the “most refined” estimate of direct disturbance—as described in the FEIS and Biological Opinion—to guide the GIS analysis. The EIS assumes that not all of the area removed from public access would be disturbed, and that all of the area within the security fence would be impacted by mine-related activities.

The table below summarizes the computed areas of impact by type of disturbance, whereas Figure 1 shows the acres of impact by various CLS categories.

<b>Type of Disturbance</b>	<b>Acres of Disturbance</b>
Security Fence Perimeter (mine facilities)	4,227.8
Primary Access Road	233.5
Utility Corridor	899.6
Decommissioned and New Forest Roads	52.7
Arizona Trail	19.7
<b>Total Disturbance</b>	<b>5,433.3</b>

The mine facilities are the single largest disturbance in the CLS, but the utility corridor adds almost 900 acres to the impacts. As shown in Figure 1, most of the impacts to the Important Riparian Areas are caused by the mine, not the utility corridor. Under the Barrel Alternative, the mine has been situated primarily in areas of Multiple Use Management, avoiding more of the Biological Core than other action alternatives. Most of the impacts to Biological Core areas occur from the access roads and utilities. There are 105 acres of disturbance *outside* the CLS, and this area consists of utility corridors near Sahuarita. Under the CLS guidelines, areas outside the CLS would require no mitigation by the developer.

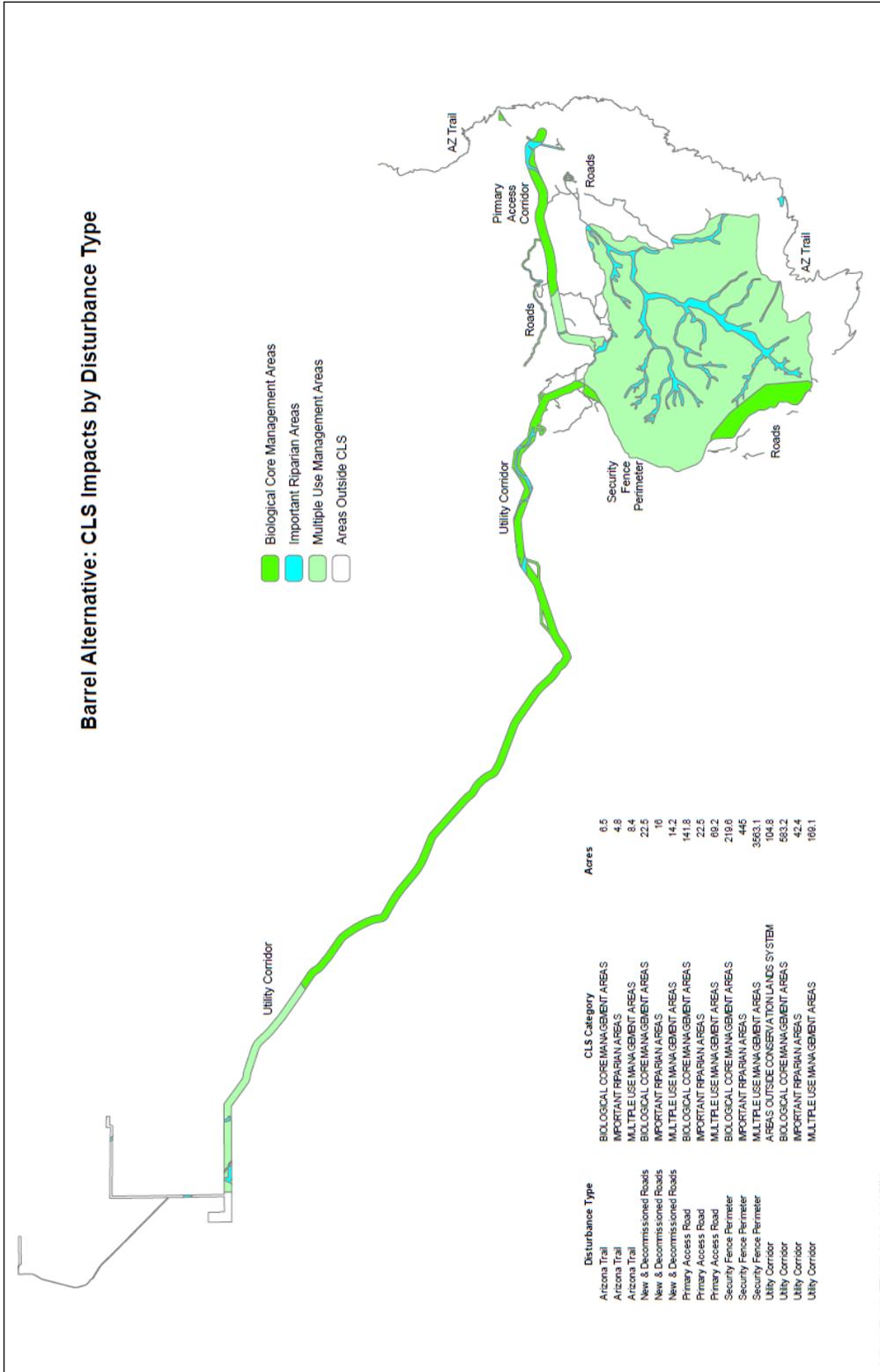


Figure 1. Conservation Lands System Analysis of the Barrel Alternative.

The table below summarizes the CLS impacts shown in Figure 1. The mitigation multipliers used in the table below are derived from the CLS Guidelines. The CLS mitigation for 5,433 acres of impacts to the Biological Core, Multiple Use and Important Riparian Areas would be 13,665 acres if the development was a typical subdivision or commercial development in Pima County and where no on-site mitigation was provided.

<b>Type of Disturbance</b>	<b>CLS Category</b>	<b>Sum of Impact Acres</b>	<b>Mitigation Multiplier</b>	<b>Sum of Mitigation Acres</b>
Arizona Trail N&D Roads Primary Access Rd. Security Fence Utility Corridor	Biological Core	973.6	4	<b>3,894.4</b>
Arizona Trail N&D Roads Primary Access Rd. Security Fence Utility Corridor	Multiple Use	3,824	2	<b>7,648</b>
Arizona Trail N&D Roads Primary Access Rd. Security Fence Utility Corridor	Important Riparian Area	530.7	4	<b>2,122.8</b>
Utility Corridor	Outside CLS	104.8	0	
<b>Total Acres</b>		<b>5,433.1</b>	<b>~2.51</b>	<b>13,665.2</b>

Thus under the CLS guidelines, the recommendation is for approximately 2.5 acres of mitigation for every acre of impact. The 13,000+ acres of CLS mitigation calculated here is higher than the County's original estimate (8,800 acres), which was based on Rosemont's mine plan of operations submitted to the Forest Service in 2007. The increase of acres is largely caused by the FEIS' accounting for the project impacts that would lie outside the mine footprint *per se*, including the access road, utility corridor, and Arizona Trail re-alignment.

Under the [CLS guidelines](#), developers can provide on-site or off-site mitigation, or a mixture of both. While it is possible that the mine might leave some land within the security fence undisturbed, only one area within the fence has been identified for protection during the pre-mining phase for the benefit of the Coleman coral-root, an orchid that inhabits a section of oak forest along McCleary Canyon. This area would not meet the requirements of the CLS for protection in perpetuity because the Forest Service only requires the plant populations to be

protected during the pre-mining phase. There is no requirement in FS-BR-15 for legal protection of the land, or physical protection of the land from future ground disturbance. As part of the operations plan, Rosemont will place a proposed diversion structure directly above this area, effectively starving the site of its natural hydrological function. For these reasons, we will assume that zero acres of CLS mitigation will occur on-site.

#### Off-site mitigation locations

Here I examine Rosemont's off-site mitigation lands, as identified in the FEIS and other documents, against the recommendations from the CLS Guidelines.

Rosemont has proposed to protect and/or enhance a total of 4,599 acres of mitigation land to address the various requirements or requests of Federal, State, and local agencies. With a total impact area of about 5,430 acres, this would be less than one acre of compensatory mitigation for each acre of impact to the land. Rosemont's brief summary of the offered mitigation lands can be found as Attachment 1.

**The Rosemont mitigation package, at ~4,600 acres, falls approximately 9,000 acres short of the 13,000+ acres that would be considered the County's CLS mitigation target if the Rosemont area were subdivided for residential and commercial development.** The comparison is even less favorable when you consider that subdivision development would not be permitted on National Forest lands in the first place. Rosemont mine activities would occur on 3670 acres of National Forest, according to the FEIS.

Another comparison is available from Pima County's proposed Multi-species Conservation Plan, (MSCP) wherein Pima County proposes to mitigate impacts to loss of habitat at even higher mitigation ratios than are required of the private sector under the CLS Guidelines. Pima County's open space purchases will be used to mitigate the future impacts of urban development under the MSCP. Under the MSCP, the mitigation that would be owed for impacts to a similarly located site would be over 18,000 acres.

Another way to think about the adequacy of off-site mitigation is to consider what other mining companies do. The Oracle Ridge Mining Corporation conveyed 476 acres of ranch land to Pima County, along with a 7,800-acre State grazing lease. The Oracle Ridge mine would impact 77 acres, mainly Biological Core, most of which is on land that they own. Resolution Copper is offering 5,300 acres of mitigation lands in exchange for access to 2,400 acres of Federal land. Their mitigation lands include lands far removed from the area of impact, such as 3,050 acres of riparian habitat on the lower San Pedro River and 940 acres near Elgin, which would be conveyed to the Appleton-Whittell Research Ranch.

Your December 23, 2009<sup>th</sup> letter to the U. S. Forest Service provided a proposal that identified the following principles for selection of compensatory mitigation lands for the Rosemont Copper Project:

- 1) In the area of direct effect or as close as possible to the area of direct effect; and
- 2) Adjacent to other protected lands; and
- 3) Protected in perpetuity with legal instruments that secure minerals and water, and other land interests; and
- 4) Managed for protection of land and water; and
- 5) Monitored to assure the mitigation intent is being met; and
- 6) Accessible to the public (at least by means of foot); and
- 7) Located within the Maeveen Marie Behan Conservation Lands System (CLS); and
- 8) A total acreage that is consistent with the CLS guidelines for mitigation.

Based on these principles, Pima County identified areas with high-priority mitigation lands (Figure 2). Because you anticipated that selection of land might be constrained by availability, your letter identified preferences for a second tier of potential mitigation lands. We have prepared Figure 2 to graphically illustrate your previous recommendations. Figure 2 also shows (in purple) the isolation of the northern end of the Santa Rita Mountains that the mine proposal could cause. There are approximately 13,000 acres north of the mine that are in the Coronado National Forest and the County has provided the Forest Service an extensive review that the severance of these lands could cause to regional wildlife populations.

Next, each of Rosemont’s proposed mitigation areas is further reviewed against the eight principles and suggested locations for compensatory mitigation. Table 3 below summarizes the acreage and mitigation approach for each site.

Site Name	Acres Protected	Rosemont’s Proposed Approach to Mitigation
Sonoita Creek	1,350	Re-establishment of channels and floodplains; enhancement of ponds; removal of livestock
Fullerton Ranch	1,763	Removal of livestock and artificial impoundments
Davidson Canyon	545	Preservation of land
Helvetia Ranch (North parcels)	939	Preservation of land
Pantano Dam	2	Preservation of land, retirement of a well, and operation of a managed underground storage facility in the Cienega Creek Natural Preserve
<b>Total Acreage</b>	<b>4,599</b>	

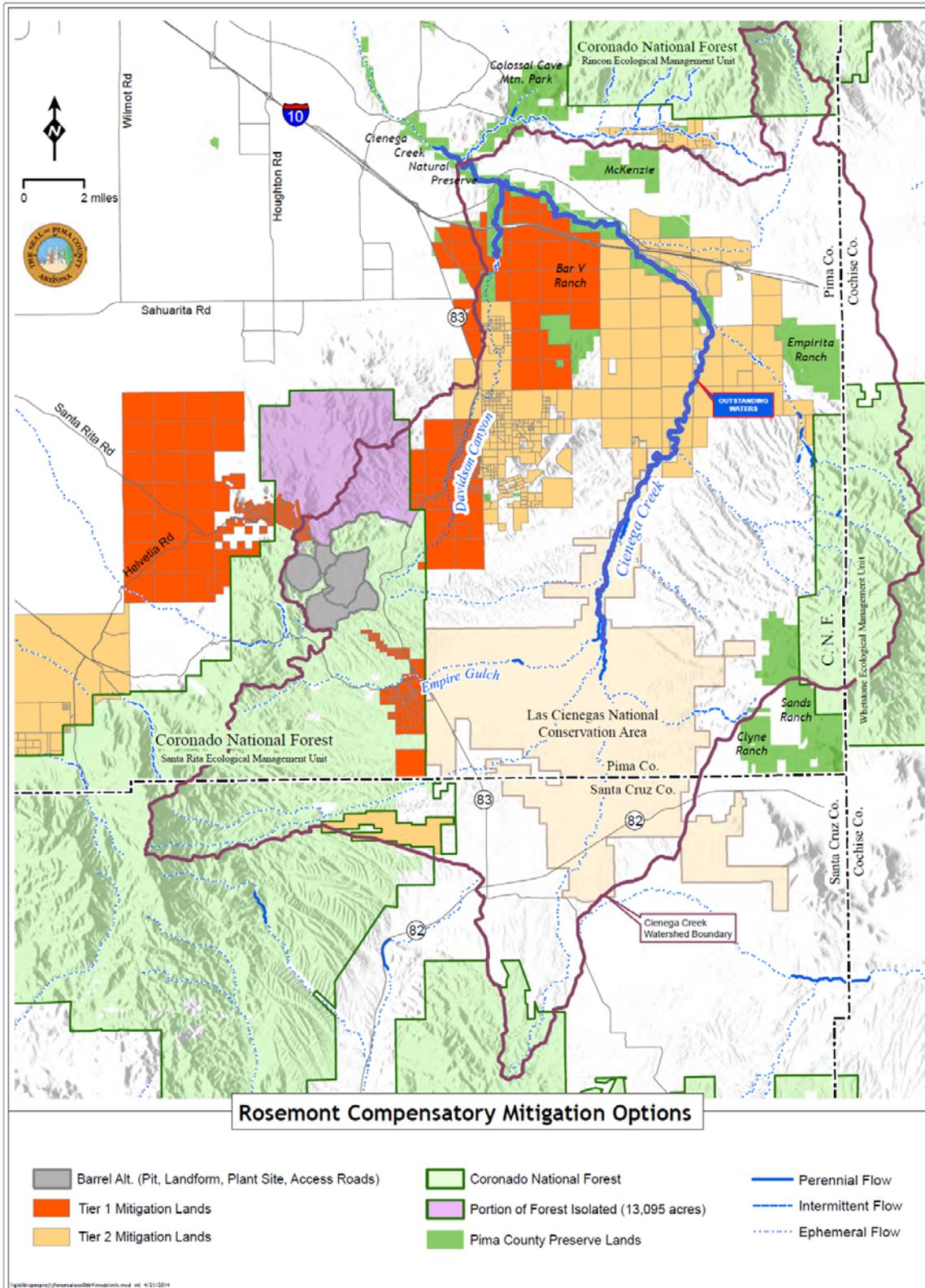


Figure 2. Pima County's 2009 Preferred Mitigation Lands relative to the Cienega Creek Watershed boundary (shown in brown).

The Sonoita Creek Ranch mitigation site (Figure 3) is located outside of the Cienega watershed and geographic area of the Rosemont project site. It is also outside the CLS. It was never been identified for acquisition in any of the public processes used by Pima County. However, Sonoita Creek's watershed has been identified as a conservation priority for Arizona Game and Fish Department, and the Ranch comes with a right to use some of the water from an off-site spring for re-establishing wetland functions. The ranch is also adjacent to National Forest land. Because the site occurs at similar elevations, it may also provide some similar vegetation types as the affected area. The land within the Sonoita Creek Ranch does contribute to landscape connectivity between the Canelo Hills, the Patagonia Mountains and the Santa Rita Mountains. It is not clear whether the site will be accessible to the public or whether the land comes with the mineral rights (which are often separately held). Rosemont would intend to monitor and manage this site for perpetual protection of land and water through the terms of a 404 permit from Corps of Engineers and through a contract or agreement with Arizona Game and Fish Commission.

The Fullerton Ranch mitigation site (Figure 3) is also located far outside the Cienega watershed in the Altar Valley. There is no known imminent risk of development. Relatively little is known about the resource values of the Fullerton Ranch, but it includes areas of Biological Core and Important Riparian Areas. This mitigation area is adjacent to the Marley Ranch acquisitions that are managed by Pima County. The area would contribute to maintaining connectivity between the Sierrita and other protected areas such as the Buenos Aires National Wildlife Refuge. Rosemont's proposed removal of livestock and artificial impoundments might result in improved soil and vegetation conditions and this could benefit conserved lands downstream in Altar Valley. It is not clear whether the site will be accessible to the public or whether the site can be protected against mineral exploitation. If the Corps accepts this site as mitigation, the site would be monitored and managed for the perpetual protection of land and water. It is unclear who would manage the site.

The Davidson Canyon parcels (Figure 3) are scattered near the Rosemont project site. Some of the resource values of these mitigation lands would be indirectly affected by the mining activities, including noise, air quality, dark skies, and hydrology. However, the vegetation is similar to some of the lower elevation lands affected by the mining proposal. The parcels include Important Riparian Areas that contribute to the physical, chemical and biological integrity of Davidson Canyon downstream. If not protected as mitigation land, the Davidson parcels would be likely to be used for commercial, industrial, or residential areas due to their proximity to Highway 83 and the mine. It is not clear whether the parcels will be accessible to the public or whether the site can be protected against mineral exploitation by others under the 1872 Mining Act.

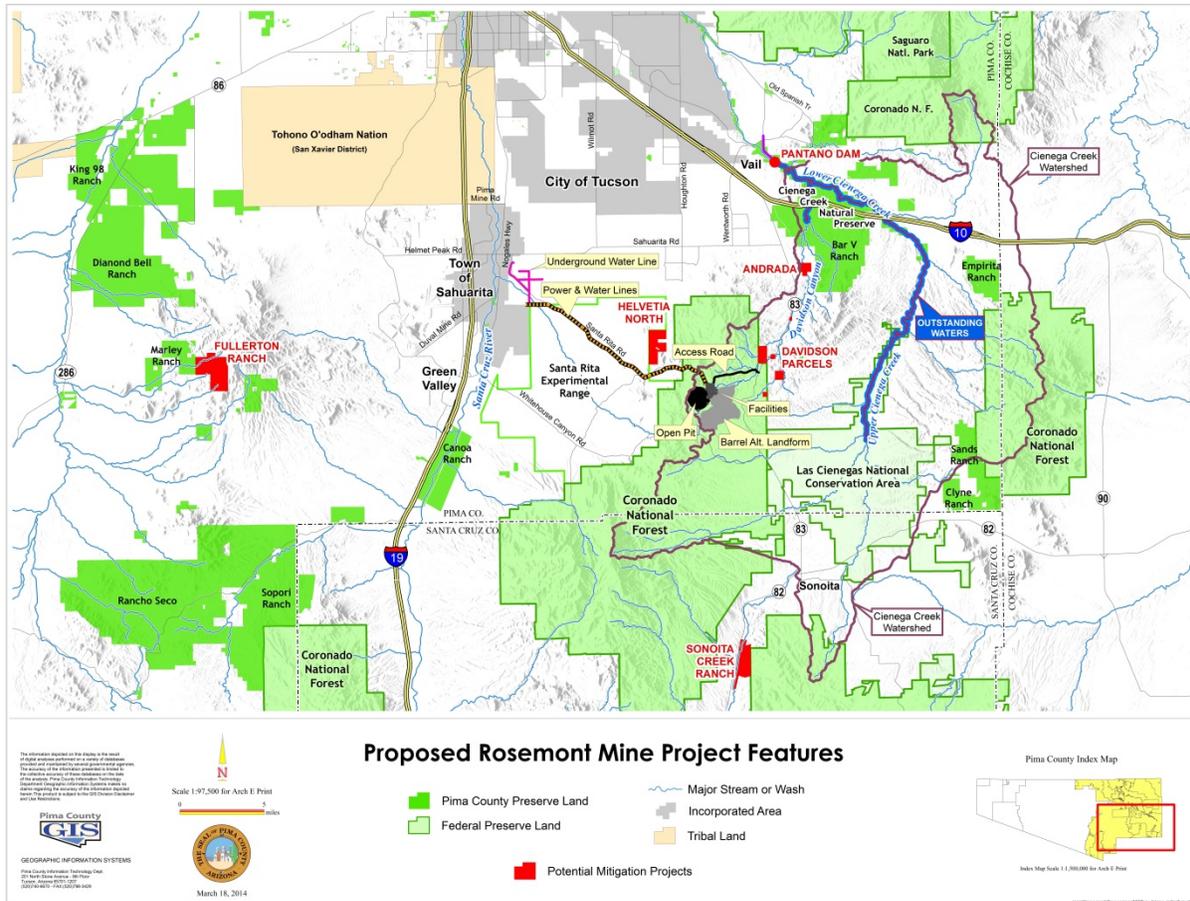


Figure 3. Fullerton Ranch, Helvetia Ranch, Davidson, Pantano Dam, and Sonoita Creek Ranch are Rosemont’s currently proposed mitigation sites. The Andrada Ranch is not owned by Rosemont, but it is for sale.

If the Corps of Engineers and Arizona Game and Fish Department reach terms with Rosemont, the parcels would be monitored and managed for perpetual protection of land and water, but it is unclear who would actually manage the site.

Pima County has also encouraged the acquisition of the Andrada Ranch along Davidson Canyon (Figure 3). The Andrada Ranch holds state trust grazing leases that abut the northern end of the Coronado National Forest. As such these lands are part of the wildlife movement areas that link the Santa Rita mountains to areas north and east.

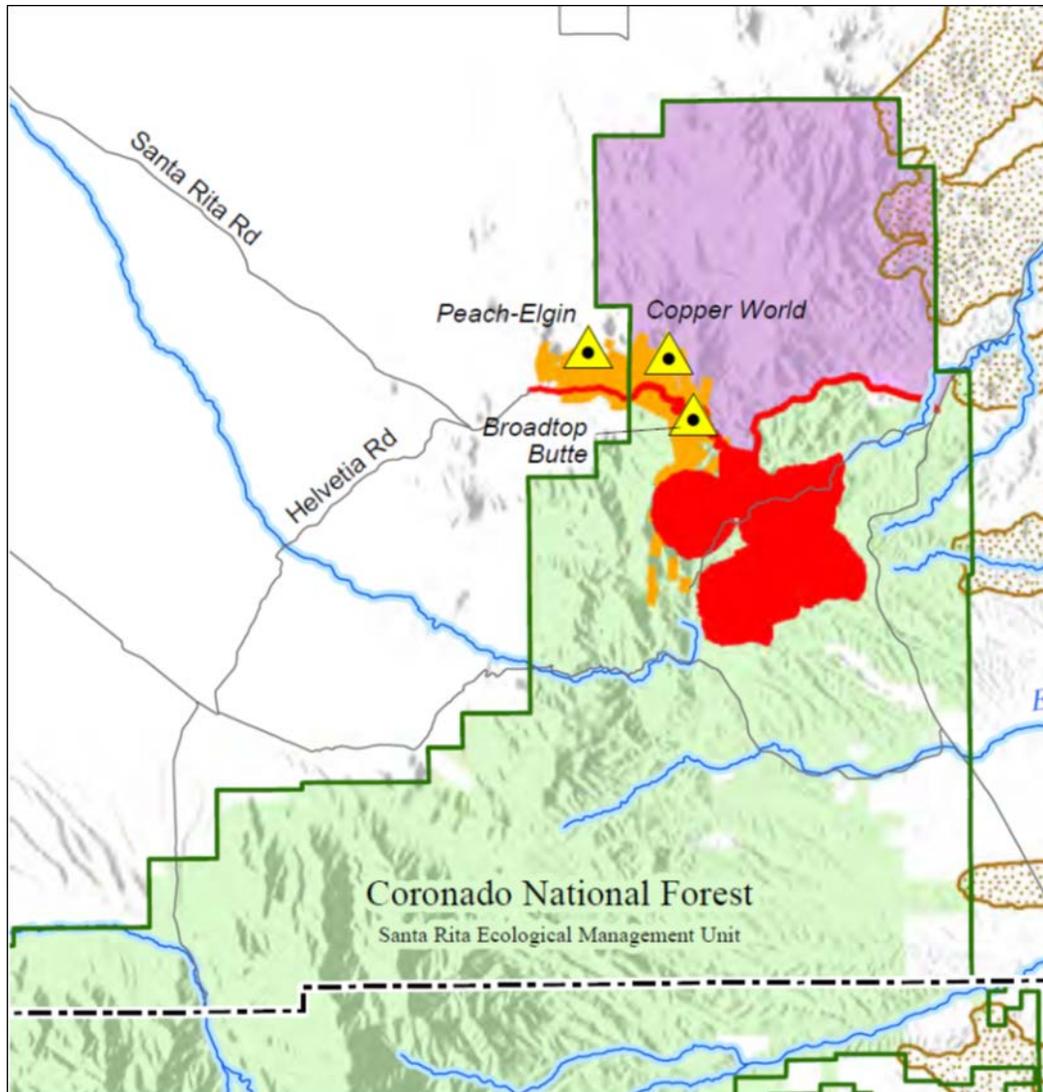
Helvetia Ranch North parcels were purchased by Rosemont from a land developer and could help to maintain connectivity to the north end of the Santa Rita Mountains from the Santa Rita Experimental Range and protect Biological Core areas of the CLS. The elevations and plant

communities are similar to some of the areas affected by the utility corridor. Most of the site is proposed as mitigation for the direct impacts to the Pima pineapple cactus and its habitat. It is not clear whether the site will be accessible to the public or whether the site can be protected against mineral exploitation by others under the 1872 Mining Act. If the Corps of Engineers or the U. S. Fish and Wildlife Service consider the parcels as mitigation, the site would be managed and monitored for perpetual protection. It is unclear who would manage the site.

During the EIS review process and in the 2009 mitigation letter, Pima County also suggested that Rosemont's land holdings at Peach-Elgin, Copper World and Broadtop Butte (shown below in orange, Figure 4) be dedicated to mitigate against future expansion of the mine into areas west of the crest of the Santa Rita Mountains and to protect historical and archeological sites. Rosemont's current proposal leaves these lands available for future development. Should Rosemont develop these parcels, the northern end of the Santa Rita mountains would be further impacted directly and indirectly through habitat fragmentation and loss of ecosystem function.

The Pantano mitigation site is tiny (2 acres) but controls key water rights within the Cienega watershed and is positioned in an area that the CLS defines as a Critical Landscape Connection. This site, also called the Del Lago Dam, is one of the few places in southern Arizona where diverted base flows could be restored to the stream. Pima County identified this parcel as a mitigation site for the mine as early as 2009. The land and water in question has value to a variety of Federally-listed species that are affected or potentially affected by the mine. The land is farther downstream of the mine than the Davidson Canyon parcels, and thus farther from indirect adverse impacts. The site is located within the Cienega Creek Natural Preserve, which provides public access and additional land-use protection. It is not known whether the site is protected against mineral exploitation under the 1872 Mining Act—none of the Natural Preserve enjoys that protection.

Rosemont proposes to operate the site as a managed underground storage facility, but there are no provisions for ecological monitoring or management. The managed underground storage facility provides a means to let water that was previously diverted to the Rancho Del Lago Golf course to flow back into the channel near the diversion dam, while retaining ownership. Under the terms of a state underground storage facility permit, the amount of water thus stored in the channel could be recovered by means of a well, minus the evaporation and transpiration that would be used by the ecosystem thus created.



**Figure 4.** Northern end of the Santa Rita unit of the Coronado, with the Barrel Alternative in red and the remaining patented mineral claims owned by Rosemont in orange. Brown stipples represent wildlife linkages.

Water and Water Rights as CLS mitigation

What is the value of the small but strategic reallocation of water supply from irrigation to wildlife purposes? For a variety of reasons, the availability of water to southern Arizona’s streams and springs has been shrinking. Through the CLS Guidelines, the Board can weigh the value that water or water rights provide in maintaining the biological goal of the SDCP, which is to “ensuring the long-term survival of the full spectrum of plants and animals that are indigenous to Pima County through maintaining or improving the habitat conditions and ecosystem functions necessary for their survival.” Both the Pantano Dam site and the Sonoita Creek have a natural water supply that is available year-round for wildlife and wetland plant

species. The portion of Cienega Creek that is upstream of the Pantano Dam site hosts a variety of rare water-dependent species, but neither the Pantano nor Sonoita sites can replace all of the species values provided by Empire Gulch spring or upper Cienega Creek within Las Cienegas National Conservation Area. The long-term security of flows to any of these sites under conditions of a changing climate is unknown.

Your December 2013 letter to Colonel Colloton, entitled “Sustainable Mitigation Strategy for Rosemont Impacts and Our View of Measureable, Meaningful and Verifiable Mitigation” identified a number of other concerns, which may or may not still be relevant. The current status of each element of your strategy is listed below relative to my current understanding of Rosemont’s mitigation proposal as expressed in various documents provided to federal agencies:

- Purchase and convey the Pantano dam site—Rosemont has acquired the dam site, but plans to retain ownership. The Corps of Engineers would require protection in perpetuity for these sites to qualify as mitigation, but the usual site protection instrument for the Corps mitigation program focuses on natural, not artificial features. The site protection instrument would need to be modified to identify what happens if the dam is destroyed or needs structural modification, and to address under what conditions the well and managed recharge project on which the mitigation depends may be used or abandoned. The site protection instrument could, in theory, be a conservation easement held by a qualified holder that is approved by the Corps.
- Purchase and convey 1,122 acre feet per year of senior surface water rights— The specifics of Rosemont’s water rights offers have changed over time as they discuss mitigation with federal agencies, but those discussions are nearing conclusion. It appears that Rosemont has acquired the water rights, and would retain ownership of the senior water right, but has offered to transfer some of the water rights to Pima County and others. This is discussed further below.
- Purchase and convey the distribution pipeline between the Pantano Dam and the Lago del Oro Golf Course—Rosemont has purchased the pipeline, and would retain ownership.
- Purchase and convey Water Production Well Registration Number 602949 owned by Vail Water Company—Rosemont has not yet purchased the well, but is proposing to the Corps to acquire and “retire” the well. This is significant, because if the well were pumped, it could deplete the existing streamflow upstream of the diversion.

- Construct and convey a reclaimed water extension line from Drexel Road at the Pantano Wash approximately 11 miles to the Pantano Dam of sufficient size to deliver approximately 750 acre feet per year of reclaimed water to the Pantano Dam site—Provision of supplementary water sources to the mitigation site is not part of Rosemont’s proposal to the federal agencies.
- Purchase from the Bureau of Reclamation (or any other reclaimed water owner) and deliver approximately 750 acre feet annually of reclaimed water to the Pantano Dam site—This is not part of Rosemont’s proposal to the federal agencies.
- Purchase and convey the Andrada Ranch, consisting of 276 fee-owned acres along Davidson Canyon, or other suitable and targeted compensatory mitigation lands as identified in your December 23, 2009 letter—Rosemont has not purchased the Ranch.

You have also expressed concern that the terms of the Federal mitigation or the managed underground storage facility (in the Cienega Creek Natural Preserve) would impose costs upon Pima County. As currently proposed, the mine would not have any responsibilities to fund management of invasive species or control other impacts that might occur in the Cienega Creek Natural Preserve (Preserve). Rosemont has indicated that such costs could be covered by their proposed Cienega Watershed Fund but it is not administered by Pima County, and the Fund is being offered to compensate for a multitude of other potential impacts. There is no guarantee that any of the money would be used in the Preserve.

As noted above, the Rosemont mitigation package includes surface water rights, which provide legal access to use the state’s water for a given purpose. Rosemont has offered to separate (“sever-and-transfer”) some of the 1,100 acre-feet of irrigation water rights from the dam site to wildlife uses at other locations on Davidson Canyon or Cienega Creek upstream. Rosemont has acknowledged that the state’s sever-and-transfer process could take years to occur, and would not create any real, flowing water at the new locations. Rosemont has indicated that Arizona Game and Fish Department or Bureau of Land Management might consider the rights useful should they establish beaver in the upper Cienega watershed. Rosemont is willing to transfer a portion of the irrigation rights they own to Pima County for wildlife use in a location farther upstream along Cienega Creek or Davidson Canyon. These transfers could in theory reduce the maximum amount of water that could be diverted at the Pantano Dam, but we observe that far less has been delivered by nature each year than what the law allows to be diverted.

In the state of Arizona, having rights to water on paper provides very limited protection to streams or springs. Many streams and springs in Arizona have been already been affected by groundwater pumping for which water rights holders have had no recourse. As described by one of our County attorneys, *“Arizona’s laws are as eccentric and schizophrenic as any, with entirely different sets of laws for the use of groundwater and surface water....This is the central divide among the 50,000+ claimants in the Gila Adjudication of the Gila River. Millions of dollars of hydrological studies have been prepared and submitted to that court in an effort to define what attributes of subsurface hydrology will compel groundwater users to defer to the prior rights of surface water users. To date, that court has failed to resolve this issue.”*

In effect, the surface water rights, once transferred to County ownership, would only be as good as the willingness of the County Board to sue others to protect their rights, and subsequent outcome of court decisions. Such paper rights do not prevent loss of streamflow due to climate change or other watershed alterations either. Nonetheless, in hopes that water rights might someday provide some meaningful protection against man-made diversions, Pima County RFCD years ago established in-stream flow water rights for wildlife along Cienega Creek. Pima County also obtained stockwatering rights on Davidson Canyon when it purchased Bar V.

### Conclusion

Pima County continues to urge Rosemont and the regulatory agencies to protect additional lands for compensatory mitigation in the CLS. Although many of Rosemont’s existing mitigation lands are not ideally located, Rosemont still has an opportunity to combine these with a more complete package of additional lands located in the Cienega watershed or adjacent to the Santa Rita unit of the Coronado National Forest to meet the CLS guidelines and more fully offset impacts of the proposed mine, as described in Figure 4. The Board can consider the value of water or water rights as part of the CLS mitigation package, but the federal decisions will likely provide at least a framework for how water or water rights will be used to offset impacts.

Most of the federal decisions are expected to be completed between now and June 2014, thus the opportunities for enshrining Rosemont’s commitments in a federal document will soon close. Even after the Federal decisions have been made, Pima County will need to decide how it would be involved—if at all—in the operation of a managed underground storage facility, which could be operated with or without a mine.

Attachment 1-Rosemont Copper brochure