

Debby Kriegel /R3/USDAFS

08/11/2010 01:52 PM

To "Terry Chute" <tjchute@msn.com>

cc "Melinda D Roth" <mroth@fs.fed.us>, "Reta Laford" <rlafor@fs.fed.us>, Debby Kriegel/R3/USDAFS@FSNOTES

bcc

Subject Re: Rosemont Cumulative Effects

History: This message has been forwarded.

Thanks Terry. See my answers in red.

"Terry Chute"  
<tjchute@msn.com>

08/11/2010 01:07 PM

To "Melinda D Roth" <mroth@fs.fed.us>, "Reta Laford" <rlafor@fs.fed.us>, "Debby Kriegel" <dkriegel@fs.fed.us>

cc

Subje Re: Rosemont Cumulative Effects

ct

Debby,

While I think it is a good idea to show the bounds of a cumulative effects area on a map , I have a couple concerns or questions about your proposal .

1. It is not clear to me what the added value of the 1902 map is. Seems like we can show past, present and reasonably foreseeable on the current map . Your thoughts helping me understand would be good. I don't see a better way to show past actions through time (like the growth of cities/towns, new highways, and the shrinking of protected lands like the Santa Rita Experimental Range). Interestingly, the 1902 maps will show a few places where resources are less impacted today (like mining towns that disappeared and the designation of wilderness).

2. Timing - are you anticipating getting this done and using it for the DEIS ? Seems like getting all the past & reasonably foreseeable actions on one map could be a big chunk of work , and I am concerned about it holding up the process . The list of past, present, and future actions is still very draft. As this list gets worked on, it could be a great time to do this mapping . Perhaps the maps won't be complete by the DEIS...but if the mapping goes relatively smoothly , maybe it could. I don't see this as holding up anything, though some resources (myself included) could do a better job with cumulative effects analysis with the map , so doing it before the DEIS is published would be best.

Eventually each resource will need their own map of their cumulative effects analysis area , and

mapping of past, present and reasonably foreseeable actions may or may not be desirable . Some past, present and reasonably foreseeable actions will be relevant to a particular resource, while others will not. I can see that it would be useful to have one master map that you could turn past, present and foreseeable action on or off, print a map with the relevant one turned on for a particular resource, and add the cumulative effects analysis area. I'm just not clear on how much time and effort this will take, and whether we have the luxury of getting this done in time to use it for the DEIS.

The other thing that worries me is the accuracy of the Reasonably Foreseeable list, and I do not know if we even have a list of past and present actions that specialists need to consider. We need to get on top of that, and I have no idea whether there is someone tasked with finalizing those or not. I would not want SWCA or anyone else researching out project polygons for project that we (FS) have not determined to be part of a "final" list. I thought you were going to review the draft list. Is that not true?

Perhaps there is a middle ground that we can get to where we use the best current base layer we have (do not invent a new one) and (1) finalize the list of past, present and foreseeable actions that are accurate and relevant (i.e., make sure that actions are truly foreseeable); (2) decide which ones are best depicted on a map (some, like Forest Plan Revision, do not lend themselves to mapping); and (3) decide how to provide maps to individual specialists that are useful and depict the past, present and reasonably foreseeable actions that are meaningful for their particular resource. If we can do that with a few days of work - and provide it to the specialists in a timely manner - it is probably worth doing. Otherwise we may need to look at this for the FEIS and do the best we can for the DEIS, which may mean describing the cumulative effects analysis area and listing the applicable past, present and reasonably foreseeable actions in the text of Chapter 3.

Sounds good to me. And I would expect that a good GIS person, and some coordination with team members (individually or at a meeting) could do this in a timely manner.

**From:** Debby Kriegel  
**Sent:** Wednesday, August 11, 2010 12:44 PM  
**To:** Melinda D Roth; tjchute@msn.com; Reta Laford  
**Cc:** Debby Kriegel  
**Subject:** Rosemont Cumulative Effects

As I think about cumulative effects analysis needed for Rosemont (and consider the bounds of analysis maps for various resources), I believe that some additional GIS mapping would be helpful for the IDT, the public, and decisionmaker in order to fully understand cumulative effects.

I've drafted a scope of work (just over 1 page) and would appreciate your thoughts. Tom Furgason told me that SWCA has several GIS specialists on staff.

Thanks.

John Able/R3/USDAFS  
10/01/2009 03:39 PM

To Melinda D Roth/R3/USDAFS@FSNOTES  
cc  
bcc  
Subject Re: Rosemont FAQs

History This message has been forwarded.

Mindee, such an FAQ would be of tremendous value for the website -- something like CEQ's "40 Most Asked Questions about NEPA." Perhaps, "20 Most Asked Questions about the Proposed Rosemont Copper Project." Thanks for running with this ideal

John A. Able  
Tucson, Arizona  
Time Zone: MST  
ODE (Organizational Development Experts)  
A Forest Service Enterprise Unit  
Text, Voice, or Voicemail: 520-405-4256  
Melinda D Roth/R3/USDAFS



Melinda D Roth/R3/USDAFS  
09/08/2009 03:34 PM

To dkriegel@fs.fed.us, dsebesta@fs.fed.us, jable@fs.fed.us, sidavis@fs.fed.us, sshafiqullah@fs.fed.us, Walter Keyes/R3/USDAFS@FSNOTES, abelauskas@fs.fed.us, aelek@fs.fed.us, ecuriel@fs.fed.us, gmckay@fs.fed.us, kbrown03@fs.fed.us, kellett@fs.fed.us, ljones02@fs.fed.us, Mary M Farrell/R3/USDAFS@FSNOTES, rlefevre@fs.fed.us, temmett@fs.fed.us, William B Gillespie/R3/USDAFS@FSNOTES, rlaford@fs.fed.us, beverson@fs.fed.us, Teresa Ann Ciapusci/R3/USDAFS@FSNOTES, mreichard@swca.com, tfurgason@swca.com, ccoyle@swca.com, Heidi Schewel/R3/USDAFS@FSNOTES

cc

Subject Rosemont FAQs

I'd like to develop and post to our website some basic project information. Basic information could help 1) educate the public about the project 2) answer general questions 3) limit mis-information 4) limit the time required to answer basic questions... I'd like to ask you all to review the list of questions I have and give me some input on other basic questions that come to mind. Thanks.

Mindee Roth  
Coronado National Forest  
300 W. Congress, FB42  
Tucson, AZ 85701  
(520) 388-8319  
(520) 396-0715 (cell)

**Melissa Reichard**

---

**From:** Beverley A Everson [beverson@fs.fed.us]  
**Sent:** Friday, May 01, 2009 10:30 AM  
**To:** Melissa Reichard  
**Cc:** Charles Coyle; rlaford@fs.fed.us; tciapusci@fs.fed.us; Tom Furgason  
**Subject:** Re: Admin Record

I defer to T.A. on this one.

Beverley A. Everson  
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Tucson, AZ. 85701

Voice: 520-388-8428  
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"Melissa Reichard" <mreichard@swca.com>

To <tciapusci@fs.fed.us>, <rlaford@fs.fed.us>, <beverson@fs.fed.us>

cc "Tom Furgason" <tfurgason@swca.com>, <ccoyle@swca.com>

04/30/2009 04:55 PM

Subject Admin Record

Hello Ladies-

Victoria and I were talking together today. I had been planning on her working on making the items that would definitely make it into the Admin Record to abide by the 1" margins requirement. However, when I thought about it- will we still need 1" margins? From what I understand, the 1" margins were for limiting text cut off during duplication of the record. Now that we are doing a completely electronic record as well, wouldn't we duplicate from that? If so, do we need the extra work of adjusting all pages to 1" margins? We notice that Jeanine's letters to Cooperators don't even abide by that guideline. Chances are, we would need to alter a significant % of the record. So, is the 1" margin requirement still necessary? You may also want to consider whether the single-sided requirement still stands for the same line of reason.

I look forward to hearing your thoughts!

Thanks!

Melissa Reichard  
Project Administrator  
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"Man's mind, once stretched by a new idea, never regains its original dimensions." -Oliver Wendell Holmes

6/18/2009



Brian Lindenlaub  
<blindenlaub@westlandresources.com>

08/11/2010 09:22 PM

To "Blaine, Marjorie E SPL"  
<Marjorie.E.Blaine@usace.army.mil>  
cc Reta Laford <rlaford@fs.fed.us>, Melinda D Roth  
<mroth@fs.fed.us>, 'Katherine Arnold'  
<karnold@rosemontcopper.com>, Jamie Sturgess  
bcc

Subject RE: Montenore Review

Thanks, Marjorie. I appreciate you providing these comments. The shortcomings you identify in the Montanore report are similar to others you and I have discussed in the past. Given that, I'd like to ask if you could direct us to a 404b1 alternatives analysis for a mining project that you feel adequately addresses offsite alternatives and issues of cost versus economics. You have indicated that older 404b1 analyses which have addressed these issues, such as Carlota and Dos Pobres/San Juan, would not necessarily apply to modern permitting efforts.

Thanks again,  
Brian Lindenlaub | Principal  
**WestLand Resources, Inc.**

**From:** Blaine, Marjorie E SPL [mailto:Marjorie.E.Blaine@usace.army.mil]  
**Sent:** Wednesday, August 11, 2010 5:47 PM  
**To:** Brian Lindenlaub  
**Cc:** Reta Laford; Melinda D Roth  
**Subject:** Montenore Review

Brian

Here are some comments on the Montenore Practicability document. I hope this assists you in providing a revised Section 404(b)(1) alternatives analysis for the Rosemont project.

1.2.1: Basic project purpose: Tiffany and I discussed and agreed that it should just state "to mine copper and silver" and shouldn't go on to state "to meet a portion of current and future demands". The latter does not go to determination of water dependency.

1.2.2: Overall project purpose: it is too restrictive. It should not specify an exact amount of ore but should approximate or give a range and it should also not state "in an economically viable manner". That portion of the overall project purpose unduly restricts the alternatives.

1.2.3: They didn't document a need for THIS project. They documented a need for copper and silver but did not indicate why this specific mine was necessary or the amount of copper/silver it would contribute to help with supply/demand of copper/silver. They did indicate that Montana produces the least amount of copper of the principal domestic mining states.

3.1: They just skipped through the alternative mine location section...it doesn't justify selection of the one they are proposing and it just makes a broad statement that there were no others that were available. It should have listed them and indicated why they were not available. What I don't understand is this document indicates that the USFS DID look at offsite alternatives in accordance with NEPA. **Reta: this makes me wonder further regarding Coronado's contention**

that the USFS never looks at offsite alternatives? I'm just confused.

3.2: Way too much time/detail explaining why a joint venture wasn't possible. Federal agencies cannot force two companies to form a joint venture so that one operation is undertaken so why print pages and pages just to justify that concept?

4.1.1: This is very interesting in that the applicant is going forward with an application for a mine where they are only at the preliminary assessment stage; obviously this has given them enough information to determine they can mine this ore body. At what stage is RM in respect to the Rosemont ore body but more importantly, the Broad Top Butte, Copper World, and Peach Elgin resources? Just from the descriptions, it seems like the latter three mineral resources are at some stage of preliminary assessment.

4.3.1: Their summary that dry backfilling is not practicable is confusing. They document the required system to place the dry backfill but then, in the last paragraph, state they can't get it close to the roof so considering that and other things (being what?), this alternative is not practicable. It may not be practicable but they haven't documented it well enough.

4.3.2: They needed to document that bringing in additional sand-sized material for the dam would not be practicable due to costs. So without that, they shouldn't have eliminated this alternative.

Due to my limited time in looking at this document, I'm going to skip down a bit.

4.5: Assessment of Economic Feasibility: they start out by stating they are discussing costs, but they aren't...they are discussing economic feasibility which is a different thing all together. Their entire discussion is based on a cost per unit which is a revenue consideration, not simply a cost consideration (cost of this alternative as compared to costs normally associated with that type of operation).

5.2 I think their site screening was too restrictive. Yes, availability is first but then it needs to be practicability in light of cost, logistics, technology any of which can cause an alternative to not be practicable. Once you have the practicable alternatives, then you start looking at the impacts to WUS and the other environmental impacts. So they put the cart before the horse since they looked at availability and then they started looking at environmental issues.

I did not go any further because I think my comments above illustrate the problems with this particular study. If you have any questions or want to discuss it, please let me know.

Also, Brian, I am attaching the guidance to which I referred the other day regarding the transportation project. I found it was no problem to release it. I am happy to assist and answer questions in any way I can as you are working on revising the 404(b)(1).

*Marjorie Blaine*

Senior Project Manager/Biologist  
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Melinda D Roth /R3/USDAFS  
10/06/2009 02:21 PM

To jmacivor@swca.com  
cc Melinda D Roth/R3/USDAFS@FSNOTES  
bcc  
Subject NFMA consistency table and MA map



1986 Management Direction as amended(edited).docx rosemont\_MAs.pdf

Mindee Roth  
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**1986 Forest Plan Management Direction  
Issues, Concerns, and Opportunities**

Management concerns and issues are termed "issues" and described below. The thirty-six issues were grouped into fourteen subject matter areas. The issue of potential wilderness designation for contiguous BLM-administered lands is not pertinent to implementation of this plan is not displayed here.

	Keep	Remove	Modify
<b>RECREATION AND VISUAL QUALITY</b>			
As local and tourist populations increase in the Coronado's zone of influence, the demand for outdoor recreation on the National Forest can be expected to continue to exceed the ability of the Forest Service to provide needed services. Several issues are generated by this situation as follows:			
1. Identification of potential overuse areas and establishment of carrying capacities (number of people who can use an area without damage to natural resources).			
2. Regulation of off-road vehicle use to protect other Forest resources and uses, while continuing to provide this much-demanded recreational activity.			
3. Use of land for recreational development and dispersed uses, and establishment of equitable fees for recreational use.			
4. The role of the private sector in providing recreation services on and adjacent to the National Forest must be reassessed.			
5. Inventory and management planning for the Coronado's many caves, and location of this resource to recreational, scientific, and wilderness uses.			
6. Visual resource integrity in all land management decisions.			
<b>WILDERNESS</b>			
Potential designation of portions of the Coronado for wilderness has long been studied and debated. Recent wilderness bills for both New Mexico and Arizona have made this allocation for most areas under consideration for the duration of this plan. The two bills directed further study on three of the Forest's areas. Two wilderness related issues are:			
1. Formulation of a recommendation to Congress concerning wilderness status for the Bunk Robinson, Whitmore Canyon, and Mt. Graham Wilderness Study Areas.			
2. Within the constraints of the Wilderness Act, decisions are needed concerning intensity of management and investment for recreation, range, wildlife habitat, and fire management (including planned ignitions) within wilderness areas.			
<b>CULTURAL RESOURCES</b>			
Arizona and New Mexico have a wealth of historic and prehistoric cultural resources. Although all such resources are currently protected from disturbance by law, many people advocate a more aggressive approach to management of cultural values. The issue is:			
1. The amount of time and investment to interpretation of cultural sites.			

<b>1986 Forest Plan Management Direction Issues, Concerns, and Opportunities</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<b>WILDLIFE AND FISH</b>			
<p>The diversity of plants and animals found on the Coronado is unique in the National Forest System. This uniqueness, coupled with a great deal of local and national interest in this resource, generates a complex management opportunity. Five issues involving wildlife management follow:</p>			
1. The amount of time and resources to be given between threatened, endangered, or unique species; and other flora and fauna.			
2. Critical wildlife habitat must be identified, along with needed controls on other uses (mineral extraction, recreation, etc.)			
3. Appropriateness of predator and rodent control, when and where.			
4. Fishing lakes which will be maintained and consideration of any new construction.			
5. Maintenance and improvement of the wildlife habitat for future generations in conjunction with other Forest activities.			
<b>RANGE</b>			
<p>Grazing by domestic livestock is a major use of the Coronado. As demand for other uses increases, potential for conflicts between uses grows. This generates two planning issues:</p>			
1. Managing Forest lands for grazing in relation to other uses.			
2. Where permitted use exceeds capacity, an appropriate combination of management changes and numbers adjustments must be determined. Scheduling of needed changes is also important.			
<b>TIMBER AND FORES PRODUCTS</b>			
<p>Sawtimber production on the Coronado is low compared to most other National Forests, but products such as fuelwood, posts, poles, Christmas trees, and beargrass are significant to local users. Silvicultural techniques are a valuable tool for accomplishment of range, wildlife, watershed, recreation, and visual quality objectives. Timber related issues are:</p>			
1. Distribution of forest products between commercial users and personal use and availability of permits to non-citizens.			
2. Timber harvest amount and objectives.			
3. Silvicultural systems and harvest techniques; including clearcutting, snag management, timber stand improvement, reforestation, and harvest of green or dead fuelwood.			
<b>PLANT AND ANIMAL DIVERSITY</b>			
<p>Because of its unique geographical location, the Coronado includes an unusually wide diversity of vegetation. Wild animals are habitat dependent, and therefore animal diversity tends to be proportional to plant diversity. In the past vegetation has been manipulated through fire management, grazing, direct plant control, etc. Issues involve further manipulations and uses of the diverse ecosystems as follows:</p>			
1. Location and extent of vegetative manipulation.			
2. Selection of species for revegetation.			
3. Management of uses and management practices in riparian areas.			

1986 Forest Plan Management Direction Issues, Concerns, and Opportunities	Keep	Remove	Modify
<b>SOIL AND WATER</b>			
Much of the water used in Southern Arizona and New Mexico originates on the mountain watersheds of the Coronado. Competition for available water is rapidly increasing and concern is growing about quantity and quality. The issue can be stated as follows:			
1. Management of forest resources to protect or enhance watershed condition from both a hydrologic function and soil productivity standpoint.			
<b>MINERALS</b>			
The Southwestern United States continues to produce a significant portion of the nation's mineral supply. Extraction of minerals has a potential to disrupt other Forest values, if not carefully regulated. In a few sensitive areas it is necessary to exclude mineral activity. The issue can be stated as follows:			
1. Identification of sensitive areas and formulation of recommendations for needed withdrawals from mineral entry.			
<b>LANDS AND SPECIAL USES</b>			
While the Coronado is substantially solid blocks of federal land, there are areas where lands would be better suited for private uses or where administration is made more costly because of the ownership pattern. Conversely, some included private lands are of a National Forest character. Demand for a wide variety of special uses of the Forest continues to grow. Three issues are listed:			
1. Revision of land ownership adjustment plans to update lands desirable for acquisition and available for disposal.			
2. Allocation of National Forest land for special uses such as commercial development, summer homes, utility corridors, scientific study sites, roads, apiary sites, ski areas, etc.			
3. Management of National Forest land for astrophysical research purposes on Mt. Graham. This issue and the specific concerns and opportunities related to it are being analyzed in a separate environmental impact statement.			
<b>SPECIAL AREA DESIGNATIONS</b>			
The biological uniqueness of the Forest generates a great deal of interest in the area for scientific study and for designation of special management areas to protect biological communities and habitats. Two types of special areas are under consideration:			
1. Management of land as Zoological-Biological Areas to protect biological uniqueness through modified management practices.			
2. Management of land as Research Natural Areas to provide opportunities for study of natural ecological processes in undisturbed areas.			

**1986 Forest Plan Management Direction Issues, Concerns, and Opportunities**

	Keep	Remove	Modify
<b>PROTECTION</b>			
<p>Many years of intensive fire control has resulted in significant changes in vegetative composition of the Coronado. In some cases this shift has been towards a less desirable plant community with attendant increase in fire hazard, decrease in forage production, and declining wildlife habitat. As management philosophies have evolved toward fire management, as opposed to control, there is increasing support for a more natural role of fire in the ecosystem. Use of fire as a tool for changing and maintaining vegetative diversity continues to enjoy strong local support. Proposed fire management policies address the following issues:</p>			
1. Use of fire as a management tool, including planned ignitions, prescribed natural fire, and management of wildfires.			
2. Appropriateness of suppression actions under varying conditions and locations.			
<b>FACILITIES (ROADS AND TRAILS)</b>			
<p>Access to Forest lands is becoming increasingly restricted as development occurs on adjacent lands, and as users cause increasing damage on neighboring private land. The Forest Transportation System has deteriorated over the past 10 years while use has drastically increased. Several access-related issues are apparent:</p>			
1. Need for adequate legal rights-of-way to allow public access to the National Forest for all legal uses.			
2. Commitment of resources to construction and maintenance of an adequate system of roads and trails (including signing) for Forest users.			
3. Resolution of conflicts between trail users (hikers, horses, motorized vehicles).			
4. Degree of public access to special use areas. Involves a legitimate need to protect valuable improvements versus the public's right to access to public land.			
<b>LAW ENFORCEMENT</b>			
<p>National forests are perceived as places to escape the pressures of urban living and relax in a peaceful atmosphere. Most forest visitors prefer a great deal of freedom from burdensome regulations, but at the same time expect a climate of "law and order." This creates a challenge in development of an agency law enforcement posture. Proposed law enforcement policies address:</p>			
1. Degree of regulation of forest users and identification of areas needing more intensive enforcement efforts.			

**1986 Forest Plan Management Direction  
Goals Applicable to all Areas**

	Keep	Remove	Modify
<b>MISSION</b>			
The broad base for management of the Coronado National Forest is provided through a general mission statement:			
Manage the resources of the Coronado National Forest under multiple-use and sustained-yield principles to provide for balanced contributions to the national welfare and to the economic and social needs of the people of Southeast Arizona and Southwest New Mexico. Management programs are to be oriented to maintain cultural values and a viable rural economy			
<b>GOALS - RECREATION</b>			
A goal is defined as a "concise statement of the state or condition that all land and resource management plan is designed to achieve. A goal is usually not quantifiable and may not have a specific date for completion." (36 CFR 219.3) Forest Service activities are grouped into 12 program elements identified by an alphabetic code. Goals have been developed in each of these elements. There are 8 resource elements: (A) Recreation, (B) Wilderness, (C) Wildlife and Fish, (D) Range, (E) Timber, (F) Water, (G) Minerals, and (H) Human and Community Development; and 4 support elements: (J) Lands, (K) Soils, (L) Facilities, and (P) Protection. The Forest has set the following goals for each resource and support element:			
Maintain the current spectrum of developed, dispersed, and primitive recreation opportunities and increase those opportunities within the capability of the resources and the framework of this plan as needs and funds develop.			
Establish a dialogue with the public to gain their understanding of our goals and objectives and insure their informed participation in our management decisions.			
Increase the public's awareness of their obligation to the resource and their responsibility in caring for it.			
Work with other government agencies and private sector to secure public access to recreation resources.			
Work with Regional Office and research in development of process to establish recreation capacities.			
Nurture partnership with other recreation agencies, the private sector, and professional organizations, to develop a full spectrum of recreation opportunities in southern Arizona and southwest New Mexico.			
Maintain or enhance the visual resource through sound landscape management principles.			
Inventory, protect, manage, and interpret cultural resources.			
Identify, evaluate, and nominate cultural resource sites to the National Register.			
Provide for the active management of cultural resources to serve as a source of knowledge about the nation's cultural heritage, to provide recreational opportunities for the public, and to facilitate the management of other forest resources.			
Protect significant cultural resources from damage by project activities or vandalism.			

**1986 Forest Plan Management Direction  
Goals Applicable to all Areas**

	Keep	Remove	Modify
Encourage protection of non-federally owned cultural properties located within or adjacent to National Forest boundaries.			
Develop Information Service Programs that will educate, inform, and involve populations of southern Arizona and southwest New Mexico in management and enjoyment of the forest.			
Preserve and protect caves for their unique environmental, biological, geological, hydrological, archeological, paleontological, cultural, and recreational values.			
Manage caves in partnership with caving organizations, scientists, and outdoor recreationists.			
Interpret cave resources and provide public education for increased public understanding and awareness of the need to protect and preserve these unique ecosystems.			
Coordinate the management of cave and surface resources as a recreational opportunity. Primary emphasis is on dispersed recreation activities compatible with responsible cave management.			
Provide for public health and safety while recognizing that no cave is completely safe and that risk-taking is part of the caving experience.			
<b>GOALS - WILDERNESS</b>			
Manage existing wilderness to preserve and protect the wilderness character in accordance with the various Wilderness Acts.			
The Bunk Robinson and Whitmire Canyon Wilderness Study Areas will be recommended for nonwilderness management. The Mt. Graham Wilderness Study Area will be recommended for wilderness designation.			
These recommendations are preliminary recommendations that will receive further review and possible modification by the Chief of the Forest Service, the Secretary of Agriculture, and the President of the United States. Final decisions on wilderness or nonwilderness designations have been reserved by the Congress to itself.			
Until Congress makes a decision, the three WSAs will be managed under the direction prescribed for Management Area 9 to maintain the existing wilderness character and potential for inclusion in the National Wilderness System.			
<b>GOALS - WILDLIFE AND FISH</b>			
Provide habitat for wildlife populations consistent with the goals outlined in the Arizona and New Mexico Department of Game and Fish Comprehensive Plans and consistent with other resource values.			
Provide for ecosystem diversity by at least maintaining viable populations of all native and desirable non-native wildlife, fish, and plant species through improved habitat management.			

**1986 Forest Plan Management Direction  
Goals Applicable to all Areas**

	Keep	Remove	Modify
Improve the habitat of and the protection for local populations of threatened and endangered species to meet the goals of the Endangered Species Act of 1973.			
<b>GOALS - RANGE</b>			
To restore rangeland to at least a moderately high ecological condition (70 to 75% of potential production, fair range condition) with stable soil and a static or upward trend.			
Produce livestock products consistent with other resources and uses.			
Eliminate grazing from areas not capable of supporting livestock without significant detriment to range or other resources.			
Balance permitted grazing use with grazing capacity.			
<b>GOALS - TIMBER</b>			
Continue a program that enhances other resource values, and that effectively utilizes the wood fiber produced. Carry out silvicultural practices to improve stand health when such practices are consistent with other resource objectives.			
<b>GOALS - SOIL AND WATER</b>			
Secure and provide an adequate supply of water for the protection and management of the National Forest.			
Provide a favorable water flow in quantity and quality for off-Forest users by improving or maintaining all watersheds to a satisfactory or higher level.			
<b>GOALS - MINERALS</b>			
Support environmentally sound energy and minerals development and reclamation.			
<b>GOALS - HUMAN AND COMMUNITY DEVELOPMENT</b>			
Use human resource programs to meet the goals and objectives for resources and activities.			
<b>GOALS - LANDS</b>			
Use land ownership adjustment to accomplish resource management objectives.			
Allow the use of available National Forest lands for appropriate public or private interests consistent with National Forest policies.			
Resolve unauthorized occupancy as cases arise.			
Obtain rights-of-way needed for resource management objectives.			
Protect representative areas identified for the Research Natural Area System.			
<b>GOALS - FACILITIES</b>			
Maintain all facilities to maintain health and safety standards. Provide administrative improvements to meet resource and activity needs.			
Identify property lines.			
Provide transportation systems to meet land management and resource needs.			
Insure that improvements will meet pollution abatement standards.			

**1986 Forest Plan Management Direction  
Goals Applicable to all Areas**

	Keep	Remove	Modify
<b>GOALS - PROTECTION</b>			
Protect life, property, and resources from wildfire while using prescribed fire as a tool to meet management objectives.			
Through integrated pest management, manage resources to prevent buildup of insects and diseases.			
Cooperate with state and local law enforcement agencies in the protection of visitors, their property, and National Forest lands and facilities.			
Cooperate with other Federal, state, and local regulatory agencies to protect air quality as required by the Clean Air Act.			

## 1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Mexican Spotted Owl

These standards and guidelines are superseded by red squirrel standards and guidelines when necessary only in red squirrel habitat on Mt. Graham in Management Areas 2 or 2A.

	Keep	Remove	Modify
<b>STANDARDS</b>			
Provide for three levels of habitat management - protected, restricted, and other forest and woodland types to achieve a diversity of habitat conditions across the landscape.			
Protected areas include delineated protected activity centers: mixed conifer and pine-oak forests with slopes greater than 40% where timber harvest has not occurred in the last 20 years; and reserved lands which include wilderness, research natural areas, wild and scenic rivers, and congressionally-recognized wilderness study areas.			
Restricted areas include all mixed-conifer, pine-oak, and riparian forests outside of protected areas.			
Other forest and woodland types include all ponderosa pine, spruce-fir, woodland, and aspen forests outside protected and restricted areas.			
Survey all potential spotted owl areas including protected, restricted, and other forest and woodland types within an analysis area, plus the area 1/2 mile beyond the perimeter of the proposed treatment area.			
Establish a protected activity center at all Mexican spotted owl sites located during surveys and all management territories established since 1989.			
Allow no timber harvest except for fuelwood and fire risk abatement in established protected activity centers. For protected activity centers destroyed by fire, windstorm, or other natural disaster, salvage timber harvest or declassification may be allowed after evaluation on a case-by-case basis in consultation with US Fish and Wildlife Service.			
Allow no timber harvest except for fire risk abatement in mixed conifer and pine-oak forests on slopes greater than 40% where timber harvest has not occurred in the last 20 years.			
Limit human activity in protected activity centers during the breeding season.			
In protected and restricted areas, when activities conducted in conformance with these standards and guidelines may adversely affect other threatened, endangered, or sensitive species or may conflict with other established recovery plans or conservation agreements; consult with US Fish and Wildlife Service to resolve the conflict.			
Monitor changes in owl populations and habitat needed for delisting.			
<b>GUIDELINES - GENERAL</b>			
Conduct surveys following Region 3 survey protocol. Breeding season is March 1 to August 31.			
<b>GUIDELINES - PROTECTED AREAS - PROTECTED ACTIVITY CENTERS</b>			

1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Mexican Spotted Owl	Keep	Remove	Modify
Delineate an area of not less than 600 acres around the activity center using boundaries of known habitat polygons and/or topographic features. Written justification for boundary delineation should be provided.			
The protected activity center boundary should enclose the best possible owl habitat configured in as compact a unit as possible, with the nest or activity center located near the center.			
The activity center is defined as the nest site. In the absence of a known nest, the activity center should be defined as a roost grove commonly used during breeding. In the absence of a known nest or roost, the activity center should be defined as the best nest/roost habitat.			
Protected Activity Center boundaries should not overlap.			
Submit protected activity center maps and descriptions to the recovery unit working group for comment as soon as possible after completion of surveys.			
Road or trail building in protected activity centers should be avoided, but may be permitted on a case-by-case basis for pressing management reasons.			
Generally allow continuation of the level of recreation activities that was occurring prior to listing.			
Require bird guides to apply for and obtain a special use permit. A condition of the permit shall be that they obtain a sub-permit under the US Fish and Wildlife Service Master Endangered Species Permit. The permit should stipulate the sites, dates, and number of visits, and maximum group size permissible.			
Harvest fuelwood when it can be done in such a way the effects on the owl are minimized. Manage within the following limitations to minimize effects on the owl: <ul style="list-style-type: none"> <li>&gt; Retain key forest species such as oak.</li> <li>&gt; Retain key habitat components such as snags and large downed logs</li> <li>&gt; Harvest conifers less than 9 inches in diameter only within those protected activity centers treated to abate fire risk as described below.</li> </ul>			

1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Mexican Spotted Owl	Keep	Remove	Modify
<p>Treat fuel accumulations to abate fire risk:</p> <ul style="list-style-type: none"> <li>&gt; Select for treatment 10% of the protected activity centers where nest sites are known in each recovery unit having high fire risk conditions. Also select another 10% of the protected activity centers where nest sites are known as a paired sample to serve as control areas.</li> <li>&gt; Designate a 100-acre "no treatment" area around the known nest site of each selected protected activity center. Habitat in the no treatment area should be as similar as possible in structure and composition as that found in the activity center.</li> <li>&gt; Use combinations of thinning trees less than 9-inches in diameter, mechanical fuel treatment, and prescribed fire to abate fire risk in the remainder of the selected protected activity center outside the 100-acre "no treatment" area.</li> <li>&gt; Retain woody debris larger than 12-inches in diameter, snags, clumps of broad-leaved woody vegetation, and hardwood trees larger than 10-inches in diameter at the root collar.</li> <li>&gt; Select and treat additional protected activity centers in 10% increments if monitoring of the initial sample showed there were no negative impacts which can be mitigated by modifying treatment methods.</li> <li>&gt; Use light prescribed burns in non-selected protected activity centers on a case-by-case basis. Burning should avoid a 100-acre "no treatment" area around the activity center. Large woody debris, snags, clumps of broad-leaved vegetation should be retained and hardwood trees larger than 10 inches diameter at the root collar.</li> <li>&gt; Pre- and post-treatment monitoring should be conducted in all protected activity centers treated for fire risk abatement. (See monitoring guidelines)</li> </ul>			
<p><b>GUIDELINES - PROTECTED AREAS - PROTECTED ACTIVITY CENTERS - STEEP SLOPES (MIXED CONIFER AND PINE-OAK FORESTS OUTSIDE PROTECTED ACTIVITY CENTERS WITH SLOPES GREATER THAN 40% THAT HAVE NOT BEEN LOGGED WITHIN THE PAST 20 YEARS)</b></p> <p>No seasonal restrictions apply.</p> <p>Treat fuel accumulations to abate fire risk.</p> <ul style="list-style-type: none"> <li>&gt; Use combinations of thinning trees less than 9 inches in diameter, mechanical fuel removal, and prescribed fire.</li> <li>&gt; Retain woody debris larger than 12 inches in diameter, snags, clumps of broad-leaved woody vegetation, and hardwood trees larger than 10 inches in diameter at the root collar.</li> <li>&gt; Pre- and post-treatment monitoring should occur within all steep slopes treated for fire risk abatement. (See monitoring guidelines)</li> </ul>			

## 1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Mexican Spotted Owl

	Keep	Remove	Modify
<b>GUIDELINES – PROTECTED AREAS – PROTECTED ACTIVITY CENTERS – RESERVED LANDS (WILDERNESS, RESEARCH NATURAL AREAS, WILD AND SCENIC RIVERS, AND CONGRESSIONALLY RECOGNIZED WILDERNESS STUDY AREAS)</b> Allow prescribed fire where appropriate.			
<b>GUIDELINES – RESTRICTED AREAS – MIXED CONIFER, PINE-OAK, AND RIPARIAN FORESTS – MIXED CONIFER AND PINE-OAK FORESTS</b>			
Manage to ensure a sustained level of owl nest/roost habitat well-distributed across the landscape. Create replacement owl nest/roost habitat where appropriate while providing a diversity of stand conditions across the landscape to ensure habitat for a diversity of prey species.			
The following table [see attached document Table J] displays the minimum percentage of restricted area which should be managed to have nest/roost characteristics. The minimum mixed conifer restricted area includes 10% at 170 basal area and additional amount of area at 150 basal area. The additional area of 150 basal area is +10% in BR-E and +15% in all other recovery units. The variables are for stand averages and are minimum threshold values and must be met simultaneously. In project design, no stands simultaneously meeting or exceeding the minimum threshold values should be reduced below the threshold values unless a district-wide or larger landscape analysis of restricted areas shows that there is a surplus of restricted area acres simultaneously meeting the threshold values. Management should be designed to create minimum threshold conditions on project areas where there is a deficit of stands simultaneously meeting minimum threshold conditions unless the district-wide or larger landscape analysis shows there is a surplus.			
Attempt to mimic natural disturbance patterns by incorporating natural variation, such as irregular tree spacing and various patch sizes, into management prescriptions.			
Maintain all species of native trees in the landscape including early seral species.			
Allow natural canopy gap processes to occur, thus producing horizontal variation in stand structure.			
Emphasize uneven-aged management systems. However, both even-aged and uneven-aged systems may be used where appropriate to provide variation in existing stand structure and species diversity. Existing stand conditions will determine which system is appropriate.			
Extend rotation ages for even-aged stands to greater than 200 years. Silvicultural prescriptions should explicitly state when vegetative manipulation will cease until rotation age is reached.			
Save all trees greater than 24 inches DBH.			

1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Mexican Spotted Owl	Keep	Remove	Modify
<p>In pine-oak forests, retain existing large oaks and promote growth of additional large oaks.</p> <p>Encourage prescribed and prescribed-natural fire to reduce hazardous fuel accumulation. Thinning-from-below may be desirable or necessary before burning to reduce ladder fuels and the risk of crown fire.</p>			
<p>Retain substantive amounts of key habitat components:</p> <ul style="list-style-type: none"> <li>&gt; Snags 18-inches in diameter and larger</li> <li>&gt; Down logs over 12-inches midpoint diameter</li> <li>&gt; Hardwoods for retention, recruitment, and replacement of large hardwoods.</li> </ul>			
<p><b>GUIDELINES – RESTRICTED AREAS – MIXED CONIFER, PINE-OAK, AND RIPARIAN FORESTS – RIPARIAN AREAS</b></p> <p>Emphasize maintenance and restoration of healthy riparian ecosystems through conformance with forest plan riparian standards and guidelines. Management strategies should move degraded riparian vegetation toward good condition as soon as possible. Damage to riparian vegetation, stream banks, and channels should be prevented.</p>			
<p><b>GUIDELINES – RESTRICTED AREAS – MIXED CONIFER, PINE-OAK AND RIPARIAN FORESTS – DOMESTIC LIVESTOCK GRAZING</b></p> <p>Implement forest plan forage utilization standards and guidelines to maintain owl prey availability, maintain potential for beneficial fire while inhibiting potential destructive fire, maintain and restore riparian ecosystems, and promote development of owl habitat. Strive to attain good to excellent range conditions.</p>			
<p><b>GUIDELINES – RESTRICTED AREAS – MIXED CONIFER, PINE-OAK, AND RIPARIAN FORESTS – OLD GROWTH</b></p> <p>Except where otherwise noted, implement forest plan old growth standards and guidelines to maintain and promote development of owl habitat.</p>			
<p><b>GUIDELINES – OTHER FOREST AND WOODLAND TYPES</b></p> <p>Apply ecosystem approaches to manage for landscape diversity mimicking natural disturbance patterns, incorporating natural variation in stand conditions and retaining special features such as snags and large trees, utilizing appropriate fires, and retention of existing old growth in accordance with forest plan old growth standards and guidelines.</p>			
<p><b>GUIDELINES – SPECIFIC RECOVERY UNITS – COLORADO PLATEAU</b></p> <p>No special guidelines apply.</p>			
<p><b>GUIDELINES – SPECIFIC RECOVERY UNITS – SOUTHERN ROCKY MOUNTAIN – NEW MEXICO</b></p> <p>No special additional guidelines apply.</p>			
<p><b>GUIDELINES – SPECIFIC RECOVERY UNITS – UPPER GILA MOUNTAINS</b></p> <p>No special additional guidelines apply.</p>			
<p><b>GUIDELINES – SPECIFIC RECOVERY UNITS – BASIN AND RANGE – WEST</b></p> <p>Emphasize restoration of lowland riparian habitats.</p>			

<b>1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Mexican Spotted Owl</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
Management of activities necessary to implement the Mt. Graham red squirrel recovery plan, which may conflict with standards and guidelines for Mexican spotted owl, will take precedence and will be exempt from the conflicting Mexican spotted owl standards and guidelines.			
<b>GUIDELINES -- SPECIFIC RECOVERY UNITS -- BASIN AND RANGE - EAST</b>			
Emphasize restoration of lowland riparian habitats.			
Management activities necessary to implement the Sacramento Mountain thistle recovery plan, which may conflict with standards and guidelines for Mexican spotted owl, will take precedence and will be exempt from the conflicting Mexican spotted owl standards and guidelines.			
<b>GUIDELINES - MONITORING</b>			
Monitoring and evaluation should be collaboratively planned and coordinated with involvement from each national forest, USFWS Ecological Services Field Office, USFWS Regional Office, USFS Regional Office, Rocky Mountain Research Station, recovery team, and recovery unit working groups.			
Population monitoring should be a collaborative effort with participation of all appropriate resource agencies.			
Habitat monitoring of gross habitat changes should be a collaborative effort of all appropriate resource agencies.			
Habitat monitoring of treatment effects (pre- and post-treatment) should be done by the agency conducting the treatment.			
Prepare an annual monitoring and evaluation report covering all levels of monitoring done in the previous year. The annual report should be forwarded to the Regional Forester with copies provided to the recovery unit working groups, USFWS Ecological Services field offices, and the USFWS Regional Office.			
<b>GUIDELINES -- MONITORING - RANGEWIDE</b>			
Track gross changes in acres of owl habitat resulting from natural and human-caused disturbances. Acreage changes in vegetative composition, structure, and density should be tracked, evaluated, and reported. Remote sensing techniques should provide an adequate level of accuracy.			

**1986 Forest Plan Management Direction  
Regionwide Standards and Guidelines for Mexican  
Spotted Owl**

In protected and restricted areas where silvicultural or fire abatement treatments are planned, monitor treated stands pre- and post-treatment to determine changes and trajectories in fuel levels; snag basal areas; live tree basal areas; volume of down logs over 12-inches in diameter; and basal area of hardwood trees over 10-inches in diameter at the root crown.

**GUIDELINES: MONITORING – UPPER GILA MOUNTAIN, BASIN AND RANGE EAST, BASIN AND RANGE WEST RECOVERY UNITS**

Assist the recovery team and recovery unit working groups to establish sampling units consisting of 19 to 39 square mile quadrats randomly allocated to habitat strata. Quadrats should be defined based on ecological boundaries such as ridge lines and watersheds. Quadrat boundaries should not traverse owl territories. Twenty percent of the quadrats will be replaced each year at random.

Using the sample quadrats, monitor the number of territorial individuals and pairs per quadrat; reproduction; apparent survival; recruitment; and age structure. Track population density both per quadrat and habitat stratum.

	Keep	Remove	Modify

1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Northern Goshawk	Keep	Remove	Modify
<p>These standards and guidelines are superseded by red squirrel standards and guidelines when necessary only in red squirrel habitat on Mt. Graham in Management Areas 2 or 2A.</p> <p><b>Applicability</b> - The northern goshawk standards and guidelines apply to the forest and woodland communities described below that are outside of Mexican spotted owl protected and restricted areas. Within Mexican spotted owl protected and restricted areas, the Mexican spotted owl standards and guidelines take precedence over the northern goshawk standards and guidelines. One or the other set of standards and guidelines apply to all forest and woodland communities, but the Mexican spotted owl standards always take precedence in areas of overlap.</p>			
<b>STANDARDS</b>			
Survey the management analysis area prior to habitat modifying activities including a 1/2 mile beyond the boundary.			
Establish, and delineate on a map, a post-fledging family area that includes six nesting areas per pair of nesting goshawks for known nest sites, old nest sites, areas where historical data indicates goshawks have nested there in the past, and where goshawks have been repeatedly sighted over a two-year or greater time period, but no nest sites have been located.			
Manage for uneven-age stand conditions for live trees and retain live reserve trees, snags, downed logs, and woody debris levels throughout woodland, ponderosa pine, mixed conifer, and spruce-fir forest cover types. Manage for old age trees such that as much old forest structure as possible is sustained over time across the landscape. Sustain a mosaic of vegetation densities (overstory and understory), age classes and species composition across the landscape. Provide foods and cover for goshawk prey.			
Limit human activity in nesting areas during the breeding season.			
Manage the ground surface layer to maintain satisfactory soil conditions, i.e. to maintain soil compaction; and to maintain hydrologic and nutrient cycles.			
When activities conducted in conformance with these standards and guidelines may adversely affect other threatened, endangered, or sensitive species, or may conflict with other established recovery plans or conservation agreements, consult with US Fish and Wildlife Service to resolve the conflict.			
Within the ranges of the Kaibab pincushion cactus, <i>Pediocactus paradinei</i> , and the Arizona leatherflower, <i>Clemtafis hirsutissima arizonica</i> , management activities needed for the conservation of these two species that may conflict with northern goshawk standards and guidelines will be exempt from the conflicting northern goshawk standards and guidelines until conservation strategies or recovery plans (if listed) are developed for the two species.			

1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Northern Goshawk	Keep	Remove	Modify
<b>GUIDELINES - GENERAL</b>			
<p>Emphasize maintenance and restoration of healthy riparian ecosystems through conformance with forest plan riparian standards and guidelines. Management strategies should restore degraded riparian areas to good condition as soon as possible. Damage to riparian vegetation, stream banks, and channels should be prevented.</p>			
<p>Refer to USDA Forest Service General Technical Report RM-217 entitled, "<u>Management Recommendations for the Northern Goshawk in the Southwestern United States</u>" for scientific information on goshawk ecology and management which provide the basis for the management guidelines. Supplemental information on goshawk ecology and management may be found in "The Northern Goshawk: Ecology and Management" published by the Cooper Ornithological Society as Studies in Avian Biology No. 16. In woodland forest cover types, use empirical data to determine desired habitat conditions.</p>			
<b>GUIDELINES - INVENTORY</b>			
<p>Use the R3 survey protocol to get complete coverage of the management analysis area (Kennedy and Stahlecker 1993, as modified by Joy, Reynolds, and Leslie 1994). Management analysis areas should be entire ecosystem management areas if possible.</p>			
<p>Complete at least one year of survey, but two years of survey should be done to verify questionable sightings, unconfirmed nest sites, etc. If nesting goshawks are found during the first year of inventory, a second year of inventory is not needed in that territory.</p>			
<p>For areas where complete inventories cannot be done, use aerial photographs to locate vegetative structural stages (VSS) 4-6 within the project area and inventory just those sites for goshawk nest areas, using R3 inventory protocol. All uninventoried areas (VSS 1-3) will be managed to post-fledging family area (PFA) specifications while in that stage. If, while using this inventory option, evidence suggests goshawks are present (such as finding plucking perches or molted goshawk feathers) conduct a complete inventory as outlined above.</p>			
<p>If forests have goshawks commonly nesting in stands classified as VSS 1-3, use the complete inventory methods for those areas. There may be situations where an area is classified as VSS 3, based on the predominant VSS class, but in actuality a combination of VSS 4 and 5 predominate the area. For those situations, use the complete inventory methods.</p>			
<b>GUIDELINES - HOME RANGE ESTABLISHMENT</b>			
<p>Post-fledging family areas (PFA) will be approximately 600 acres in size. Post-fledging family areas will include the nest sites and consist of the habitat most likely to be used by the fledglings during their early development.</p>			

<b>1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Northern Goshawk</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<p>Establish a minimum of three nest areas and three replacement nest areas per post-fledging family area. The nest areas and replacement nest areas should be approximately 30 acres in size. A minimum total of 180 acres of nest areas should be identified within each post-fledging family area.</p>			
<p>Nest site selection will be based first on using active nest sites followed by the most recently used historical nest areas. When possible, all historical nest areas should be maintained.</p>			
<p>Manage for nest replacement sites to attain sufficient quality and size to replace the three suitable nest sites.</p>			
<b>GUIDELINES – MANAGEMENT SCALE</b>			
<p>Distribution of habitat structure (tree size and age classes, tree groups of different densities, snags, dead and down woody material, etc.) should be evaluated at the ecosystem management area level, at the mid-scale such as drainage, and at the small-scale of site. Where VSS 6 is deficit within the ecosystem management area, all VSS 6 will be maintained regardless of location. However, over time, the intent is to sustain a relatively even distribution (again based on site quality) of VSS 6 across the ecosystem management area.</p>			
<b>GUIDELINES – VEGETATION MANAGEMENT – LANDSCAPE OUTSIDE GOSHAWK POST-FLEDGING FAMILY AREAS - GENERAL</b>			
<p>The distribution of vegetation structural stages for ponderosa pine, mixed conifer, and spruce-fir forests is 10% grass/forb/shrub (VSS1), 10% seedling-sapling(VSS2), 20% young forest (VSS3), 20% mid-aged forest (VSS4), 20% mature forest (VSS5), 20% old forest (VSS6). Note: The specified percentages as a guide and actual percentages are expected to vary + or - up to 3%.</p>			
<p>The distribution of VSS, tree density, and tree age are a product of site quality in the ecosystem management area. Use site quality to guide in the distribution of VSS, tree density, and tree ages. Use site quality to identify and manage dispersal PFA and nest habitat at 2-2.5 mile spacing across the landscape.</p>			
<p>Snags are 18 inches or larger DBH and 30-feet or larger in height, downed logs are 12-inches in diameter and at least 8-foot long, woody debris is 3-inches or larger on the forest floor, canopy cover is measured with vertical crown protection on average across the landscape.</p>			

<b>1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Northern Goshawk</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<p>The order of preferred treatment for woody debris is:</p> <ol style="list-style-type: none"> <li>1. Prescribed burning,</li> <li>2. Lopping and scattering,</li> <li>3. Hand piling or machine grapple piling,</li> <li>4. Dozer piling</li> </ol>			
<p><b>GUIDELINES – VEGETATION MANAGEMENT – LANDSCAPE OUTSIDE GOSHAWK POST-FLEDGING FAMILY AREAS – CANOPY COVER</b>            Canopy cover guidelines apply only to mid-aged to old forest structural stages (VSS4, VSS5, and VSS6) and not to grass/forb/shrub to young-forest structural stages (VSS1, VSS2, and VSS3)</p>			
<p><b>GUIDELINES – VEGETATION MANAGEMENT – LANDSCAPE OUTSIDE GOSHAWK POST-FLEDGING FAMILY AREAS – SPRUCE-FIR</b>            Canopy cover for mid-aged forest (VSS4) should average 1/3 (60%) and 2/3 (40%), mature forest (VSS5) should average 60%. Maximum opening size is 1-acre, with a maximum width of 125 feet. Provide two groups of reserve trees per acre with six trees per group when opening size exceeds 0.5. Leave at least 3 snags, 5 downed logs, and 10-15 tons of woody debris per acre.</p>			
<p><b>GUIDELINES – VEGETATION MANAGEMENT – LANDSCAPE OUTSIDE GOSHAWK POST-FLEDGING FAMILY AREAS – MIXED CONIFER</b>            Canopy cover for mid-aged forest (VSS4) should average 1/3 (60%) and 2/3 (40%), mature forest (VSS5) should average 50%, and old forest (VSS 6) should average 60%. Maximum opening size is up to 4-acres, with a maximum width of up to 200 feet. Retain one group of reserve trees per acre of up to 3-5 trees per group for openings greater than 1-acre in size. Leave at least 3 snags, 5 downed logs, and 10-15 tons of woody debris per acre.</p>			
<p><b>GUIDELINES – VEGETATION MANAGEMENT – LANDSCAPE OUTSIDE GOSHAWK POST-FLEDGING FAMILY AREAS – PONDEROSA PINE</b></p>			
<p>Canopy cover for mid-aged forest (VSS4) should average 40%, mature forest (VSS5) should average 40%, and old forest (VSS6) should average 40%. Opening size is up to 4-acres, with a maximum width of up to 200 feet. One group of reserve trees, 3-5 trees per group, will be left if the opening is greater than an acre in size. Leave at least 2 snags per acre, 3 downed logs per acre, and 5-7 tons of woody debris per acre.</p>			
<p><b>GUIDELINES – VEGETATION MANAGEMENT – LANDSCAPE OUTSIDE GOSHAWK POST-FLEDGING FAMILY AREAS – WOODLAND</b>            Manage for uneven-age conditions to sustain a mosaic of vegetation densities (overstory and understory), age classes, and species composition well-distributed across the landscape. Provide for reserve trees, snags, and down woody debris.</p>			

<b>1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Northern Goshawk</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<p><b>GUIDELINES - VEGETATION MANAGEMENT - LANDSCAPES WITHIN POST-FLEDGING FAMILY AREAS - GENERAL</b></p> <p>Provide for a healthy sustainable forest environment for the post-fledging family needs of goshawks. The principle difference between within the post-fledging family area and outside the post-fledging family area is the higher canopy cover within the post-fledging family area and smaller opening size within the post-fledging family area. Vegetative Structural distribution and structural conditions are the same within and outside the post-fledging family area.</p>			
<p><b>GUIDELINES - VEGETATION MANAGEMENT - LANDSCAPES WITHIN POST-FLEDGING FAMILY AREAS - SPRUCE-FIR</b></p> <p>Canopy cover for mid-aged forest (VSS4) should average 60% and for mature (VSS 5) and old forest (VSS6) should average 70%.</p>			
<p><b>GUIDELINES - VEGETATION MANAGEMENT - LANDSCAPES WITHIN POST-FLEDGING FAMILY AREAS - MIXED CONIFER</b></p> <p>Canopy cover for mid-aged (VSS4) to old forest (VSS6) should average 60%.</p>			
<p><b>GUIDELINES - VEGETATION MANAGEMENT - LANDSCAPES WITHIN POST-FLEDGING FAMILY AREAS - PONDEROSA PINE</b></p> <p>Canopy cover for mid-aged forest (VSS4) should average 1/3 (60%) and 2/3 (50%). Mature (VSS5) and old forest (VSS6) should average 50%.</p>			
<p><b>GUIDELINES - VEGETATION MANAGEMENT - LANDSCAPES WITHIN POST-FLEDGING FAMILY AREAS - WOODLAND</b></p> <p>Maintain existing canopy cover levels.</p>			
<p><b>GUIDELINES - VEGETATION MANAGEMENT - LANDSCAPES WITHIN NESTING AREAS - GENERAL</b></p> <p>Provide unique nesting habitat conditions for goshawks. Important features include trees of mature to old age with high canopy cover.</p>			
<p>The structure of the vegetation within nest areas is associated with the forest type, and tree age, size, and density, and the developmental history of the stand. Table 5 of RM-217 presents attributes required for goshawks on locations with "low" and "high" site productivity.</p> <p>Preferred treatments to maintain the desired structure are to thin-from-below with non-uniform spacing and use of handtools and fire to reduce fuel loads. Lopping and scattering of thinning debris is preferred if prescribed fire cannot be used. Piling of debris should be limited. When necessary, hand piling should be used to minimize compaction within piles and to minimize displacement and destruction of the forest floor and the herbaceous layer. Do not grapple or dozer-pile debris. Manage road densities at the lowest level possible to minimize disturbance in the nest area. Use small, permanent skid trails in lieu of roads for timber harvesting.</p>			

<b>1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Northern Goshawk</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<b>GUIDELINES - VEGETATION MANAGEMENT - LANDSCAPES WITHIN NESTING AREAS - SPRUCE-FIR, MIXED CONIFER, AND PONDEROSA PINE COVERTYPES</b>			
The nesting area contains only mature to old forest (VSS5 and VSS6) having an canopy cover (measured vertically) between 50-70% with mid-aged VSS6 trees 200-300 years old. Non-uniform spacing of trees and clumpiness is desirable.			
<b>GUIDELINES - VEGETATION MANAGEMENT - LANDSCAPES WITHIN NESTING AREAS - WOODLAND</b>			
Maintain existing canopy cover levels.			
<b>GUIDELINES - HUMAN DISTURBANCE</b>			
Limit human activities in or near nest sites and post-fledging family areas during the breeding season so that goshawk reproductive success is not affected by human activities.			
The breeding season extends from March 1 through September 30.			
Low intensity ground fires are allowed at any time in all forested cover types, but crown fires are not acceptable in the post-fledging family area or nest areas. Avoid burning the entire home range of a goshawk pair in a single year. For fires planned in the occupied nest area, a fire management plan should be prepared. The fire management plan should minimize the risk of goshawk abandonment while low intensity ground fire burns in the nest area. Prescribed fire within nesting areas should be planned to move with prevailing winds away from the nest tree to minimize smoke and risk of crown fire developing and driving the adults off or consuming the nest tree.			
<b>GUIDELINES - GROUND SURFACE LAYER - ALL FORESTED COVER TYPES</b>			
Manage road densities at the lowest level possible. Where timber harvesting has been prescribed to achieve desired forest condition, use small skid trails in lieu of roads.			
Piling of debris should be limited. When necessary, had or grapple piling should be used to minimize soil compaction within piles and to minimize forest floor and herbaceous layer displacement and destruction.			
Limit dozer use for piling or scattering of logging debris so that the forest floor and herbaceous layer are not displaced or destroyed.			

## 1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Grazing Management

	Keep	Remove	Modify
<b>STANDARDS</b>			
Forage use by grazing ungulates will be maintained at or above a condition which assures recovery and continued existence of threatened and endangered species.			
<b>GUIDELINES</b>			
Identify key ungulate forage monitoring areas. These key areas will normally be 1/4 to 1 mile from water, located on productive soils on level to intermediate slopes, and be readily accessible for grazing. Size of the key forage monitoring areas could be 200 to 500 acres. In some situations, such as high mountain meadows with perennial streams, key areas may be closer than 1/4 mile from water an less than 20 acres. Within key forage monitoring areas, select appropriate key species to monitor average allowable use.			
In consultation with US Fish and Wildlife Service, develop site-specific forage use levels. In the event that site-specific information is not available, average key species forage utilization in key forage monitoring areas by domestic livestock and wildlife should not exceed the levels in the following table [see attached document Table I] during the forage growing season.			
The above table is based on composition and climatic conditions typical of sites below the Mogollon Rim. On sites with higher precipitation and vegetation similar to sites above the Mogollon Rim, allowable use for ranges in poor to excellent condition under deferment or rest strategies may be increased by 5%. The guidelines established in the above table are applicable only during the growing season for the identified key species within key areas. Allowable use for key forage species during the dormant season is not covered in the above table. These guidelines are to be applied in the absence of more specific guidelines currently established through site-specific NEPA analysis for individual allotments.			
Guidelines for allowable use for specific allotment(s) management or for grazing strategies not covered in the above table will vary on a site-specific basis when determined through the Integrated Resource Management (IRM) process.			
Allowable use guidelines may be adjusted through the land management planning revision or amendment process. Guidelines established through this process to meet specific ecosystem objectives will also employ the key species and key area concept and will be monitored in this manner.			

# 1986 Forest Plan Management Direction Regionwide Standards and Guidelines for Old Growth

	Keep	Remove	Modify
<b>STANDARDS</b>			
Until the forest plan is revised, allocate no less than 20 percent of each forested ecosystem management area to old growth as depicted in the table below [see attached document <i>Table III</i> ].			
In the long-term, manage old growth in patterns that provide for a flow of functions and interactions at multiple scales across the landscape through time.			
Allocations will consist of landscape percentages meeting old growth conditions and not specific acres.			
<b>GUIDELINES</b>			
All analyses should be at multiple scales - one scale above and one scale below the ecosystem management area's. The amount of old growth [that] can be provided and maintained will be evaluated at the ecosystem management area level and be based on forest type, site capability, and disturbance regimes.			
Strive to create or sustain as much old growth compositional, structural, and functional flow as possible over time at multiple-area scales. Seek to develop or retain old growth function on at least 20 percent of the naturally-forested area by forest type in any landscape.			
Use information about pre-European settlement conditions at the appropriate scales when considering the importance of various factors.			
Consider the effects of spatial arrangement on old growth function, from groups to landscapes, including de facto allocations to old growth such as goshawk nest sites, Mexican spotted owl protected activity centers, sites protected for species behavior associated with old growth, wilderness, research natural areas, and other forest structures managed for old growth function.			
In allocating old growth and making decisions about old growth management, use appropriate information about the relative risks to sustaining old growth function at the appropriate scales due to natural and human-caused events.			
Use quantitative models at the appropriate scales when considering the importance of various factors. These models may include, but are not limited to: Forest Vegetation Simulator, BEHAVE, and FARSITE.			
Forested sites should meet or exceed the structural attributes to be considered old growth in the five primary forest cover types in the southwest as depicted in the table on page 24.			

<b>1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<p align="center"><b>DISPERSED RECREATION – DEVELOPED RECREATION – WILDERNESS MANAGEMENT</b></p> <p>1. Develop operational plans for all areas that are receiving resource damage because of recreation activities.</p> <p>2. Determine use capacities and manage to those capacities at less than standard or standard.</p> <p>3. Integrate recreation planning with other planning through development and use of the Recreation Opportunity Spectrum and education of forest personnel in its application.</p> <p>4. Nominate appropriate trails to the National Recreation Trails System.</p> <p>5. Caves will be evaluated under provisions of the Federal Cave Protection Act of 1988. Caves determined to be significant under the Act or those being evaluated are exempt from locational disclosure under the Freedom of Information Act.</p> <p>6. The location and resources of caves will be kept confidential when needed to protect important archeological resources, habitat for endangered wildlife, sensitive cave biots, and unique geological features. This confidentiality also includes information provided by cooperators under signed agreements.</p> <p>7. Specific management prescriptions will be prepared for caves with high resource, educational, or recreational values; hazardous conditions; or heavy use. These prescriptions will include guidelines for appropriate use, necessary restrictions, and monitoring requirements. Planning priority is for those caves currently under permit.</p> <p>8. Inventory, map, and monitor caves Forestwide to determine visitor capacity, condition, and further management needs. Evaluation of this information will help identify priority caves that may require protection measures such as gating, entry permits, or education emphasis.</p> <p>9. Surface-disturbing land management decisions will include consideration of potential impacts to delicate cave ecosystems.</p> <p>10. Measures for protection of caves will be incorporated into project planning. These may include avoidance of the alteration of cave entrances, limitation of management activities within and area draining into a cave if they may affect the cave ecosystem, avoidance of diversion of surface drainage into caves, and limitation of public access if required to prevent damage to cave resources or if there are safety hazards.</p> <p>11. Identified bat roosts will be managed as a sensitive resource and for the enhancement of populations. Protection measures may include seasonal closures, education, and gating. Management of roosts will include consultation with State and Federal wildlife agencies.</p>			

<b>1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<p>12. Access for exploration and development of locatable mineral resources will be analyzed in response to a proposed operating plan. Potential impacts to cave resources will be considered in reviewing proposed mining operating plans.</p>			
<p>13. Withdraw from mineral entry those areas needed to protect caves from mining activities.</p>			
<p>14. Excavation to locate caves will be analyzed and permitted on a case-by-case basis. Exploration inside caves, including excavation, will be commensurate with identified resource values and permitted on a case-by case basis.</p>			
<p>15. Research activity will be permitted when compatible with identified resource values and when regionally significant.</p>			
<p>16. All management direction will be accomplished with involvement of interested publics. Encourage management of specific caves through the use of a Memorandum of Understanding with caving organizations.</p>			
<p>17. Entry permits will be required for caves, based upon specific resource considerations.</p>			
<p>18. Transportation and recreation planning will consider existing and future needs for both motorized (vehicular) and non-motorized recreation opportunities. Appropriate users will be contacted prior to closing roads or trails to existing uses.</p>			
<p>The following criteria will be applied to each area of the Forest when considering changes in motorized vehicle use:</p> <ul style="list-style-type: none"> <li>(a) The type of recreational uses to be accommodated and the appropriate maintenance levels for each road or trail.</li> <li>(b) Safety of both non-vehicle users and vehicle users.</li> <li>(c) Minimization of conflicts between vehicle users and non-vehicle users.</li> <li>(d) Protection of the natural resource base.</li> </ul>			

1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas	Keep	Remove	Modify
<p>19. The standards and guidelines pertaining to travel and use of motor vehicles within the Forest are by area designation as follows. Designations are shown on the ORV map. The signing of areas open or closed to motor vehicle use will be in accordance with standards and guidelines contained in the Regional Guide for the Southwestern Region.</p> <p>(a) <u>Designation</u>: Closed to all motorized travel.</p> <p><u>Guidelines</u>: Closed to all motorized vehicles at all times, except those authorized by law, permits, and orders in connection with resource management and public safety.</p> <p>(b) <u>Designation</u>: Restricted. Generally closed to all cross-country motorized travel. Roads and trails are open to travel except when posted closed.</p> <p><u>Guidelines</u>: Closed to cross-country travel by all motorized vehicles, except those uses authorized by law, permits, and orders in connection with resource management and public safety.</p> <p>All road and trails are open to motorized travel unless posted as closed. Roads and trails are those listed in the Transportation System Inventory or physically evident on the ground and recognizable as roads or trails. They will be identified with standard route markers to accommodate all users. Vehicles may pull off roads and trails up to 300 feet for parking or camping.</p> <p>(c) <u>Designation</u>: Restricted. Generally closed to all cross-country motorized travel. Roads are open to travel except when posted closed. All trails are closed to motorized travel.</p> <p><u>Guidelines</u>: Closed to cross-country travel by all motorized vehicles, except those authorized by laws, permits, and orders in connection with resource management and public safety.</p> <p>All roads are open to motorized travel unless posted as closed. All trails are closed to motorized travel. A trail is defined as "a way for purposes of travel by foot, stock, or trail vehicles 40-inches wide or less." Roads and trails are those listed in the Transportation System Inventory or physically evident on the ground and recognizable as roads. They will be identified with standard route markers to accommodate all users. Vehicles may pull off roads up to 300 feet for parking or camping.</p> <p>In Sabino Canyon Recreation Area, private motor vehicles are allowed only in the parking lot. Only administrative, educational, emergency, and shuttle bus vehicular traffic are allowed on canyon roads. Limits on bicycle use may be required.</p>			

## 1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas

<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<b>VISUAL RESOURCE MANAGEMENT</b>		
1. Continue to maintain and protect the visual integrity of the landscape by meeting or exceeding the established visual quality objectives, which range from preservation to maximum modification. This shall be done by providing visual analysis for all management practices to predict visual impacts, recommending methods for meeting visual quality objectives, and mitigating visual impacts in accordance with design guidelines in USDA Handbook 478, <u>National Forest Landscape Management</u> , Volume 2 series. Facilities developed to accommodate the viewer will remain visually subordinate to the surrounding landscape.		
2. Rehabilitate or enhance the existing visual quality in the process of accomplishing other resource management practices.		
3. Evidence of management activities no longer desired will be removed and rehabilitated consistent with designated visual quality objectives.		
4. Viewshed corridor plans will be prepared for management activities that fall within viewing areas of major recreational roads and their associated recreation areas. These plans will identify key visual elements of the viewshed and coordinate the activities to promote diversity and the desired visual character over time.		
5. Inventory the Existing Visual Condition (EVC) and the Visual Absorption Capability (VAC) of the landscape.		
<b>CULTURAL RESOURCE MANAGEMENT</b>		
1. The Forest will comply with the National Historic Preservation Act (NHPA), as amended, and will undertake active management which recognizes cultural resources as equal in importance to other multiple uses. Cultural resources will be managed in coordination with the State Historic Preservation Plan an planning activities of the State Historic Preservation Officer and State Archeologist, and in accordance with the Forest Service Manual and the Coronado National Forest Planning Assessment.		
2. Forest authorized projects will be managed to comply with 36 CFR 800, the Forest Service Manual, and the Coronado National Forest Planning Assessment. All consultation responsibilities with the State Historic Preservation Officer will be followed. The area of the undertaking's potential environmental impact will be inventoried for cultural resources. Inventory standards will be as specified in the Forest Service Manual. The identification of areas of Native American religious use will be sought during the project scoping portion of the environmental analysis process. Native American groups descended from groups that occupied the project vicinity aboriginally will be consulted as appropriate.		

**1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas**

	Keep	Remove	Modify
<p>3. During the conduct of undertakings, the preferred management of sites listed in, nominated to, eligible for, or potentially eligible for the National Register is avoidance and protection. Cultural properties will be protected from damage by project activities through project design, individual site identification, protection measures, training, monitoring and coordination with law enforcement staff. Unevaluated sites will be managed as if eligible unless consultation with the State Historic Preservation Officer indicates otherwise. Management will attempt to achieve a "No Effect" determination in undertakings. When this is not feasible, a "No Adverse Effect" determination will be the preferred standard. This may include cases where consultation with the SHPO indicated that data recovery and interpretation are appropriate. The procedures in 36 CFR 800 will be followed in reaching a management decision.</p>			
<p>4. The interaction between cultural and other resources for any specific undertaking will be evaluated in project-level analyses. Where resource management conflicts occur, the desirability of in-place preservation of cultural resources will be weighed against the values of the proposed land use. Preservation of cultural resources in-place will become increasingly important under the following conditions:</p> <ul style="list-style-type: none"> <li>&gt; where present methods of investigation and data recovery cannot realize the current research potential of the site;</li> <li>&gt; where the sites are likely to have greater importance for addressing future research questions than current ones;</li> <li>&gt; where the cultural values derive primarily from qualities other than research potential, and where those values are fully realized only when the cultural remains exist undisturbed in their original context(s), (e.g., association with significant historical persons or events, special ethnic or religious values, or unique interpretive values);</li> <li>&gt; where cultural resources are important primarily for the quality of their architecture and the integrity of their setting;</li> <li>&gt; where preservation in-place is necessary to accomplish the objectives of the State Historic Preservation Plan;</li> <li>&gt; where site density would make data recovery economically infeasible, or require unattainable operating conditions.</li> </ul>			
<p>5. The Forest cultural resources history overview is complete and will be updated and augmented with interviews and archival information. The general prehistory overview for Southeastern Arizona will be reviewed and expanded in order to provide specific background and management information for Forest cultural resources.</p>			

**1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas**

	Keep	Remove	Modify
<p>6. The Forest will participate with other Forests in development of a cultural resources allocation process to assign sites to appropriate management categories. In consultation with the State Historic Preservation Officer, cultural resources will be allocated to management categories.</p>			
<p>7. The Forest will nominate to the National Register at least two sites per year for each full-time professional archeologist employed in the Forest cultural resources management program, or one thematic or multiple-property nomination per year. Sites determined eligible for the National Register will be inspected periodically, unless previous data recovery is considered complete. Sites listed on the National Register will be inspected at least biennially.</p>			
<p>8. The Forest will provide for the stabilization of cultural resources with priorities determined by National Register status, the inherent scientific and interpretive values of the resource, and the feasibility of current technology to arrest further deterioration.</p>			
<p>9. A cultural resources professional will inspect each site that may be affected by an undertaking. At least 20 percent of the sites designated for protection within each undertaking, including all National Register and eligible properties, will be inspected by a cultural resources specialist, sale administrator, contracting officer's representative, or project inspector. If damage to a cultural resource is discovered, the procedures in the Forest Service Manual and Forest Service Handbook 2309.24 will be followed.</p>			
<p>10. Appropriate measures will be developed to protect cultural resources from deterioration due to natural forces, visitor use, and vandalism. Protective measures may include: signing, fencing, administrative closures, patrolling, interpretive signs, and stabilization or data recovery. Contracts, permits, and leases which have the potential to affect cultural resources will include appropriate clauses on protection responsibilities and liability for damage.</p>			
<p>11. The Forest will pursue opportunities to interpret cultural resources to the public. On-site interpretation will include interpretive trails, signs, exhibits, and self-guided and specialist-guided tours at historic and prehistoric sites. Off-site interpretation will include lectures, professional reports and publications, brochures, programs, and displays. Interpretation of cultural resources will be integrated with other resource interpretation and with other recreation facilities and programs. The Forest will pursue opportunities to develop cooperative efforts with other Federal and State agencies interested in cultural resource interpretation, such as the Bureau of Land Management and other national forests, and with private partners.</p>			

### 1986 Forest Plan Management Direction

#### Standards and Guidelines Applicable to all Areas

	Keep	Remove	Modify
12. The Forest will conduct inventories in areas where the need has been identified in the Forest Planning Assessment. Priorities will be based on management needs, i.e. where inventory information is necessary to avoid potential conflicts with other uses, to predict site distribution and density, to prepare National Register nominations, or to develop interpretation for sites.			
13. The Forest will maintain architectural National Register properties in accordance with the Secretary of Interior's standards and guidelines. Historic values will be considered in the development and modification of facilities. Programmatic Memoranda of Agreement will be developed for the maintenance and treatment of structures listed in the National Register to ensure proper long-term treatment and facilitate consultation with the State Historic Preservation Officer.			
<b>WILDLIFE AND FISH</b>			
1. Maintain or improve occupied habitat of commonly hunted species, listed threatened and endangered species, and management indicator species through mitigation of Forest activities with cooperation of New Mexico Department of Game and Fish, Arizona Game and Fish Department, and US Fish and Wildlife Service. Where applicable, consult with other wildlife and plant oriented groups and affected agencies. (See Appendix H [attached as Table I/J] for minimum desired habitat acres.)			
2. Coordinate where needed, animal damage and plant control on Forest Service administered lands with the US Fish and Wildlife Service and State wildlife and plan agencies.			
3. Maintain or improve current vegetative diversity (numbers of plant associations and species occurrence) by mitigation of Forest activities. (See Appendix H [attached as Table I/J] for desired acres.)			
4. With cooperation of Federal, Arizona, and New Mexico wildlife agencies, develop overall direction for listed threatened and endangered species. (See Appendix G [attached as Table V] for species list). Delist Federally- and State-listed threatened and endangered species in accordance with species recovery plans. Reoccupy historical habitat Forestwide with other identified species.			
5. Reintroduce extirpated native species into historical habitats in accordance with cooperative interagency plans.			

<b>1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<p>6. Consult with the New Mexico Department of Game and Fish, New Mexico Department of Natural Resources, Arizona Game and Fish Department, and US Fish and Wildlife Service during the environmental analysis process on projects significantly affecting wildlife and threatened and endangered plant habitats. Specific agency responsibilities are described in FSM 2610 (Wildlife and Fish Cooperative Relations) and 2670 (Threatened and Endangered Plants and Animals) in the Endangered Species Act. Where applicable consult with other wildlife and plant oriented groups (such as State Heritage Programs) and affected Federal agencies.</p>			
<p>7. Determine presence of Federally and State listed threatened and endangered plant and animal species in project areas through on-site inventory and consultation with existing databases as part of environmental analysis completion. Recommendations for habitat needs will be made on a project-by-project basis.</p>			
<p>8. In cooperation with the US Fish and Wildlife Service, Arizona Game and Fish Department, and New Mexico Department of Game and Fish, develop a general activity plan for State and Federally listed threatened and endangered species. This directional plan would guide habitat management on the Coronado National Forest by:</p> <ul style="list-style-type: none"> <li>(1) determining critical habitat for threatened and endangered species and prescribing measures to prevent the destruction or adverse modification of such habitat;</li> <li>(2) recommending appropriate conservation measures including the designation of special areas to meet the protection and management needs of such species;</li> <li>(3) prioritizing completion of recovery plans on Memorandums of Understanding by species; and</li> <li>(4) establishing a timeframe for (3) above.</li> </ul> <p>Habitat requirements, research needs, and transplant goals with completion dates would be outlined for each species within its recovery plan. (See Appendix G [attached as Table V] for species list.)</p>			
<p>9. Develop management plans for designated endangered species critical habitat on site-by-site basis as species recovery plans are completed. Habitat management for Federally listed species will take precedence over unlisted species. Habitat management for endangered species will take precedence over threatened species. Habitat management for sensitive species will take precedence over non-sensitive species.</p>			

**1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas**

	Keep	Remove	Modify
<p>10. In cooperation with Arizona and New Mexico wildlife agencies develop an activity plan for transplanting other native species into historically occupied habitat. This directional plan would guide habitat management on the Coronado National Forest by:</p> <ul style="list-style-type: none"> <li>(1) prioritizing relocation sites Forestwide by species;</li> <li>(2) developing habitat management plans and Memoranda of Understanding for relocation sites;</li> <li>(3) establishing a schedule for completion of (1) and (2) above.</li> </ul> <p>11. Evaluate through consultation with Arizona Game and Fish, New Mexico Departments of Game and Fish and Natural Resources, along with other wildlife and plant oriented groups where appropriate, population viability of management indicator species through determination of:</p> <ul style="list-style-type: none"> <li>(1) amount of suitable habitat;</li> <li>(2) distribution of suitable habitat;</li> <li>(3) number of individuals that support regional population goals; and</li> <li>(4) likelihood of continued existence.</li> </ul> <p>12. Mitigate impacts on wildlife and plant diversity by applying the following standards and guidelines to the appropriate management activities. Wildlife species to be featured are shown for each individual management area.</p> <ul style="list-style-type: none"> <li>(a) Mineral entry and oil and gas exploration <ul style="list-style-type: none"> <li>(1) Leave buffers around watering and feeding areas for escape and hiding cover. Buffer widths vary with the site but must be wide enough to screen affected wildlife from the project site.</li> <li>(2) Rehabilitate site after entry using mixture of forage and cover plant species.</li> <li>(3) Within occupied habitat of threatened and endangered species: <ul style="list-style-type: none"> <li>(a) Specific recommendations made on site-by-site basis. Recommendations vary from seasonal limitations to no construction permitted or mineral withdrawal.</li> </ul> </li> </ul> </li> <li>(b) Recreation <ul style="list-style-type: none"> <li>(1) Trails <ul style="list-style-type: none"> <li>(a) New Construction <ul style="list-style-type: none"> <li>1. Leave one mile buffer around peregrine falcon eyrie locations and other critical raptor nesting sites.</li> <li>2. Route around rock talus slopes.</li> </ul> </li> <li>(b) Maintenance of existing trails <ul style="list-style-type: none"> <li>1. Minimum maintenance within one mile of peregrine falcon eyrie location.</li> <li>2. Limit maintenance to between October 1 and February 1 within one mile of peregrine falcon.</li> </ul> </li> </ul> </li> <li>(2) Recreation use</li> </ul> </li> </ul>			

**1986 Forest Plan Management Direction  
Standards and Guidelines Applicable to all Areas**

Keep	Remove	Modify
<p>(a) Establish species tolerance levels on a project site-by-site basis.</p> <p>(c) <u>Fuelwood Harvest</u></p> <p>(1) Follow old growth standards and guidelines per the regional standards and guidelines depicted at the beginning of Chapter 4 (Plan pages 22 to 23). Old growth characteristics have been placed in tabular form (Plan page 24).</p> <p>(a) Retention areas will emphasize hiding, escape, bedding, and thermal cover around feeding and watering areas, in drainages, and along roads. Leave strips vary in size from 50 to 200 feet depending on density by existing vegetation.</p> <p>(b) Retention areas will emphasize leaving mast and berry producing trees in the same mixtures of mature and overmature species as in pretreatment stand.</p> <p>(2) In Mexican spotted owl and northern goshawk habitat, manage other tree age classes per regionwide guidelines depicted at the head of Chapter 4 (Plan pages 15 to 22). In other areas manage other tree classes as follows:</p> <p>Poles: greater than or equal to 20% of the stand</p> <p>Sapling and seedling: less than or equal to 60% of the stand.</p> <p>(3) Maintain 3 or more cavity bearing live trees and 3 or more snags or decadent trees per acre. Tree diameters at breast height will be at least 12 inches through rotation period, where feasible.</p> <p>(4) Meander cutting block boundaries following natural lines for greater edge effect.</p> <p>(5) In fuelwood stands yielding less than 4 cords per acre at end of rotation, leave 50% of trees with diameter breast heights less than 4 inches for thermal, hiding, and escape cover, and as growing stock.</p> <p>(6) Retain all age classes of riparian species (defined in FSM 2526, Riparian Watershed Management) and madrone.</p> <p>(7) Control livestock and recreation use in stands for two growing seasons or more after harvest to establish vegetative regeneration.</p> <p>(8) Retain two turkey roosts per square mile. A roost will include at least 7 trees with 12-inche diameters and 30-foot heights or greater within one-half mile of water.</p> <p>(9) Leave at least two slash piles as cover or nest sites within one-half mile of water. In turkey and Mearn's quail habitats, lop and scatter the slash.</p> <p>(10) Retain 150 foot vegetation buffers around raptor nests and colonial turkey vulture and owl roost sites.</p> <p>(11) In high density Mearn's quail habitat, leave 15 acres of uncut tree stands interspersed with openings less than 150 feet in width. Utilization of forage by livestock will not exceed 45% by weight. In lower density habitat follow guidelines (1), (2), (4), (5), (6) and (7) above.</p> <p>(12) In identified threatened and endangered species habitat, the above standards and</p>		

1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas	Keep	Remove	Modify
<p>guidelines will be modified, if necessary, on a site-by-site basis.</p> <p>(d) <u>Roads</u></p> <ul style="list-style-type: none"> <li>(1) Limit density of existing and new road construction to one mile of road or less per square mile.</li> <li>(2) Close and reseed temporary fuelwood roads after harvest.</li> <li>(3) Establish tolerance levels for State and Federally listed threatened and endangered species for new construction and maintenance of roads on project-by-project basis.</li> </ul> <p>(e) <u>Range Management</u></p> <ul style="list-style-type: none"> <li>(1) Provide wildlife input into allotment management plans in order to: <ul style="list-style-type: none"> <li>(a) Maintain wildlife and livestock utilization of perennial vegetation at levels established in FSM 2209.21 (Range Analysis and Management Handbook).</li> <li>(b) Provide for one water per section available to wildlife yearlong.</li> <li>(c) Provide for wildlife passage thorough fences by: <ul style="list-style-type: none"> <li>1. Building fences with 4 wires or less with bottom wire 16 inches off ground, top wire 12 inches above second wire, and fence height less than or equal to 42 inches.</li> <li>2. Providing crossings at established antelope travel routes.</li> </ul> </li> </ul> </li> </ul> <p>(f) <u>Range and Water Rehabilitation Projects</u></p> <ul style="list-style-type: none"> <li>(1) Leave strips of existing vegetation in drainages and around waters. Width varies with density of existing vegetation but adequate hiding, escape, bedding, and thermal cover is usually provided with strips of 50 to 150 feet wide.</li> <li>(2) Construct 2 slash piles within one-half mile of water. In turkey and Mearns quail habitats, lop and scatter the slash.</li> <li>(3) Retain all non-targeted plant species, (such as cacti and agaves) within limits of treatment method.</li> <li>(4) Include plant species for wildlife in reseeding mixture.</li> </ul> <p>(g) <u>Other Forest Products Harvest</u></p> <ul style="list-style-type: none"> <li>(1) <u>Beargrass</u> <ul style="list-style-type: none"> <li>(a) Harvest areas less than 6 acres when removing 100% of plants.</li> <li>(b) Reentry at least 2 years after initial treatment.</li> <li>(c) Selectively harvest only one out of three plants in drainages.</li> <li>(d) No harvest during Merriam's and Gould's turkey nesting and brooding periods in occupied turkey habitats.</li> </ul> </li> <li>(2) <u>Yucca, Cactus, Ocotillo, etc.</u> <ul style="list-style-type: none"> <li>(a) Harvest permitted on site-by-site basis.</li> </ul> </li> </ul> <p>(h) <u>Timber Harvest</u></p> <ul style="list-style-type: none"> <li>(1) Maintain basal area and age-class distributions as shown in silvicultural guidelines for timber harvest in Management Area 2.</li> </ul>			

**1986 Forest Plan Management Direction  
Standards and Guidelines Applicable to all Areas**

Keep	Remove	Modify
<p>(2) Retain current acres of meadows.</p> <p>(a) Route timber haul roads around meadows.</p> <p>(b) Restrict off-road vehicle use to designated roads.</p> <p>(c) Leave 50 to 150 feet buffers around meadows to provide thermal, escape, and hiding cover.</p> <p>(3) Leave 3 or more snags of at least 20 inches diameter breast height per acre through rotation period.</p> <p>(4) Meander harvest block boundaries to create greater edge effect.</p> <p>(5) Retain all age classes of riparian species (defined in FSM 2526 - Riparian Watershed Management) and madrone.</p> <p>(6) Control livestock and recreation use in stands for 2 or more growing seasons after harvest to allow vegetative regeneration.</p> <p>(7) Leave 50 to 150 feet or more vegetation buffers around waters and along roads and drainages to provide thermal, escape, bedding, and hiding cover. Width varies with density of existing vegetation.</p> <p>(8) Retain 150 foot buffers around raptor nests.</p> <p>(9) Manage for two turkey roosts per section over rotation period. Roosts will include at least 7 trees with 20 inch diameter breast heights and 50 foot heights or greater on a one-fourth acres area. Roost sites will have at least a basal area of 120 and be within a one-half mile of water.</p> <p>(10) In harvest stands, lop and scatter slash within one-half mile of water.</p> <p>(11) Manage aspen as follows:</p> <p>(a) 40% of stand has aspen and conifer basal area greater than or equal to 161; 30% greater than or equal to 81, but less than 160; 30% less than or equal to 80.</p> <p>(b) 20% of canopy cover retained in overmature or mature age classes.</p> <p>(c) Leave 3 cavity bearing overmature and mature trees and 3 snags with diameter breast heights greater than 10 inches per acre during the 80-year rotation period.</p> <p>(d) Regeneration areas will be less than 6 acres.</p> <p>(12) Gambels oak</p> <p>(a) Retain 40% of canopy cover (compared to total enclosure) as mature and overmature; less than or equal to 30% as poles; and less than or equal to 30% as seedlings/saplings.</p>		

**1986 Forest Plan Management Direction  
Standards and Guidelines Applicable to all Areas**

**WILDLIFE HABITAT MAINTENANCE, THREATENED AND ENDANGERED PLANT HABITAT IMPROVEMENT, FISH HABITAT IMPROVEMENT, GAME HABITAT IMPROVEMENT, AND NONGAME HABITAT IMPROVEMENT**

1. Maintain wildlife structures to the following guidelines. They are intended to meet specific wildlife habitat objectives as shown for each Management Area. Structures may not exist in every Management Area.

- (a) Maintain all water developments every 4 years.
- (b) Maintain study plots once every 10 years.
- (c) Maintain other structures once every 4 years.

The following structural and nonstructural improvement guidelines are intended to meet the specific wildlife habitat objectives as shown for each Management Area. They may not be applicable for every Management Area.

Nonstructural Wildlife Improvements

- (a) Prescribe burn feasible areas on a 20-year cycle.
- (b) Seed suitable wildlife forage species as needed in fuelwood and timber areas.
- (c) Transplant listed threatened and endangered and other identified species into suitable habitat following guidelines of species recovery plans and Memoranda of Understanding.
- (d) Revegetate wildlife areas with wildlife forage, cover, and riparian species. Native species should be used when available.
- (e) Thin or patch cut an average of 10 acres of aspen, gambel oak, and timber species per year.

Structural Wildlife Improvements

- (a) Construct water developments or potholes to accomplish 1 per section within 4 decades.
- (b) Consider structural improvements and maintenance for threatened and endangered species as technology develops.
- (c) Construct fish habitat improvement structures as needed for threatened and endangered species.
- (d) Fence riparian areas where prescribed by approved allotment management plans. Miles of fence constructed will vary with management plan.

**RANGE MANAGEMENT**

1. Priority for allotment management planning will be given to areas with opportunity to reverse range deterioration or to increase permitted numbers.

2. Priority for range improvements goes to allotments with approved plans and where cost effective.

**Keep**

**Remove**

**Modify**

## 1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas

	Keep	Remove	Modify
<p>3. Specific standards and guidelines for livestock grazing operations are those contained in:</p> <ul style="list-style-type: none"> <li>&gt; Regionwide Standards and Guidelines (Plan page 22)</li> <li>&gt; FSH 2209.21 (Range Analysis Handbook)</li> <li>&gt; FSH 2209.22 (Structural Range Improvement Handbook)</li> <li>&gt; FSH 2209.23 (Nonstructural Range Improvement Handbook)</li> <li>&gt; FSM 2323 (Grazing Management in Wilderness)</li> </ul>			
<p>4. Discontinue livestock grazing in Redfield Allotment (Galiuro Mountains) due to economic and ecological reasons.</p>			
<b>TIMBER MANAGEMENT</b>			
1. Coordinate fuelwood programs, to the extent possible, with those on adjacent lands.			
2. Complete fuelwood and Christmas tree inventories.			
3. Timber management priorities are to enhance wildlife and recreational resources.			
4. Fuelwood and other forest products, such as beargrass and manzanita, will be made available to residents of Mexico when not fully utilized by U.S. citizens.			
<b>WATERSHED AND SOIL MAINTENANCE</b>			
1. Use water needed for national forest programs frugally and efficiently.			
2. First priority for watershed improvement projects goes to unsatisfactory watershed condition.			
3. Complete watershed analyses and watershed restoration action plans.			
4. In all aspects of planning (budget, long-range, coordination with other agencies, coordination with other disciplines within the Forest Service and cooperation with research) watershed will be represented. Plans will be sensitive to maintaining or improving watershed conditions.			
5. Through management services, provide information to minimize disturbance and improve already-disturbed areas. Best management practices will be used to minimize the time of recovery to a satisfactory erosion level, minimize soil productivity loss, improve water quality, and minimize channel damage.			
6. Monitor designated projects according to an approved water quality monitoring plan.			
7. Restrict equipment use to terrain and climatic conditions where soil damage will be minimal.			
8. Manage riparian areas in accordance with legal requirements regarding floodplains, wetland, wild and scenic rivers, and cultural and other resources. Recognize the importance and distinct values of riparian areas in forest plans.			

<b>1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<p>9. Manage riparian areas to protect the productivity and diversity of riparian-dependent resources by requiring actions within or affecting riparian areas to protect and, where applicable, improve dependent resources (FSM 2526). Emphasize protection of soil, water, vegetation, and wildlife and fish resources prior to implementing projects (FSM 2526).</p>			
<p>10. Give preferential consideration to resources dependent on riparian areas over other resources. Other resource uses and activities may occur to the extent that they support or do not adversely affect riparian-dependent resources.</p>			
<p>11. By the end of the first time period, complete classifications and inventories of all riparian areas, and complete action plans to improve all unsatisfactory riparian areas. Improve all riparian areas to satisfactory or better condition by the end of Period 5. Such satisfactory conditions are specified below, expressed as a percentage of "natural" conditions (that is, what each site can produce if not further disturbed by man). Twenty-five percent of all riparian areas must be in satisfactory condition by Period 2.</p> <p>(a) <u>Aquatic Resource</u></p> <ul style="list-style-type: none"> <li>(1) Maintain at least 80 percent of natural shade over water surfaces in fish-bearing streams.</li> <li>(2) Maintain at least 80 percent of natural bank protection.</li> <li>(3) Maintain the composition of sand, silt, and clay within 20 percent of natural levels in fish-bearing streams.</li> </ul> <p>(b) <u>Vegetation Resource</u> (where the site is capable of supporting woody plants)</p> <ul style="list-style-type: none"> <li>(1) Maintain at least 60 percent of the woody plant composition in three or more riparian species.</li> <li>(2) Maintain at least three age-classes of riparian woody plants, with at least 10 percent of the woody plant cover in sprouts, seedlings, and saplings of riparian species.</li> <li>(3) Maintain at least 60 percent of natural shrub and tree crown cover.</li> </ul> <p>(c) <u>Wildlife Resources</u> - maintain at least 60 percent of natural shade over land surfaces.</p>			
<p>12. On a site-specific basis, identify riparian-dependent resources and develop action plans and progress to bring about conditions essential to supporting those dependent resources.</p>			
<b>MINERALS MANAGEMENT</b>			
<p>1. To the extent possible, avoid construction of roads across sensitive soils and scenic lands. Prohibit the construction of roads across mountain meadows.</p>			

<b>1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<p>2. Mining and leasing activities will be allowed within the framework of applicable laws and regulations including environmental laws and regulations designed to mitigate the impacts of mining activities. Emphasis should be on gaining cooperation and control through the use of operating plans and bonds for rehabilitation to protect and restore surface resources.</p>			
<p>3. Exploration and development of common variety minerals for use as aggregate sources must be based on needs identified in transportation plans. Allocation of mineral aggregate will be based on Forest Service needs and the most cost-efficient use of various quality aggregates. Forest Service will have priority before personal or commercial use of aggregate materials.</p>			
<b>HUMAN RESOURCE PROGRAMS</b>			
<p>1. Consider needs of handicapped persons in all new development or redevelopment projects.</p>			
<p>2. Use volunteers to supplement other resource management activities.</p>			
<b>LAND CLASSIFICATION</b>			
<p>1. Capitalize on opportunities to consolidate small private land holdings into economically viable units through land ownership adjustment.</p>			
<p>2. Recognize, in the periodic review of Forest land ownership adjustment planning, the public benefits to be gained and the effect of the planning on land adjacent to the Coronado National Forest.</p>			
<p>3. Consider all resource values and social needs in doing land adjustment planning.</p>			
<b>LAND MANAGEMENT PLANNING</b>			
<p>1. Carry out the intent and direction contained in the Land and Resource Management Planning regulations and current FSM 1920 Manual direction (Land and Resource Management Planning).</p>			
<b>SPECIAL USE MANAGEMENT</b>			
<p>1. Make rights-of-way wide enough to safely accommodate the use and its future maintenance.</p>			
<p>2. Require site development and rehabilitation plans for uses such as sanitary landfills, dumps, borrow pits, quarries, storage yards, and work camps in order to minimize all resource impacts.</p>			
<p>3. Utility lines will be placed underground when necessary to meet the visual quality objective unless this is not feasible because of overriding environmental concerns, costs, and technical considerations. Existing utility lines that do not meet the visual quality objective will be placed underground or realigned when reconstruction becomes necessary.</p>			

<b>1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
4. Existing utility and transportation corridors will continue to be used for those types of uses. Every attempt should be made to locate new utilities within those existing corridors that meet the visual quality objective. Existing corridors that do not meet the visual quality objective should be relocated when construction becomes necessary. New corridors shall be located so that the visual quality objectives are met.			
5. The powerline serving the Mt. Graham International Observatory will be buried. The astronomical observatory permittee will provide electric power capability to Columbine Administrative Site.			
6. Public access to special use areas will continue so long as it is consistent with safety and the type of use permitted.			
7. Land occupancy and use authorizations will be evaluated in light of their effects on the management, protection, development, and utilization of the resources and the long-term public interest in full recognition and response to the requirements and intent of the National Environmental Policy Act.			
Maintain existing electronic and astrophysical sites and complete site management plans for all sites with cooperation of user groups. Continue to establish user groups or organizations for each site. Consolidation of existing and new facilities and uses shall be given high priority over opening new sites. Group uses according to compatibility.			
9. Within the Pinaleno Mountains, High Peak (Mt. Graham) will no longer be considered for electronic site development. Any development of the West Peak electronic site will be deferred until further analysis is completed as part of the recovery for the Mt. Graham red squirrel.			

**1986 Forest Plan Management Direction  
Standards and Guidelines Applicable to all Areas**

10. Electronic sites will be managed to the following standards:
- (a) Maximize joint use of existing buildings.
  - (b) Lot plans as presently established will be eliminated. Sites allocated on a total required facility basis.
  - (c) Maintenance of individual site roads and trails will be carried out jointly through cooperative maintenance proportionate payments to the amount of use or will be maintained by the users.
  - (d) Clearing of vegetation will be limited to that which poses a hazard to facilities and operational efficiency.
  - (e) Commercial broadcasting and constant carriers will be allowed where compatible. These sites must be separated physically from land mobile and microwave sites.
  - (f) VHF transmitters will be permitted if frequencies are compatible with those of previous users. (Authorize only specified frequencies and not wide-range bands on 2700-10 Technical Data Sheets).
  - (g) All new and replacement towers must be self-supporting.
  - (h) New and replacement antennas and towers will be below the height for which the FAA requires lights because of the interference with the fire lookout tower and aesthetics.
  - (i) All utility lines will be placed underground.
  - (j) Any prospective permittee desiring a site shall furnish detailed plans of buildings and antenna support structure to the District Ranger for approval. All towers will meet Electronic Industries Association standard RS-222-C, structural standards for steel antenna towers. These plans will show the relationship of the proposed building and antenna to other facilities in the area, along with manufacturer's specifications for equipment to be used.
  - (k) All buildings will be colored to blend with the background.

**LANDS ADMINISTRATION**

- 1. Take actions necessary to determine status of NFS lands and interests in lands.
- 2. Update and maintain land status records.
- 3. Acquire lands or interest in lands through exchange, purchase, or donation in accordance with the Forest Land Adjustment Classification Maps and criteria set forth in Table 11 [see attached Table VI].

	Keep	Remove	Modify

<b>1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<p>4. Make the following changes in the Forest Land Adjustment Program:</p> <p>(a) <u>East Whitetail Canyon</u> (Chiricahua Mountains)</p> <ul style="list-style-type: none"> <li>&gt; Reclassify approximately 183 acres of National Forest land as base-for-exchange.</li> <li>&gt; Reclassify approximately 464 acres of private land from priority 3 for acquisition to undesirable for National Forest purposes.</li> </ul> <p>(b) <u>Holy Cross Area</u> (Santa Catalina Mountains)</p> <ul style="list-style-type: none"> <li>&gt; Reclassify approximately 340 acres of National Forest land as base-for-exchange</li> </ul> <p>(c) <u>Summerhaven Area</u> (Santa Catalina Mountains)</p> <ul style="list-style-type: none"> <li>&gt; Reclassify approximately 41 acres of private land from priority 1 to priority 3 for acquisition.</li> </ul> <p>(d) <u>North and East Side of Santa Rita Mountains</u></p> <ul style="list-style-type: none"> <li>&gt; Reclassify approximately 2500 acres of National Forest land as base-for-exchange</li> </ul>			
<p>5. Exchanges should result in an improved Forest land ownership pattern.</p>			
<p>6. The exchange of National lands into private ownership should not conflict with county zoning or State and local planning goals.</p>			
<p>7. National Forest land exchanges should foster sound community development. Before exchanges are consummated, it should be determined that the lands being conveyed to private ownership are suitable for their intended use from the standpoint of soils, availability of water, drainage, access, and other physical and environmental factors.</p>			
<p>8. Some areas of high management and operating costs, such as residence areas, do not contribute proportionately to achieving Forest Service goals and objectives. These areas should be carefully evaluated to determine the merits of exchanges. Areas that are costly to administer, have long-term land occupancy commitments, do not contribute significantly to achieving Forest Service goals and objectives, and have minimal benefit to the general public should be considered as candidate areas for exchange in return for areas of high value multiple resource lands.</p>			
<p>9. Emphasize acquisition of water-oriented property inside the National Forest boundary. This property provides much needed high quality public recreation use, as well as high value wildlife and fish habitat.</p>			
<p>10. Attempt to acquire private land from willing sellers that will provide additional public recreational opportunities including open space. Acquisition will receive low priority Forestwide.</p>			
<p>11. Review all existing Forest Service withdrawals for following:</p> <ul style="list-style-type: none"> <li>&gt; Recreation areas</li> <li>&gt; Administrative sites</li> <li>&gt; Revocations and all others</li> </ul>			



<b>1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<p>4. Road maintenance activities will be conducted primarily for protection of our road investment, resource protection, user safety, and user economy. Funding will continue to be the primary constraint on the intensity of road maintenance efforts. When roads in need of maintenance cannot be serviced because of budget constraints, they will be closed if unacceptable resource damage is occurring. Maintenance agreements with local government and private organizations will be sought to supplement Forest Service funding.</p>			
<p>5. Snowplowing will be provided by the Mt. Graham International Observatory permittee to keep Swift Trail (State Highway 366) and the new access road open for limited access such as in level 2 road maintenance. Generally, access will not be suited for passenger vehicles. Tire chains and/or four-wheel drive would be required above the snow line.</p>			
<p>6. Criteria for determining the appropriate level of trail maintenance are:</p>			
<p>(a) Type and use (e.g. foot, horses, vehicles, or mix)</p>			
<p>(b) Amount of use.</p>			
<p>(c) Significance of trail (e.g. major access route, leads to dead-end, etc.)</p>			
<b>ROAD AND TRAIL CONSTRUCTION AND RECONSTRUCTION</b>			
<p>1. Reconstruct major roads based on schedule shown in Table 9 [see attached Table VIII].</p>			
<p>2. Bring the General Hitchcock Highway to standard, two lane and 30 mph design speed, to improve safety and reduce maintenance costs. Keep the highway as a scenic highway. Maintain to level 5. Pima County will assume management responsibility once reconstruction is completed. Ensure that reconstruction has minimum impact on unique rock formations, riparian areas, threatened and endangered plants, etc.</p>			
<p>3. Construct or reconstruct trails based on needs shown in Table 10 [see attached as Table IX].</p>			
<b>FACILITY CONSTRUCTION</b>			
<p>1. Construct or reconstruct facilities in accordance with schedule in Table 6 [see attached as Table X].</p>			
<b>FACILITY MAINTENANCE</b>			
<p>1. Maintain facilities to the appropriate condition class. See Appendix F for definition of building condition classes.</p>			
<b>DAM ADMINISTRATION</b>			
<p>1. Inspect dams as per current FSM direction</p>			
<b>GENERAL ADMINISTRATION</b>			
<p>1. Every attempt will be made to make the public aware of Forest Service management activities. Emphasis shall be placed on those practices that exclude public use, such as electronic or astrophysical sites, and those practices not generally understood by the public.</p>			

## 1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas

	Keep	Remove	Modify
<b>FIRE MANAGEMENT</b>			
1. Develop the most cost-efficient operations for fire management activities depending on the resources, property, and lives to be protected.			
2. Keep the level of prevention and suppression activities commensurate with the increasing risks and hazards.			
3. Conduct fire suppression activities in a way to protect watershed and visual resource values.			
4. Appropriate fire suppression responses will protect life and property.			
<b>AIR QUALITY MANAGEMENT</b>			
1. All management practices will be planned so that air quality will meet local, State, and Federal standards.			
<b>CHEMICAL MANAGEMENT</b>			
1. Safeguard water, people, animals, pets, and property in connection with the use of pesticides and fire retardants.			
2. Conform to Department of Agriculture standards in the use of all pesticides and promote development of acceptable alternatives for the use of pesticides.			
3. Chemicals may be used within guidelines approved by other agencies for the following purposes: <ul style="list-style-type: none"> <li>(a) Insecticides and rodenticides in recreation areas and administrative sites.</li> <li>(b) Herbicides for aquatic weed control in fishing lakes. Requests normally come for State Game and Fish Departments.</li> <li>(c) Insect and disease control on timber and rangelands. Proposals for insect control on rangelands (i.e. grasshoppers, etc.) normally come from outside agencies.</li> <li>(d) Small research studies from universities or governmental research agencies.</li> <li>(e) Herbicides to control brush and herbaceous plants along State and Federal highways. Requests normally come from State Highway Departments as par of annual highway maintenance.</li> <li>(f) Dust control at recreation sites and administrative sites and on roads.</li> <li>(g) Cyanide leaching as part of mining operations.</li> <li>(h) Herbicides to control invading plants that reduce herbaceous forage production on rangelands. Not all of the control would be done by use of herbicides. Depending on individual circumstances, the control might be by mechanical means, prescribed fire, fuelwood harvest, herbicides, or some combination.</li> </ul>			

<b>1986 Forest Plan Management Direction Standards and Guidelines Applicable to all Areas</b>	<b>Keep</b>	<b>Remove</b>	<b>Modify</b>
<b>INSECT AND DISEASE MANAGEMENT</b>			
1. Threatened, endangered, and sensitive species habitat requirements will take precedence over vegetation manipulation to control insects and disease. All silvicultural examinations will integrate insect and disease considerations in the final stand prescriptions to maintain stand vigor and composition in resistant conditions. Special attention will be given to removal of mistletoe-infected trees during intermediate harvests and regeneration harvests.			
<b>LAW ENFORCEMENT</b>			
1. Increase and strengthen law enforcement efforts through Memoranda of Understanding and providing Forest Service law enforcement personnel.			
2. Enforce laws firmly and fairly. Emphasize personal contact and education over issuance of citations.			
3. In all programs, incorporate measures to promote safety.			

**1986 Forest Plan Management Direction  
Management Area 4**

	Keep	Remove	Modify
<p><b>MANAGEMENT EMPHASIS AND INTENSITY</b></p> <p>Manage for a sustained harvest of livestock forage and fuelwood while maintaining and improving game animal habitat. Fully mitigate the impacts on cultural resources and non-game wildlife habitats. Visual quality objectives will be met or exceeded. Dispersed recreation activities may occur except for those that adversely affect the productivity of the land or resources. Watershed and soil conditions will be improved or maintained.</p>			
<p><b>MANAGEMENT AREA DESCRIPTION</b></p> <p>Lands capable and suitable for fuelwood harvest, livestock grazing, and game habitat management. Average slopes are 0 to 40%. Includes desert scrub, grassland, chaparral, and woodland vegetative types.</p>			
<p><b>CAPABILITY AREA TYPES</b></p> <p>1P, 1BM, 2P, 2PH, 3P, 5H, 5HM, 6P, 6PH, 6BM, 7P, 7PH, and 7BM Total acres = 1,128,289</p>			
<p><b>SPECIFIC MANAGEMENT PRESCRIPTION</b></p> <p>Timber Suitability: All acres unsuitable</p>			
<p><b>STANDARDS AND GUIDELINES – DISPERSED RECREATION</b></p> <p>1. Maintain 25% of trails to level 2 and 75% to level 3. See Appendix E for definition of levels. 2. Use of motorized vehicles is restricted to existing trails and roads. Some trails may be closed to motorized vehicles for safety, resource protection, and user conflict reasons. All trails on the Santa Catalina Ranger District are closed to motorized vehicles. 3. Maintain existing ROS class composition, except if any existing roads are determined to be unneeded, close them to create more opportunities for semi-primitive nonmotorized or primitive experiences. 4. Manage dispersed recreation use at less than standard.</p>			
<p><b>STANDARDS AND GUIDELINES – VISUAL RESOURCE MANAGEMENT</b></p> <p>1. Manage the following acres at the indicated Visual Quality Objectives: 135,201 acres Retention (12%) 406,144 acres Partial Retention (36%) 440,208 acres Modification (39%) 146,736 acres Maximum Modification (13%)</p>			

## 1986 Forest Plan Management Direction Management Area 4

### STANDARDS AND GUIDELINES - WILDLIFE AND FISH

1. Specific standards and guidelines for management of wildlife are shown in the Forestwide prescription for activities appropriate to this Management Area. They are intended to meet the following objectives:
- (1) Maintain and improve current habitat for Federally listed plant and animal species and work toward delisting.
  - (2) In fuelwood stands (as compared to an unharvested stand) maintain 80% or more of the occupied high density habitat and 60 to 80% of the low density habitat for Mearns' quail. Maintain 80% or more of the occupied habitat for cavity nesters.
  - (3) Outside fuelwood areas, maintain 100% of occupied habitat for quail and cavity nester species.
  - (4) Maintain or improve current levels of occupied habitat for:
    - > mule deer
    - > white-tailed deer
    - > javelina
    - > desert bighorn sheep
    - > pronghorn
    - > cottontail
    - > white-sided jackrabbit
    - > black bear
    - > raptors
    - > Merriam's turkey
    - > Gould's turkey
    - > scaled quail
    - > Gambel's quail
    - > waterfowl
    - > Baird's sparrow
    - > Arizona ridge-nosed rattlesnake
    - > Twin-spotted rattlesnake
    - > Western massasauga
    - > Gila topminnow

**Keep**

**Remove**

**Modify**

## 1986 Forest Plan Management Direction Management Area 4

	Keep	Remove	Modify
<b>STANDARDS AND GUIDELINES - WILDLIFE HABITAT MAINTENANCE</b>			
<p>1. Maintain wildlife structures based on guidelines shown in Forestwide prescription. The objective is to maintain current levels of occupied habitat for:</p> <ul style="list-style-type: none"> <li>&gt; mule deer</li> <li>&gt; white-tailed deer</li> <li>&gt; javelina</li> <li>&gt; desert bighorn sheep</li> <li>&gt; pronghorn</li> <li>&gt; cottontail</li> <li>&gt; black bear</li> <li>&gt; Merriam's turkey</li> <li>&gt; scaled quail</li> <li>&gt; Gambel's quail</li> <li>&gt; waterfowl</li> <li>&gt; Gila topminnow</li> </ul>			
<b>STANDARDS AND GUIDELINES - THREATENED AND ENDANGERED PLANT HABITAT IMPROVEMENT, FISH HABITAT IMPROVEMENT, GAME HABITAT IMPROVEMENT, NONGAME HABITAT IMPROVEMENT</b>			
<p>1. Structural and nonstructural habitat improvements projects will be based on guidelines in the Forestwide prescription. They are intended to meet the following objectives:</p> <p>(1) Improve quality and availability of forage and availability of water for commonly hunted species:</p> <ul style="list-style-type: none"> <li>&gt; mule deer</li> <li>&gt; white-tailed deer</li> <li>&gt; javelina</li> <li>&gt; desert bighorn sheep</li> <li>&gt; pronghorn</li> </ul> <p>(2) Maintain horizontal and vertical plant diversity at current levels.</p> <p>(3) Delist threatened and endangered species and reoccupy historical habitat with other identified species following guidelines in approved species recovery plans and Memoranda of Understanding.</p> <p>(4) Maintain and improve current nesting habitat for endangered species as directed by approved recovery plans.</p>			

## 1986 Forest Plan Management Direction Management Area 4

	Keep	Remove	Modify
<b>STANDARDS AND GUIDELINES - RANGE MANAGEMENT AND RANGE IMPROVEMENT</b>			
1. Manage suitable rangeland as follows: See Appendix C for definition of range management levels.			
<u>Range Management Levels</u>			
<u>Level</u>			
<u>Vegetation Type</u>			
<u>Acres</u>			
B Grassland and chaparral			
C Grassland			
D Grassland and woodland			
Projected Range Condition			
Condition			
Period 1			
Satisfactory			
Unsatisfactory			
Period 5			
1,072,032			
56,437			
2. Develop proper grazing systems to insure renewal of desired vegetative species for livestock forage, big and small game habitat, and to improve soil and water resources.			
3. Grazing intensity, utilization standards, and kinds and numbers of livestock will vary depending on the particular allotment and will be based on the physiological needs of the forage plants. Attempt to achieve efficient use of full capacity range.			
4. Structural and nonstructural improvements should receive high priority in these areas as needed for the desired level of management.			
5. Vegetative manipulation will be used for range forage improvement and may consist of such activities as prescribed burning, mechanical removal, wood harvest, use of approved herbicides, livestock grazing, and reseeding of native or non-native species. See Appendix C for activity selection criteria.			
<b>STANDARDS AND GUIDELINES - TIMBER SALE PREPARATION AND ADMINISTRATION</b>			
1. Silviculturally manage the woodland tree resource under uneven-age management. Fuelwood harvest will be limited to those lands which contain fuelwood species having a crown cover of 10% or more. Manage to sustain an average 40 to 50 year cutting cycle.			
2. The removal of dead or green trees for wood products or Christmas trees will be individual tree selection or group selection limited to maximum clearing size of two acres. Harvest will be restricted to removal of overmature, mature, poor form, low vigor, or over-crowded trees for the purpose of maintaining vigorous stands and desired wildlife species.			
3. Use fuelwood sales to accomplish other management objectives such as fuel hazard reduction, visual quality enhancement, and range management.			

## 1986 Forest Plan Management Direction Management Area 4

1986 Forest Plan Management Direction Management Area 4	Keep	Remove	Modify
<p>4. Prohibit the removal of saguaro cactus, agave, yucca, and ironwood wildings unless it becomes necessary to remove these in order to accommodate a use of higher priority. The harvest of beargrass, ocotillo, and most cactus species will be permitted as long as there is no significant impact on other resources or uses.</p>			
<b>STANDARDS AND GUIDELINES - WATERSHED AND SOIL MAINTENANCE AND IMPROVEMENT</b>			
<p>1. Restore damaged watersheds to a satisfactory watershed condition. Watershed treatment is a high priority in this Management Area. Watershed maintenance and improvement may consist of channel stabilization, activities to increase water infiltration, and revegetation using native or non-native species. See Appendix D for appropriate activities.</p>			
<p>2. Manage all programs to eliminate or minimize onsite and downstream water pollution.</p>			
<p>3. Provide, to the extent possible, conservation pools and minimum streamflows in authorizing or developing water storage impoundments and diversion projects.</p>			
<b>STANDARDS AND GUIDELINES - MINERALS MANAGEMENT</b>			
<p>1. Common materials for personal or commercial use will require a permit. Attempt to locate borrow areas in places that would enhance resources or facilities.</p>			
<b>STANDARDS AND GUIDELINES - LANDS ADMINISTRATION</b>			
<p>1. Act on land exchange offers involving Priority I land and the most desirable Priority II lands to the extent possible.</p>			
<b>STANDARDS AND GUIDELINES - ROAD AND TRAIL MAINTENANCE</b>			
<p>1. Bring existing roads and trails that are to be retained on the system to a maintainable standard which is suitable for the planned use and provides for safety and resource protection. Maintain 80% of roads to Level 2, 15% to Level 3, 3% to Level 4, and 2% to level 5. See Appendix E for a definition of levels.</p>			
<p>2. Close, drain, and revegetate roads and trails that are determined to be unneeded for further use. This should be a cost of the initiating resource element.</p>			
<b>STANDARDS AND GUIDELINES - FIRE MANAGEMENT</b>			
<p>1. The management area is divided into fire suppression zones 1 and 2 based on resource protection and cost objectives. See section 5 for a definition of zones.</p>			
<b>STANDARDS AND GUIDELINES - FUELS MANAGEMENT</b>			
<p>1. Reduce slash from fuelwood harvest to a level that is compatible with Forest Service ability to protect the remaining resources.</p>			
<p>2. Within foreground distance zones of sensitivity Levels 1 and 1 (trails, roads, use areas, and water bodies) require 100% treatment of all slash and debris.</p>			
<p>3. Fuel treatment may consist of chipping, broadcast burning, piling and burning, or lopping and scattering.</p>			

**1986 Forest Plan Management Direction  
Management Area 4**

	Keep	Remove	Modify
4. Prescribed fire will be used to reduce fuel hazard and enhance wildlife habitat and improve range conditions.			
5. All projects that include prescribed burning will include specific burning prescriptions that will insure the fire can be controlled within the established boundaries and that the burning meets the desired resource objectives.			
6. Burn fuelwood slash and debris piles in locations and at times that will minimize scorching of adjacent trees and shrubs.			
<b>STANDARDS AND GUIDELINES - INSECT AND DISEASE MANAGEMENT</b>			
1. Maintain surveillance for insect and disease outbreaks. Where opportunities exist, attempts will be made to reduce or prevent damage from insects and diseases. Use integrated pest management techniques which are compatible, economical, and environmentally acceptable.			
2. Recognize and prevent conditions favorable for insect and disease outbreaks.			

## 1986 Forest Plan Management Direction Management Area 7A

**Note:** Due to the blending and sometimes indistinct differences between riparian vegetation types, Management Area 7 has been assigned to two distinct prescriptions. The resource manager will have to decide which prescription is appropriate based on the actual ground conditions. Prescription A is intended for capability types 11AR and 12R.

### MANAGEMENT EMPHASIS AND INTENSITY

Manage to perpetuate the unique wildlife or vegetative species. Improve and manage riparian areas (as defined by FSM 2526 – Riparian Watershed Management) to benefit riparian dependent resources. Dispersed recreation activities and other uses may be allowed to the extent they do not degrade the unique values. Facilities may be allowed and maintained for the purpose of protecting these resources. Visual quality objectives will be met.		
---	--	--

### MANAGEMENT AREA DESCRIPTION

Undeveloped lands that have been identified as supporting flora and fauna associations that are unique enough to require special management practices. Includes identified riparian ecotypes. Includes deciduous and coniferous forest types. Includes known essential habitats for threatened and endangered plants and animals.		
--	--	--

### CAPABILITY AREA TYPES

8M, 9AHM, 9BHM, 11AR, and 12R Total acres = 24,423		
---	--	--

### SPECIFIC MANAGEMENT PRESCRIPTION

Timber Suitability: All acres unsuitable		
--	--	--

### STANDARDS AND GUIDELINES – DISPERSED RECREATION

1. Maintain trails to level 3. See Appendix E for a definition of levels. 2. Use of motorized vehicles is restricted to existing trails and roads. Some trails may be closed to motorized vehicles for safety, resource protection, and user conflict reasons. All trails on the Santa Catalina Ranger District are closed to motorized vehicles. 3. Maintain current roaded natural (RN) recreation opportunities while creating semi-primitive nonmotorized (SPNM) opportunities when possible by closing roads which are determined to be unneeded, and creating temporary roads only for resource utilization projects. 4. Manage dispersed use at a level of 75% less than standard and 25% standard.		
---	--	--

**Keep**

**Remove**

**Modify**

**1986 Forest Plan Management Direction  
Management Area 7A**

	Keep	Remove	Modify
<p><b>STANDARDS AND GUIDELINES – VISUAL RESOURCE MANAGEMENT</b></p> <p>1. Manage the following acres at the indicated Visual Quality Objectives:            8,792 acres Retention (36%)            8,060 acres Partial Retention (33%)            6,106 acres Modification (25%)            1,465 acres Maximum Modification (6%)</p>			

## 1986 Forest Plan Management Direction Management Area 7A

	Keep	Remove	Modify
<p align="center"><b>STANDARDS AND GUIDELINES – WILDLIFE AND FISH</b></p> <p>1. Specific standards and guidelines for management of wildlife are shown in the Forestwide prescription for activities appropriate to this Management Area. They are intended to meet the following objectives:</p> <p>(1) Maintain and improve current habitat for Federally listed plant and animal species and work toward delisting.</p> <p>(2) In fuelwood stands maintain 90% or more of occupied habitat (compared to untreated stands) for primary and secondary cavity nesters. In other areas, maintain 100% of occupied habitat for these species.</p> <p>(3) As part of allotment management planning, complete riparian management plans by the second period.</p> <p>(4) Maintain or improve current levels of occupied habitat for:</p> <ul style="list-style-type: none"> <li>&gt; Apache fox squirrel</li> <li>&gt; white-tailed deer</li> <li>&gt; mule deer</li> <li>&gt; pronghorn</li> <li>&gt; cottontail</li> <li>&gt; raptors</li> <li>&gt; Mearns' quail</li> <li>&gt; Gould's turkey</li> <li>&gt; Merriam's turkey</li> <li>&gt; coppery-tailed trogon</li> <li>&gt; sulphur-billed flycatcher</li> <li>&gt; beardless flycatcher</li> <li>&gt; thick-billed kingbird</li> <li>&gt; Bell's vireo</li> <li>&gt; blue-throated hummingbird</li> <li>&gt; Arizona ridge-nosed rattlesnake</li> <li>&gt; Mexican stoneroller</li> <li>&gt; Gila topminnow</li> <li>&gt; Sonora chub</li> <li>&gt; Gila chub</li> <li>&gt; Arizona trout</li> </ul>			
<p align="center"><b>STANDARDS AND GUIDELINES – WILDLIFE HABITAT MAINTENANCE</b></p> <p>1. Maintain wildlife structures based on guidelines shown in Forestwide prescription. They are intended to maintain current levels of occupied habitat for species listed above.</p>			

## 1986 Forest Plan Management Direction Management Area 7A

	Keep	Remove	Modify
<b>STANDARDS AND GUIDELINES – THREATENED AND ENDANGERED PLANT HABITAT IMPROVEMENT, FISH HABITAT IMPROVEMENT, GAME HABITAT IMPROVEMENT, NONGAME HABITAT IMPROVEMENT</b>			
<p>1. Structural and nonstructural habitat improvements projects will be based on guidelines as shown in the Forestwide prescription. They are intended to meet the following objectives:</p> <ul style="list-style-type: none"> <li>(1) Improve quality and availability of forage and water for:               <ul style="list-style-type: none"> <li>&gt; white-tailed deer</li> <li>&gt; mule deer</li> <li>&gt; pronghorn</li> <li>&gt; Merriam's turkey</li> <li>&gt; Gould's turkey</li> </ul> </li> <li>(2) Delist threatened and endangered species and reoccupy historical habitat with other identified species following approved species recovery plans and Memoranda of Understanding. Also improve habitat for Federally listed plants and animals following these same guidelines.</li> </ul>			
<b>STANDARDS AND GUIDELINES – RANGE MANAGEMENT</b>			
<p>1. Manage suitable rangeland at Level D. If level D is not achievable, manage at Level A (no livestock). See Appendix C for definition of range management levels.</p> <p>2. Vegetative manipulation is not used for range improvement.</p>			
<b>STANDARDS AND GUIDELINES – TIMBER SALE PREPARATION AND ADMINISTRATION</b>			
<p>1. Restrict removal of vegetation, such as beargrass, agave, yucca, ocotillo, and cactus to salvage operations and to remove invading species.</p> <p>2. Use fuelwood sales to accomplish other management objectives such as hazard reduction, visual quality enhancement, and wildlife habitat improvement. Harvest will be limited to individual tree selection.</p>			
<b>STANDARDS AND GUIDELINES – WATERSHED AND SOIL MAINTENANCE AND IMPROVEMENT</b>			
<p>1. Restore damaged watersheds to satisfactory watershed condition. Watershed treatment is a high priority in this Management Area. Watershed maintenance and improvement may consist of channel stabilization and revegetation using native or non-native species. See Appendix D for appropriate activities.</p> <p>2. Manage all programs to eliminate or minimize onsite and downstream water pollution.</p>			
<b>STANDARDS AND GUIDELINES – MINERALS MANAGEMENT</b>			
<p>1. Consider mineral withdrawals as needed to protect essential habitats for threatened and endangered species.</p>			

**1986 Forest Plan Management Direction  
Management Area 7A**

	Keep	Remove	Modify
<b>STANDARDS AND GUIDELINES – LANDS ADMINISTRATION</b>			
1. Attempt to acquire private lands that will "fill-in" ownership pattern resulting in more effective management of National Forest lands.			
2. Act on all exchange offers that appear to be in the public interest.			
<b>STANDARDS AND GUIDELINES – ROAD AND TRAIL PLANNING AND MAINTENANCE</b>			
1. Attempt to avoid these areas with new road and trail development.			
2. Bring existing roads and trails that are to be retained on the system to a maintainable standard which is suitable for the planned use and provides for minimum safety and resource protection. Maintain roads to Level 2. See Appendix E for a definition of levels.			
3. Close, drain, and revegetate existing roads that are determined to be unneeded for further use. This should be a cost of the initiating resource element.			
<b>STANDARDS AND GUIDELINES – FIRE AND FUELS MANAGEMENT</b>			
1. The management area is divided into fire suppression zones 1 and 2 based on resource protection and cost objectives. See Section 5 for definition of zones.			
2. Require 100% treatment of all slash and debris within cleared right-of-way boundaries.			
3. Within foreground distance zones of sensitivity Level 1 and 2 (trails and road use areas and water bodies) require 100% treatment of all activity slash.			
4. Fuel treatment may consist of chipping, broadcast burning, piling and burning, or lopping and scattering.			
5. The prescribed use of fire will be used to reduce fuel hazard and enhance wildlife habitat.			
6. All projects that include prescribed burning will include specific burning prescriptions that will insure the fire can be controlled within established boundaries and that the burning meets the desired resource objectives.			
7. Burn debris piles in locations and at times that will minimize scorching of adjacent trees and shrubs.			
<b>STANDARDS AND GUIDELINES – INSECT AND DISEASE MANAGEMENT</b>			
1. Maintain surveillance for insect and disease outbreaks. Where opportunities exist, attempts will be made to reduce or prevent damages from insects and diseases. Use integrated pest management techniques which are compatible, economical, and environmentally acceptable.			
2. Recognize and prevent conditions favorable for insect and disease outbreaks.			

## 1986 Forest Plan Management Direction Management Area 7B

	Keep	Remove	Modify
<p><b>Note:</b> Due to the blending and sometimes indistinct differences between riparian vegetation types, Management Area 7 has been assigned to two distinct prescriptions. The resource manager will have to decide which prescription is appropriate based on the actual ground conditions. Prescription B is intended for capability types 10R and 11BR.</p>			
<b>MANAGEMENT EMPHASIS AND INTENSITY</b>			
<p>Manage to perpetuate the unique wildlife or vegetative species while producing livestock forage and fuelwood on a sustained basis.                      Recreation activities and other uses may occur to the extent they do not degrade the unique values.                      Visual quality objectives will be met.                      Facilities may be allowed and maintained for the purpose of protecting these resources.</p>			
<b>MANAGEMENT AREA DESCRIPTION</b>			
<p>Undeveloped lands that have been identified as supporting flora and fauna associations that are unique enough to require special management practices.                      Includes identified higher ecosystem expansions such as oak and mesquite bottoms.                      Includes known essential habitat for threatened and endangered plants and animals.</p>			
<b>CAPABILITY AREA TYPES</b>			
10R and 11BR			
Total acres = 17,124			
<b>SPECIFIC MANAGEMENT PRESCRIPTION</b>			
<b>STANDARDS AND GUIDELINES - DISPERSED RECREATION</b>			
1. Maintain trails to level 3. See Appendix E for a definition of levels.			
2. Use of motorized vehicles is restricted to existing trails and roads. Some trails may be closed to motorized vehicles for safety, resource protection, and user conflict reasons. All trails on the Santa Catalina Ranger District are closed to motorized vehicles.			
3. Maintain current Roaded Natural (RN) recreation opportunities while creating increased semi-primitive non-motorized (SPNM) opportunities when possible by closing roads which are determined to be unneeded, and creating temporary roads only for resource utilization projects.			
4. Manage dispersed use at a level of 75% less than standard and 25% standard.			
<b>STANDARDS AND GUIDELINES - VISUAL RESOURCE MANAGEMENT</b>			
1. Manage the following acres at the indicated Visual Quality Objectives:			
6,165 acres Retention (36%)			
5,651 acres Partial Retention (33%)			
4,281 acres Modification (25%)			
1,027 acres Maximum Modification (6%)			

## 1986 Forest Plan Management Direction Management Area 7B

	Keep	Remove	Modify
<b>STANDARDS AND GUIDELINES - WILDLIFE AND FISH</b>			
<p>1. Specific standards and guidelines for management of wildlife are shown in the Forestwide prescription for activities appropriate to this Management Area. They are intended to meet the following objectives:</p> <p>(1) Maintain and improve current habitat for Federally listed plant and animal species and work toward delisting.</p> <p>(2) In fuelwood stands (as compared to unharvested stands) maintain 80% or more of the occupied high density habitat and 60 to 80% of the low density habitat for Mearns quail. Maintain 80% or more of the occupied habitat for cavity nesters. In other areas, maintain 100% of occupied habitat for quail and cavity nester species.</p> <p>(3) Maintain or improve current occupied levels of habitat for:</p> <ul style="list-style-type: none"> <li>&gt; white-tailed deer</li> <li>&gt; mule deer</li> <li>&gt; javelina</li> <li>&gt; pronghorn</li> <li>&gt; cottontail</li> <li>&gt; raptors</li> <li>&gt; Merriam's turkey</li> <li>&gt; Gould's turkey</li> <li>&gt; coppery-tailed trogon</li> <li>&gt; sulphur-billed flycatcher</li> <li>&gt; beardless flycatcher</li> <li>&gt; thick-billed kingbird</li> <li>&gt; Bell's vireo</li> <li>&gt; blue-throated hummingbird</li> <li>&gt; Arizona ridge-nosed rattlesnake</li> <li>&gt; Mexican stoneroller</li> <li>&gt; Gila topminnow</li> <li>&gt; Sonora chub</li> <li>&gt; Gila chub</li> </ul>			

<b>STANDARDS AND GUIDELINES - WILDLIFE HABITAT MAINTENANCE</b>			
<p>1. Maintain wildlife structures based on guidelines shown in Forestwide prescription. They are intended to maintain current levels of occupied habitat for species listed above.</p>			

**1986 Forest Plan Management Direction  
Management Area 7B**

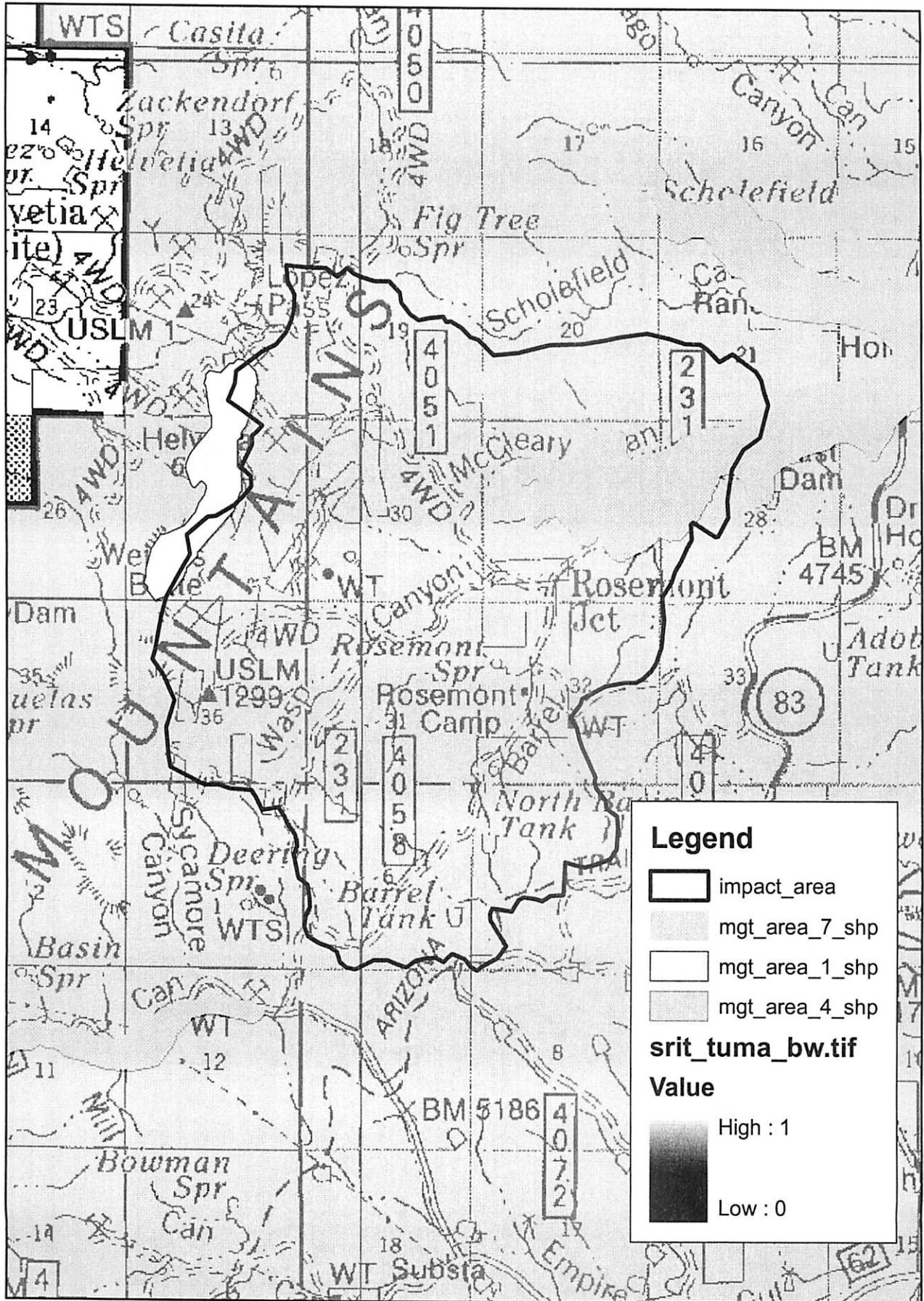
	Keep	Remove	Modify									
<p><b>STANDARDS AND GUIDELINES – THREATENED AND ENDANGERED PLANT HABITAT IMPROVEMENT, FISH HABITAT IMPROVEMENT, GAME HABITAT IMPROVEMENT, NONGAME HABITAT IMPROVEMENT</b></p> <p>1. Structural and nonstructural habitat improvements projects will be based on guidelines as shown in the Forestwide prescription. They are intended to meet the following objectives:</p> <ul style="list-style-type: none"> <li>(1) Improve quality and availability of forage and water for:               <ul style="list-style-type: none"> <li>&gt; white-tailed deer</li> <li>&gt; mule deer</li> <li>&gt; pronghorn</li> <li>&gt; Merriam's turkey</li> <li>&gt; Gould's turkey</li> </ul> </li> <li>(2) Delist threatened and endangered species and reoccupy historical habitat with other identified species following approved species recovery plans and Memoranda of Understanding. Also improve habitat for Federally listed plants and animals following these same guidelines.</li> </ul>												
<b>STANDARDS AND GUIDELINES – RANGE MANAGEMENT AND IMPROVEMENT</b>												
<p>1. Manage suitable rangeland at Level D. If level D is not achievable, manage at Level A (no livestock). See Appendix C for definition of range management levels. Management seeks full utilization of forage allocated to livestock. Cost-effective management systems and techniques, including fencing and water development, are designed and applied to obtain relatively uniform livestock distribution and use of forage and to maintain plant vigor.</p> <p><u>Projected Range Conditions</u></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 60%;"><u>Condition</u></td> <td style="width: 20%;"><u>Period 1 Acres</u></td> <td style="width: 20%;"><u>Period 5 Acres</u></td> </tr> <tr> <td>Satisfactory</td> <td style="text-align: right;">15,412</td> <td style="text-align: right;">15,412</td> </tr> <tr> <td>Unsatisfactory</td> <td style="text-align: right;">1,712</td> <td style="text-align: right;">1,712</td> </tr> </table>	<u>Condition</u>	<u>Period 1 Acres</u>	<u>Period 5 Acres</u>	Satisfactory	15,412	15,412	Unsatisfactory	1,712	1,712			
<u>Condition</u>	<u>Period 1 Acres</u>	<u>Period 5 Acres</u>										
Satisfactory	15,412	15,412										
Unsatisfactory	1,712	1,712										
<p>2. Vegetative manipulation may be used for range improvement and may consist of such activities as prescribed burning, mechanical removal, wood harvest, use of approved herbicides, livestock grazing, and reseeding of native or non-native species. See Appendix D for activity selection criteria.</p>												

## 1986 Forest Plan Management Direction Management Area 7B

	Keep	Remove	Modify
<b>STANDARDS AND GUIDELINES – TIMBER SALE PREPARATION AND ADMINISTRATION</b>			
<p>1. Silviculturally manage the woodland tree resource under uneven-age management. Fuelwood harvest will be limited to those lands which contain fuelwood species having a crown cover of 10% or more. Manage to sustain an average 40 to 50 year cutting cycle. The removal of dead or green trees for wood products or Christmas trees will be by individual tree selection or group selection limited to maximum clearing size of two acres. Harvest will be restricted to removal of overmature, mature, poor form, low vigor, or overcrowded trees for the purpose of maintaining vigorous stands and sustaining the yield of wood products while maintaining the unique values of the area.</p> <p>2. Use fuelwood sales to accomplish other management objectives such as hazard reduction, visual quality maintenance, range improvement, and wildlife habitat improvement.</p> <p>3. Prohibit the removal of saguaro cactus, agave, yucca, and ironwood wildings unless it because necessary to remove them in order to accommodate a use of higher priority. The harvest of beargrass, ocotillo, and most cactus species will be permitted as long as there is no significant impact of other resources or uses.</p>			
<b>STANDARDS AND GUIDELINES – WATERSHED AND SOIL MAINTENANCE AND IMPROVEMENT</b>			
<p>1. Watershed treatment is a high priority in this Management Area. Watershed maintenance and improvement may consist of channel stabilization, activities to increase water infiltration, and revegetation using native or non-native species. See Appendix D for activity selection criteria.</p> <p>2. Manage all programs to eliminate or minimize onsite and downstream water pollution.</p>			
<b>STANDARDS AND GUIDELINES – MINERALS MANAGEMENT</b>			
<p>1. Common materials for personal or commercial use may be removed by permit or for National Forest management purposes.</p>			
<b>STANDARDS AND GUIDELINES – LANDS ADMINISTRATION</b>			
<p>1. Consider mineral withdrawals as needed to protect essential habitats for Federally threatened and endangered species.</p> <p>2. Attempt to acquire private lands that will "fill-in" ownership pattern resulting in more effective management of National Forest Lands.</p> <p>3. Act on all exchange offers that appear to be in the public interest.</p>			
<b>STANDARDS AND GUIDELINES – ROAD AND TRAIL PLANNING AND MAINTENANCE</b>			
<p>1. Attempt to avoid these areas with new road development.</p> <p>2. Bring existing roads that are to be retained on the system to a maintainable standard which is suitable for the planned use and provides for safety and resource protection. Maintain roads to Level 2. See Appendix E for a definition of levels.</p>			

**1986 Forest Plan Management Direction  
Management Area 7B**

	Keep	Remove	Modify
3. Close, drain, and revegetate existing roads that are determined to be unneeded for further use. This should be a cost of the initiating resource element.			
<b>STANDARDS AND GUIDELINES - FIRE AND FUELS MANAGEMENT</b>			
1. The management area is divided into fire suppression zones 1 and 2 based on resource protection and cost objectives. See Section 5 for definition of zones.			
2. Reduce slash from fuelwood harvest and right-of-way clearing to a level that is compatible with Forest Service ability to protect the remaining resources and still provide needed wildlife habitat.			
3. Fuel treatment may consist of chipping, broadcast burning, piling and burning, or lopping and scattering.			
4. Prescribed fire will be used to reduce fuel hazard and maintain or improve wildlife habitat, livestock forage, and watershed condition.			
5. All projects that include prescribed burning will include specific burning prescriptions that will insure the fire can be controlled within established boundaries and that the burning meets the desired resource objectives.			
6. Burn fuelwood slash and debris piles in locations and at times that will minimize scorching of adjacent trees and shrubs.			
<b>STANDARDS AND GUIDELINES - INSECT AND DISEASE MANAGEMENT</b>			
1. Maintain surveillance for insect and disease outbreaks. Where opportunities exist, attempts will be made to reduce or prevent damages from insects and diseases. Use integrated pest management techniques which are compatible, economical, and environmentally acceptable.			
2. Recognize and prevent conditions favorable for insect and disease outbreaks.			



# Mitigation



"Tom Furgason"  
<tfurgason@swca.com>  
12/15/2009 05:22 PM

To "Kathy Arnold ROSEMONT"  
<karnold@rosemontcopper.com>  
cc <beverson@fs.fed.us>, "Melinda D Roth"  
<mroth@fs.fed.us>, <jsturgess@augustaresource.com>,  
"Jonathan Rigg" <jrigg@swca.com>, "Melissa Reichard"  
bcc

Subject FW: Mitigation table

Kathy,

Attached is SWCA's Draft section on the mitigation to be included in Chapter 2 as submitted to the Coronado on October 16. The Coronado responded by having their specialists provide and inventory of all of the mitigation ideas discussed by the IDT to date.

We'll be compiling what we have from the Cooperating Agencies and sending those tomorrow. Keep in mind that their deadline is this Friday. As we discussed at the last Coronado/Rosemont meeting, we are sending what we have now so that Rosemont will have time to review some of this information prior to our meeting on December 21.

I will also send a list of mitigation that the public mentioned during scoping. We expect to have this in the next couple of days.

Feel free to call me if you have any questions or need additional information.

Tom

-----Original Message-----

From: Jonathan Rigg  
Sent: Tuesday, December 15, 2009 4:31 PM  
To: mroth@fs.fed.us  
Cc: Tom Furgason  
Subject: FW: Mitigation table

Hi Mindee,

Here is a copy of the in progress mitigation comment table. Only the FS comments have been accumulated in this version and I will be adding the public and coop agency mitigation tomorrow.

Thanks!

Jonathan

---

From: Melinda D Roth [mailto:mroth@fs.fed.us]  
Sent: Tuesday, December 15, 2009 3:28 PM  
To: Jonathan Rigg  
Subject: Mitigation table

From my IDT meeting notes: Build a table that contains these concepts:

Mitigation idea  
Idea source  
Resource area or issue addressed  
Mitigates what?  
Required by permit, law...  
Notes/Disposition  
Apply to which alts

Mindee Roth  
Coronado National Forest  
300 W. Congress, FB42  
Tucson, AZ 85701  
(520) 388-8319  
(520) 396-0715 (cell)  
(520) 388-8305 (FAX)



DEIS Mitigation Comment Compilation\_JR\_121509.doc Ch2 DRAFT Mitigation\_111609\_TF.doc

Debby Kriegel /R3/USDAFS  
02/04/2010 09:25 AM

To Melinda D Roth/R3/USDAFS@FSNOTES, Beverley A  
Everson/R3/USDAFS@FSNOTES  
cc Debby Kriegel/R3/USDAFS@FSNOTES, bidwell@swca.com  
bcc

Subject Rosemont information request

History:  This message has been replied to and forwarded.

Bev and Mindee,

I have read the MPO and Reclamation and Closure Plan and attend regular Rosemont meetings, but I continue to be surprised by learning about additional mine-related features that would effect visual quality and recreation. This is due to my lack of experience on large mines, and I simply don't understand the scale and appearance of many of these features.

We have good information on the pit, plant, and access road, and will be getting more information on the power line and grading for the waste rock and tailings piles. It's the rest of the stuff that I find myself unclear about.

I would like to formally request information from Rosemont. This information will be needed for both visual quality and recreation analyses, and is likely of value to other IDT members. I will need complete information for each feature (written descriptions, sizes, photos of equivalent items from other mines, details, etc.), as well as maps of where these features will be located.

1. All above-ground constructed features (other than the pit, plant, access road, and power line) that will be needed for mine operations, including, but not limited to: buildings, drainage structures (headwalls, hardened drainageways, etc.), well enclosures/housings, conveyors, slabs, roads, fences, and above-ground water lines.
2. All facilities and other improvements that must remain after mine closure, including, but not limited to: buildings, constructed drainage structures (headwalls, hardened drainageways, etc.), well enclosures/housings, slabs, roads, fences, and above-ground utility lines.
3. Areas (other than the pit and waste rock and tailings piles) that will require major grading during mine operations or will not be returned to natural topography after mine closure. This would include embankments (sediment ponds, containment areas, compliance dams, diversion basins, etc.), grading for the plant site and mine access road, perimeter roads, and other similar areas.

Please forward this request to Rosemont.

Thanks.

~~~~~  
Debby Kriegel, RLA  
Landscape Architect  
Coronado National Forest  
300 W. Congress  
Tucson, AZ 85701  
(520) 388-8427  
Fax (520) 388-8305  
[www.fs.fed.us/r3/coronado/](http://www.fs.fed.us/r3/coronado/)  
[dkriegel@fs.fed.us](mailto:dkriegel@fs.fed.us)

Debby Kriegel /R3/USDAFS  
03/22/2010 03:00 PM

To abelauskas@fs.fed.us, aelek@fs.fed.us, cablair@fs.fed.us,  
ccleblanc@fs.fed.us, dkriegel@fs.fed.us,  
dsebesta@fs.fed.us, ecuriel@fs.fed.us, gmckay@fs.fed.us,

cc

bcc

Subject Rosemont Mine - List of "other" facilities and features

We all are very familiar with the Rosemont pit, plant, and waste/tailings piles (the "Big 3"). However, I continue to learn about other project elements beyond these areas. In recent weeks I re-read both the MPO and Reclamation Plan, met with Dale Ortman to clarify, and compiled a list. Although I'm not sure exactly how we might use this, at a minimum it provides a good tickler list for analysis of impacts to each resource. I'll be presenting this at our IDT meeting on Wednesday. If you have time before then, please look it over and bring your comments and questions. Thanks!



Other\_Mine\_Elements\_032210.xlsx

DRAFT - DELIBERATIVE - INTERNAL USE ONLY

**Rosemont Mine - Facilities and features within EMA boundary OTHER than pit, waste/tailings piles, and plant**

March 22, 2010

Note: "Plant" is defined as all facilities shown on MPO Figure 2-8 "Ancillary Facilities".

| Category                | Description                                                                                                                                                                   | During Mine | Post-Mine | Notes |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------|-------|
| <b>Roads</b>            | Main access road (3.7 miles, 68+ ft easement and at least 52 ft wide corridor, cuts/fills, ditches, signs, culverts, gunnite embankments, bollard barricades)                 | Yes         | Yes       |       |
|                         | Secondary access road over ridge from Santa Rita Rd to plant (11 ft wide road)                                                                                                | Yes         | Yes       |       |
|                         | Highway 83 widening at intersection with access road (~500 ft N & S)                                                                                                          | Yes         | Yes       |       |
|                         | Numerous mine roads between pit, crusher, and plant (120-130 ft wide haul roads)                                                                                              | Yes         | No        |       |
|                         | Haul roads N, E, and S around pit                                                                                                                                             | Yes         | No        |       |
|                         | Roads around perimeter of waste rock & tailings piles                                                                                                                         | Yes         | Yes       |       |
|                         | Roads to re-connect public access around mine                                                                                                                                 | Yes         | Yes       |       |
|                         | Roads for power lines (to each pole)                                                                                                                                          | Yes         | Yes       |       |
|                         | Water line roads (probably the same as secondary access road)                                                                                                                 | Yes         | Yes       |       |
|                         | Slurry pipeline roads (if used)                                                                                                                                               | Yes         | No        |       |
|                         | Well access roads                                                                                                                                                             | Yes         | Yes       |       |
|                         | Conveyor roads                                                                                                                                                                | Yes         | No        |       |
| <b>Buildings</b>        | Filter plant, if not located within plant area                                                                                                                                | Yes         | No        |       |
| <b>Power Lines</b>      | Construction power line (138 kV, pole height 90 ft., span 800 ft on level ground (less on steep topo)                                                                         | Yes         | No        |       |
|                         | Permanent power line (138 kV, pole height 90 ft, span 800 ft on level ground (less on steep topo)                                                                             | Yes         | Unknown   |       |
|                         | Upgraded power line through Box Canyon (alternative)                                                                                                                          | Yes         | Yes       |       |
|                         | Power line around perimeter of pit                                                                                                                                            | Yes         | No        |       |
| <b>Other mine waste</b> | Heap leach, if not located within other waste rock pile (including road, acid system, PLS pond, PLS to SX plant channel/line, tanks/warehouse, pumps, stormwater ponds, etc.) | Yes         | Yes       |       |
|                         | Landfill (foundations, parking lots, pond liners, and other non-hazardous waste)                                                                                              | Yes         | Yes       |       |
| <b>Conveyors</b>        | MPO and phased tailings alt: behind waste rock buttress                                                                                                                       | Yes         | No        |       |

|                  | Upper Barrel alt: partially behind waste rock buttress                                                                                                                                                                                                                                                       | Yes | No    |                                                                                                                                                                                                                           |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | Scholefield alt: conveyor on east side of project between the plant and pile, including over the outer shell of waste pile, or if filter plant is located near tailings, pipes to the plant (with roads) and conveyor over the outer shell of waste pile                                                     | Yes | No    |                                                                                                                                                                                                                           |
|                  | Sycamore alt: across ridge to Sycamore Canyon (potentially could be in a tunnel)                                                                                                                                                                                                                             | Yes | No    |                                                                                                                                                                                                                           |
|                  | Second conveyor on upper ridge area (MPO section 2, p. 27)                                                                                                                                                                                                                                                   | Yes | No    | Location unknown. Probably connects the filter plant with active tailings deposition area.                                                                                                                                |
| <b>Pipelines</b> | Water supply lines and associated roads, 20" black iron pipe                                                                                                                                                                                                                                                 | Yes | No    |                                                                                                                                                                                                                           |
|                  | Slurry line (if used) and associated roads, black pipe <24"                                                                                                                                                                                                                                                  | Yes | No    |                                                                                                                                                                                                                           |
|                  | Irrigation pipelines (if used)                                                                                                                                                                                                                                                                               | Yes | Maybe |                                                                                                                                                                                                                           |
|                  | Pumps/booster system facilities for pipelines (boosters in MPO figure 2-10). Building, likely metal, about the size of a big garage, with a good sized pump and electrical control gear inside. Each would also include a power line, and perhaps electrical equipment in a small yard next to the building. | Yes | No    |                                                                                                                                                                                                                           |
| <b>Wells</b>     | Point of compliance wells around waste piles. Each includes a concrete slab, 6" capped pipe 24" high, and a small sign.                                                                                                                                                                                      | Yes | Yes   | Water may be pulled with a truck mounted pump. If this is not available, each well may need a dedicated pump with power supplied from a truck mounted generator brought to the well each time a sample is taken.          |
|                  | Dewatering wells around pit: concrete slab, machinery, 5-6' high, power pole and line, and electric box                                                                                                                                                                                                      | Yes | No    | Unknown number and exact locations.                                                                                                                                                                                       |
|                  | Groundwater monitoring wells "downgradient of facility (MPO section 2, p. 28 and reclamation plan p. 33)                                                                                                                                                                                                     | Yes | Yes   | May need information on number and locations. Typically, there are monitor wells located at the boundary of the PMA (Pollutant Management Area as per the APP) and Alert Well located between the facilities and the PMA. |

|                            | Hydrogeologic characterization and pit characterization wells                                                                                                                                                                                           | Maybe | Maybe    | Wells installed by Rosemont during groundwater investigations. Will remain in existence only if used for monitoring, which we don't know at this time. Unknown quantity and locations. |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fences</b>              | Perimeter security fence: 4-stand barbed wire (range fence), frequent signs                                                                                                                                                                             | Yes   | No       |                                                                                                                                                                                        |
|                            | Pit fence on road side: chain link, 6-8' high with signs, possibly barbed wire on top                                                                                                                                                                   | Yes   | Yes      |                                                                                                                                                                                        |
|                            | Pit fence on remote side: range fence with frequent signs                                                                                                                                                                                               | Yes   | Yes      |                                                                                                                                                                                        |
|                            | Resource protection fences (cultural sites, biologically sensitive sites, etc.): unknown material                                                                                                                                                       | Yes   | Maybe    |                                                                                                                                                                                        |
| <b>Drainage Structures</b> | Diversion channels around entire mine operation (plant, pit, and waste/tailings piles). Rip-rap lined channels. 120 ft wide, with concrete weirs 15'w x 4'h typical max as needed for stability. Some options to concrete may be possible (e.g., rock). | Yes   | Yes      |                                                                                                                                                                                        |
|                            | Ends of MPO Central drain. Inlet possibly a large concrete structure associated with retention pond. Outlet probably rock only. Inlet and outlets for alternatives would be smaller.                                                                    | Yes   | Yes      |                                                                                                                                                                                        |
|                            | Stormwater (settling) ponds. Similar to large stock ponds (<10' earthen berms with armored embankments and spillways). Allow sediment to settle out before moving into creeks.                                                                          | Yes   | No       |                                                                                                                                                                                        |
|                            | Ponds along pipelines in all locations where pipes could break (stock pond sized)                                                                                                                                                                       | Yes   | No       |                                                                                                                                                                                        |
|                            | Lined ponds (such as heap leach if not located under waste rock)                                                                                                                                                                                        | Yes   | No       |                                                                                                                                                                                        |
|                            | Compliance dam (MPO figure 2-11), also known as final monitoring dam at outlet of Barrel Canyon. Porous dam with 6 ft. high earth embankment and large waste rock (Reclamation plan, p. 33).                                                            | Yes   | Probably | See section 2.9.5 of the MPO. Likely the Compliance Point Dam would be removed once ADEQ was satisfied that the APP could be terminated following final reclamation.                   |
|                            | 90 ft. dam (MPO section 2, p. 47)                                                                                                                                                                                                                       | Yes   | Maybe    | This dam retains the PWTs pond. It would only remain post-mine if incorporated in the toe of the waste rock buttress.                                                                  |

| Other | "Growth Media/Topsoil" stockpiles                                                                                                                                                                                                                                                                                                                                                                | Yes | No                         |                                                                                                                                            |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
|       | Vegetation test plots (two, approx. 4 acres each)                                                                                                                                                                                                                                                                                                                                                | Yes | No                         |                                                                                                                                            |
|       | Mitigation measures: AZ Trail stock water/trail to Sentenal Peak/interp signs, etc.                                                                                                                                                                                                                                                                                                              | Yes | Yes                        | Should IDT review mitigation list and add other items?                                                                                     |
|       | Other communication lines/towers? (phone lines, cell towers, etc., such as MPO section 2, p. 15)                                                                                                                                                                                                                                                                                                 | Yes | No                         | Location and number are unknown                                                                                                            |
|       | Piezometers at base of dry stack tailings (Reclamation Plan p. 30)                                                                                                                                                                                                                                                                                                                               | Yes | Yes                        | Sensor is buried. Above ground there would be an electrical box to protect the plug-in connection port.                                    |
|       | Sand & gravel quarry (MPO section 2, p. 62)                                                                                                                                                                                                                                                                                                                                                      | Yes | No?                        | Location is unknown, but likely to be within plant site or other area to be disturbed by mine facilities, such as the waste disposal area. |
|       | Berm around pit (MPO p. 78 mentions fence and/or berm)                                                                                                                                                                                                                                                                                                                                           | Yes | Yes                        | May be a berm, fence, or combination of the two.                                                                                           |
|       | Other sub-surface items: liners (process water ponds, heap leach collection ditches, heap leach pipeline containment ditches, and heap leach pile), foundations, landfilled items, septic system, utility lines (water, sewer, electrical, etc.), geotextile drains under waste pile                                                                                                             | Yes | Yes, but only below ground | No lined ponds will remain post-mine (except heap leach).                                                                                  |
|       | Constructed wetland (Reclamation Plan p. 50)                                                                                                                                                                                                                                                                                                                                                     | Yes | Maybe                      | This appears to be mentioned as an option to be used on an "as needed" basis. Location not clear.                                          |
|       | Weather stations and/or air quality monitoring facilities. Likely they will be the standard monitoring station with precipitation, wind, temperature and humidity monitors; there may also be an evaporation pan. Power is often supplied with a solar panel if the station is not near another facility with power. They may also have particulate monitors or these may be located separately. | Yes | ?                          |                                                                                                                                            |

Robert Lefevre/R3/USDAFS  
01/25/2010 01:10 PM

To Melinda D Roth/R3/USDAFS@FSNOTES, Beverley A  
Everson/R3/USDAFS@FSNOTES

cc

bcc

Subject Re: Mitigation Table Review needs

Bev and Mindee: I looked at Air #34 and my notes about it. I had thought this would be accomplished if we abide by Pima Department of Environmental Quality Code of Ordinances Title 17.12. However, it appears that ordinance requires the holder of the permit (Rosemont, in this case) to do the inspections and make the report. If we decide to make unscheduled inspections we will have to train someone how to do it. It does not appear that Pima County Department of Environmental Quality makes unscheduled inspections. I have no suggestions for rewording except to spell "tuned" correctly.

Robert E. Lefevre  
Forestry and Watershed Program Manager  
Coronado National Forest  
USDA Forest Service  
520-388-8373  
Melinda D Roth/R3/USDAFS



Melinda D Roth/R3/USDAFS  
01/25/2010 11:24 AM

To dkriegel@fs.fed.us, dsebesta@fs.fed.us, sldavis@fs.fed.us,  
sshafiqullah@fs.fed.us, wkeyes@fs.fed.us,  
hschewel@fs.fed.us, temmett@fs.fed.us, gmckay@fs.fed.us,  
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cclblanc@fs.fed.us, seanlockwood@fs.fed.us,  
ljones02@fs.fed.us, cablair@fs.fed.us, kbrown03@fs.fed.us  
cc Beverley A Everson/R3/USDAFS@FSNOTES, Reta  
Laford/R3/USDAFS@FSNOTES, Melinda D  
Roth/R3/USDAFS@FSNOTES, jrigg@swca.com,  
tfurgason@swca.com

Subject Mitigation Table Review needs

Bev sent out the latest draft of the Mitigation Table on Friday. I reviewed it and found the following items for Forest action:

✓ Air #34

✓ Plants and Animals #51

Hydrology #110, 111, 116, 120, 124, 126, 127, 128, 105, 107

Transportation #228 (says Larry will reword?)

Visual #234, 237, 238

We can talk about this need at Wednesday's IDT meeting, especially in light of Forest Plan Revision assignments and timeframes. Please keep Bev apprised if you complete your section before Wednesday.

Reta Laford/R3/USDAFS



Reta Laford/R3/USDAFS  
07/20/2009 09:18 PM

To Melinda D Roth/R3/USDAFS@FSNOTES  
cc tfurgason@swca.com, Reta Laford/R3/USDAFS@FSNOTES  
Subject Letter still needed - Re: Need letter for Scoping Report #1 

I just looked at Tom's Final Scoping Report #1. The June letter you included is the wrong letter. The June letter was our request for the whole review process throughout development of the FEIS. In July we sent a letter specific to requesting review for scoping. The July letter should be very similar to the version that was in an earlier draft of the scoping report. So . . . see if it can be found in the correspondence database for July and ask Karina to check the hardcopy mail files. Thanks. Sorry for the confusion.

Reta Laford, Deputy Forest Supervisor

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300 W Congress Street, Tucson, AZ 85701

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Fax: 520-388-8305  
Email: rlaford@fs.fed.us

---

Reta Laford/R3/USDAFS



Reta Laford/R3/USDAFS  
07/20/2009 08:43 PM

To Melinda D Roth/R3/USDAFS@FSNOTES  
cc Reta Laford/R3/USDAFS@FSNOTES  
Subject Re: Need letter for Scoping Report #1 

Good work piecing it together. I recall it was a crazy time. Perhaps Karina will be able to locate the hardcopy (if there was on). Perhaps the final dropped out an enclosure because we could get that summary ready fast enough. Hopefully we can straighten it out with asking the RO for a copy of what we sent them. Thanks for working on this, and the million other Rosemont things!

Reta Laford, Deputy Forest Supervisor

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Fax: 520-388-8305  
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---

Melinda D Roth/R3/USDAFS



Melinda D Roth/R3/USDAFS



"Melissa Reichard "  
<mreichard@swca.com>  
09/26/2009 10:24 PM

To "Reta Laford" <rlaford@fs.fed.us>  
cc "Tom Furgason" <tfurgason@swca.com>, "Beverley A  
Everson" <beverson@fs.fed.us>, "Melinda D Roth"  
<mroth@fs.fed.us>

bcc

Subject IDT Theme rationale

Reta-

Since I haven't heard back from you on where you wanted to put some of the new rationale areas that I sent yesterday, I took the chance to do some further work.

So, what I have attached is the same tracking sheet with additional columns in the beginning noting the categories of the rationale. I went through all the worksheets for the Not Sig. and the Non-Issue. I tried to make a quick check for you of the documented rationale vs. the NEPA disposition vs. the guessed LO disposition. You may also want to glance at the tabbed called Discrepancies. I made this list a long time ago now but these are still worth noting before making things complete.

I think you will notice differences and may want to make changes. So, I am holding off on creating the tables until I hear back from you. I'm interested to hear what you think and if this helps make things any easier.

I have my youngest son's birthday party tomorrow, but I will be checking my phone periodically. So, feel free to call me anytime.

*Melissa Reichard*

Project Administrator  
SWCA Environmental Consultants  
343 West Franklin Street  
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(520)325-9194, (520)325-2033 fax

Sound Science. Creative Solutions.

*"Man's mind, once stretched by a new idea, never regains its original dimensions."*

*-Oliver Wendell Holmes*



SR3 Tables.xls

Larry Jones/R3/USDAFS  
01/27/2010 01:42 PM

To tfurgason@swca.com, gsoroka@swca.com  
cc Beverley A Everson/R3/USDAFS@FSNOTES, Melinda D  
Roth/R3/USDAFS@FSNOTES  
bcc  
Subject Fw: Specialist report guidance document

Tom 'n' Geoff--

Not sure if I sent this to you or said I would, but here is some additional guidance for our biology reports.

Larry Jones  
Wildlife, Fish, and Rare Plants  
Coronado National Forest  
300 W Congress  
Tucson, AZ 85701

520-388-8375  
ljones02@fs.fed.us

----- Forwarded by Larry Jones/R3/USDAFS on 01/27/2010 01:41 PM -----



Richard A  
Gerhart/R3/USDAFS  
01/26/2010 01:07 PM

To Larry Jones/R3/USDAFS@FSNOTES  
cc  
Subject Specialist report guidance document

I think I said I would send this to you.



Guidance\_on\_Prep\_of\_Res\_Rpts.pdf

Richard A. Gerhart  
Wildlife, Fish and Rare Plants Program Manager  
Coronado National Forest  
300 West Congress  
Tucson AZ 85701  
(520) 388-8374  
rgerhart@fs.fed.us



Melinda D Roth/R3/USDAFS  
05/10/2010 03:48 PM

To jrigg@swca.com  
cc  
bcc

Subject Fw: Rosemont, Chapter 1 review USE THIS One

*Chapter 1 RO input  
See Bevs comments  
email 5/13/10.*

We received Region's input on Chapter 1 on May 7th. The forest will need to review the comments and assign needed work to one of us. I'll keep you posted.

Mindee Roth  
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(520) 396-0715 (cell)  
(520) 388-8305 (FAX)

— Forwarded by Melinda D Roth/R3/USDAFS on 05/10/2010 03:48 PM —



Beverley A  
Everson/R3/USDAFS  
05/07/2010 05:17 PM

To Melinda D Roth/R3/USDAFS@FSNOTES  
cc

Subject Fw: Rosemont, Chapter 1 review USE THIS One

FYI

Beverley A. Everson  
Forest Geologist  
Coronado National Forest  
300 W. Congress Street, 6th Floor  
Tucson, AZ. 85701

Voice: 520-388-8428  
Fax: 520-388-8305

— Forwarded by Beverley A Everson/R3/USDAFS on 05/07/2010 04:58 PM —



"STEVE.HATTENBACH@OG  
C.USDA.GOV"  
<STEVE.HATTENBACH@OG  
C.USDA.GOV>  
05/07/2010 04:02 PM

To "beverson@fs.fed.us" <beverson@fs.fed.us>,  
"riafor@fs.fed.us" <riafor@fs.fed.us>  
cc "mlinden@fs.fed.us" <mlinden@fs.fed.us>,  
"jcandrew@fs.fed.us" <jcandrew@fs.fed.us>  
Subject RE: Rosemont, Chapter 1 review USE THIS One

Mike L., Jackie A. and my comments are incorporated on this draft – Jackie – I want you to take a quick look at page 4 purpose and need and express any concerns you have over my edits and lengthy comment.

Reta/Bev – besides P&N I think you'all need some work on the cultural resource issue Section 10.



Melinda D Roth/R3/USDAFS  
05/27/2010 10:50 AM

To Reta Laford/R3/USDAFS@FSNOTES  
cc Melinda D Roth/R3/USDAFS@FSNOTES, Beverley A  
Everson/R3/USDAFS@FSNOTES  
bcc

Subject Rosemont Chapter 1 due date

I applied a technique that I learned at yesterday's project mgmt. training to estimate task timeframes. The timeframe for finalizing Chapter 1 is 6 days. I will need a day to incorporate final changes, which gives others 5 days to comment. This means I will be finalizing Chapter 1 next Friday, June 4th. Your input is likely to define what input I need from others. It would be most efficient to have your input no later than June 2nd.

What is not reflected in my Chapter 1 notes that you have is a slight reordering of issues to parallel the Chapter 3 outline. Please let me know how to proceed if this timeframe will not work for you. Finalizing Chapter 1 will also allow us to finalize Scoping Report 3. Completion of these 2 items can be counted as major accomplishments and reported to Rosemont at our June 9th Status meeting!

A small group of us will be working with SWCA on June 3rd to incorporate our review comments into the Chapter 2 MPO description. This will be important to establish a framework for the description of the other alternatives. Again, your comments, incorporated early, could really help our efficiency and document quality.

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"Melissa Reichard"  
<mreichard@swca.com>  
08/04/2009 04:07 PM

To "Teresa Ann Ciapusci" <tciapusci@fs.fed.us>  
cc "Melinda D Roth" <mroth@fs.fed.us>  
bcc  
Subject RE: 2009 08 03 Notes from Alaska

Thanks! It looks like you guys are getting a lot of information!

Item 17, though, I am not sure what it refers to. What backup copies? I was told to have a full complete paper copy that reflects the electronic copy.

I found item 15 interesting- I would appreciate further detail about what type of information about IDT conflict they typically include. Most of the other items I am having a difficult time following.

I did see a reference to a resource report template and I wonder how that would fit in if a contractor is doing the resource reports. Also, if I could see the template that may generate some ideas on how to apply this to all reports regardless of contractor.

Item 12- exactly what process steps do they delete drafts before turning in finals?

I copied Mindee on this because she would like to stay in the loop. I really appreciate your effort to keep me involved!!!

*Melissa*

"Science is organized knowledge. Wisdom is organized life." -Immanuel Kant

---

**From:** Teresa Ann Ciapusci [mailto:tciapusci@fs.fed.us]  
**Sent:** Monday, August 03, 2009 5:45 PM  
**To:** Melissa Reichard  
**Subject:** 2009 08 03 Notes from Alaska

Here is the first installment -

Teresa Ann Ciapusci  
Staff Officer  
Ecosystem Management and Planning  
Coronado National Forest  
300 West Congress, FB42  
Tucson, Arizona 85701  
(520) 388-8350 office  
(520) 237-0879 cellular  
(520) 388-8305 fax

R10 Visit notes

2009 08 03 Ciapusci and Davis

1. Recent court decision requires all attachments to public comments must be coded for content analysis – double check that scoping comment attachments were coded when appropriate. Scott Peak Timber Sale court case
2. Cumulative effects – not everyone on the team uses the same resources for cumulative effects
  - a. Wildlife identifies 5 items of cumulative effects
  - b. Timber comes along and adds one more that wildlife did not cover
  - c. Solution: Cumulative Effects Catalog
    - i. Petersburg RD has a good example that Sue will e-mail to us
    - ii. Includes past, present, and reasonably foreseeable (catalog defines reasonably foreseeable)
    - iii. Defended the catalog process in court successfully
    - iv. The catalog becomes an appendix to the DEIS – not attached to the FEIS because its already defined in the DEIS
3. References are attached directly to the resource reports – see R10/EP/Resource Report templates
4. Model runs
  - a. GIS-based models do not have legends
  - b. Final model run is put in resource report, signed and dated, remove and destroy all previous runs
    - i. One final run for DEIS
    - ii. If any change in alternatives, FEIS should have another run, but if nothing changed, no more runs should be included
5. Number consistency among team members - *explain why some inconsistencies.*
  - a. Write down all key numbers and values
  - b. Range of values can be acceptable depending on type of value
  - c. Numbers and values must be defined in the document – educational tool for the public
  - d. Choose between Metric and English Systems – use one or the other, not both
  - e. Define the qualitative terms (negligible, moderate, minor, extreme, etc.) when used
6. Tables and Values – especially those created within models and GIS layers
  - a. Totals need to go across and down in logical sequence
  - b. Accuracy vs. precision (significant digits)
  - c. Rounding errors introduced by use of non-significant decimal places
  - d. Define rounding protocols (nearest unit, ten, five) how to round up or down to nearest five
  - e. Call estimates “estimates” – don’t give impression that an estimate is a defined value
  - f. GIS pixels are only defined to the nearest 10 acres for example
7. What happens in the resource report – moves to the document – and then to the record
8. Defines hard look, integrated analysis, and interdisciplinary analysis occurred
9. All resource specialists must meet at the site at the same time, in person
10. Document an on-site IDT meeting – all on the site at the same time talking about the same thing
  - a. Include pictures of the IDT on-site in the administrative record

*different resources can have different list of projects for cumm. effects.*

- P/L
11. Documentation of why team was selected and why they have expertise – bios in DEIS must be supported in the project record
  12. Process
    - a. Electronic (in native format plus conversion to pdf format) and paper copies of all records
    - b. Is the packet of records complete? YES – Assume this is a LIE and make the resource specialist prove it!
      - i. Are all records signed, dated, cited, and referenced (electronic signatures are ok meaning /s/ is acceptable if the hardcopy document has an original handwritten signature and date)
      - ii. Internal FTP site is acceptable means to turn records into the Forest Service record keeper; better is external hard drive that is turned in to record keeper
      - iii. Delete all early draft copies before turning in final copies to record keeper and before FOIA request arrives – recent FOIA responses and litigation discovery are requiring affidavits to support the search parameters
  13. At the end, resource specialists will have a specialist report clearly labeled to be the DEIS and, if something changes between draft and final, on labeled to be the FEIS report – snapshot at DEIS, snapshot at FEIS, and references for each and its all in one place
  14. ACCO folders with movable brads are the best for storage of paper records – better than 3-ring binders (one ACCO folder for the DEIS, one for the FEIS) (can use multiple volumes of the ACCO folder for DEIS or FEIS labeled “folder x of y”)
    - a. Content tabs
      - i. Table of Contents
      - ii. Resource reports
      - iii. References
      - iv. Model Runs
      - v. Survey reports
      - vi. Maps and figures
      - vii. Findings required by law and legal framework
      - viii. Field notes
        1. no editorial comments
        2. no unnecessary artwork
        3. must be professional level work
        4. information is collected in the field
        5. decision makers make the decisions
      - ix. Resource specialist’s final version of the DEIS section and FEIS section text for their resource, including appendix material
      - x. Resource specialist’s final version of the ROD section text, if needed
      - xi. DVD
      - xii. Schema
      - xiii. Notes
      - xiv. Project Index
    - b. Enter documentation into Administrative Record index
      - i. Ensure all index information is complete
      - ii. Check references and enter into the index

- iii. Verify that references are present and complete in the package
  - iv. Save the index
  - v. Send to writer editor to integrate sections into the main EIS documentation in summarized format (resource specialist should write the summary)
  - vi. Check that findings required by law are included in the packet
  - vii. Set timeline for completed record to be ready
    - 1. DEIS and comment period, and response to comment
    - 2. FEIS, ROD, and appeal period
  - viii. File hardcopy in the Administrative Record
- ✓ 15. IDT notes must include dissenting opinions and what the team did with the dissenting opinion, including if the decision is to let the responsible official sort it out
16. Suggestions for timeline management – see back of blue envelope
- a. Tell specialists the time allotted to complete resource reports – negotiate with resource specialist input (includes summary write up for EIS text)
17. Check with Melissa about who gave direction to make back up copies of all paper records and why the person gave that direction – with electronic copies available, why is this necessary?
18. Schema – refine base schema from R10 and once its set up, leave it for the duration of this project
- a. Keep schema flat – don't do a lot of subdividing
  - b. Use cross reference tracks to point reviewers to another section of the record if that is where the documentation fits best – *How?*
- ✓ 19. Importance of complete IDT notes
- ✓ 20. Biographies – prove resource specialists have the qualifications and experience to be a team member, recorded in the administrative record (usually about half a page) – more than what is documented in the EIS – includes resume's of team members that left the team for whatever reason (ensure time period of time on team is included)
21. Tracking table of all attachments and how they were used in the analysis
22. Cover letter does not have a separate document number from its attachments
23. All categories in the EIS and Schema should be alphabetical – don't try to group or prioritize one resource over another in importance
- 24.

Debby Kriegel /R3/USDAFS  
08/20/2010 07:43 AM

To Melinda D Roth/R3/USDAFS@FSNOTES  
cc mreichard@swca.com, Sarah L  
Davis/R3/USDAFS@FSNOTES  
bcc  
Subject Re: Fw: Information request 

History:  This message has been replied to.

Golder's report is on the web, filed on the public website under Technical Reports , Visual.

I'd also like to refer Julia to Horst Schor's report, which is still incorrectly filed on the public website under Specialist Reports.

SWCA has Schor's 3-D model, which I think is in Autocad. I think it would be great to share this with Pima County, though we need to make it clear that it's not currently an alternative being analyzed.

SWCA should also have 3-D files for existing topo and alternatives. That's what Marcie and Trent have been using. I'm guessing that existing DEMs is safe to share. The data for the alternatives came from Tetra Tech, so I don't know whether it's ok to share...probably ought to contact Rosemont first.

Thanks.

Melinda D Roth/R3/USDAFS



Melinda D Roth /R3/USDAFS  
08/18/2010 08:15 AM

To Sarah L Davis/R3/USDAFS@FSNOTES, Debby  
Kriegel/R3/USDAFS@FSNOTES  
cc mreichard@swca.com  
Subject Fw: Information request

Please see Julia Fonseca's request below. Can you help me to understand/find/decide if is appropriate to share or not, etc.? I will be looking in WebEx for this info also.

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----- Forwarded by Melinda D Roth/R3/USDAFS on 08/18/2010 08:11 AM -----



"Julia Fonseca "  
<Julia.Fonseca@rfcd.pima.go  
v>  
08/17/2010 01:05 PM

To mroth@fs.fed.us  
cc  
Subject Information request

Hi, Mindee,

Can you provide us, as a cooperator, with the following items?

June 13, 2006 Preliminary Economic Analysis (referred to on your project website)

Feb 17, 2010 Golder Rosemont Mine Landforming

Digital elevation model representing the existing terrain and any alternatives being analyzed

Please let me know your response at your earliest convenience by email or phone (see below).

Thanks,

Julia Fonseca, Environmental Planning Manager  
Pima County Office of Conservation Science and Environmental Policy

201 N. Stone Ave. 6th floor  
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(520) 740-6460  
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Julia.Fonseca@pima.gov

<http://www.pima.gov/cmo/sdcp/>

*EIS Outline direction*  
5/5/10



Melinda D Roth/R3/USDAFS  
05/05/2010 11:09 AM

To jrigg@swca.com, mreichard@swca.com  
cc Beverley A Everson/R3/USDAFS@FSNOTES  
bcc Melinda D Roth/R3/USDAFS  
Subject Forest direction on Rosemont EIS outline

Reta has reviewed the EIS outline which is attached. This outline is made up of Rochelle Desser's version of Chapters 1 and 2 and SWCA's version of Chapter 3. Chapters 4-7 are fairly straight forward, so detailed direction is not needed at this time. Reta's comments on the above referenced outline follow:

- Chapter 3 organization of Physical, Biological, and Social is required.
- Under Biological, we are unclear what "Sky Islands" is. A more descriptive name would be preferable.
- We do not see a general wildlife section similar to "Plant Communities".
- In general, the Social section could be arranged to put the more important topics up front. Specifically, the socioeconomic sub-section may need to move up in the Social section because of its importance relative to other sub-sections.
- The organization needs to consider 3 concepts - most important information first, foundational topics first (general to more specific), and the logical flow of information. For example, the description and analysis of Water is foundational to Riparian, Seeps, and Springs. Also significant issues are more important than non significant ones. For example, Heritage and Recreation are more important than Noise, Dark Skies, etc.

There is no right or wrong organization. As you know, we plan to further scrutinize and possibly fine tune the outline once we see its application to the MPO description and analysis that is ongoing. It may be wise to further discuss the organization of the Social subsection of Chapter 3 to avoid major reorganization later. You can work through me on that if you desire.



Desser Rosemont Outline chapters 1 and 2.docx Chapter 3 Outline supplements Rochelles version.docx

Mindee Roth  
Coronado National Forest  
300 W. Congress, FB42  
Tucson, AZ 85701  
(520) 388-8319  
(520) 396-0715 (cell)  
(520) 388-8305 (FAX)

see other examples

|                      | Importance | Logical Flow |
|----------------------|------------|--------------|
| Land Use             |            |              |
| Dark Skies + Astron. |            |              |
| Visual               | XX         |              |
| Rec                  | X          |              |
| Haz Mat              |            |              |
| Fire + fuels         |            |              |
| Transport. / Access  | X          |              |
| Noise + vib.         | X          |              |
| Pub Safety           |            |              |
| Heritage             | XX         |              |
| Socioecon            | X          |              |
| E.J.                 |            |              |

Related: Transp. Safety HazMat,  
 Safety, Fire,  
 Visual, dark skies, rec.

Socio Econ, EJ

land use / access

Qual. of life - Visual, dark, noise,  
 socioecon, rec., traffic, safety

**DRAFT Rosemont DEIS Outline**

**March 16, 2010**

**CHAPTER 1**

**Introduction**

**Document Structure**

**Background**

**Purpose of and Need for Action**

**Proposed Action**

**Decision Framework**

**Forest Service**

**Bureau of Land Management**

**U.S. Army Corps of Engineers**

**Public Involvement**

**Issues**

**Issue 1: Impact on Land Stability and Soil Productivity**

**Issue 2: Impact on Water Resources**

**Issue 3: Impact on Springs, Seeps and Riparian Habitats**

**Issue 4: Impact on Plants and Animals**

**Issue 5: Impact on Air Quality**

**Issue 6: Impact on Visual Resources**

**Issue 7: Impact on Recreation**

**Issue 8: Impact on Public Safety**

**Issue 9: Impact on Dark Skies and Astronomy**

**Issue 10: Impact on Heritage Resources**

**Issue 11: Socio-Economic Impacts**

**Other Related Efforts**

**Mineral Withdrawal Efforts**

**Powerline**

**Water Rights**

**Other**

**CHAPTER 2**

**Introduction**

**Summary of Alternative Development Process/Alternatives Considered in Detail/Issues (table)**

**Alternative 1 No Action Description**

**Proposed Action and Action Alternatives - Common Elements**

**Overview of Mining Operations, Processing (oxide and sulfide ores) and Facility Needs**

**Mine Life**

**Permits and Permitting Processes**

**Assumptions from Permit Process**

**Pit**

**Water Supply and Control**

**Other Utilities and Support Facilities**

**Blasting and Drilling**

**Waste Rock and Tailings**

**Ore, Waste Rock and Tailings Transport**

**Solid, Hazardous and Sanitary Waste**

**Reclamation and Closure**

**Design Features, Resource Protection Plans and Mitigation**

**Monitoring**

**Forest Plan Amendments**

**Proposed Action in Detail**

**Specific Elements of the PMPO**

**Mine Footprint**

**Phasing of Activities**

**Mitigation Specific to this Alternative**

**Additional Items Needed for Implementation**

**Monitoring**

**Rationale, Effectiveness, Cost**

**Forest Plan Amendments**

**Each Alternative in Detail**

**Primary Issues Alternative Intended to Address (Why did we develop this alternative?)**

**Specific Elements of Each Alternative**

**Mine Footprint**

**Phasing of Activities**

**Mitigation Specific to this Alternative**

**Additional Items Needed for Implementation**

**Monitoring**

**Rationale, Effectiveness, Cost**

**Forest Plan Amendments**

**Alternatives Considered but Dismissed with Rationale**

**Alternative Comparison Table (includes elements of each alternative and issue/purpose and need measures)**

**CHAPTER 3**

**Introduction**

**How chapter is organized**

**Relevant information about Mining that will Inform all sections (referenced to avoid redundancy sections)**

**The Santa Rita Mountains, general geography, climate, topography, main place names and communities, land uses, overall management direction**

**Basis for Cumulative Effects – Foreseeable Future Activities**

## **The Physical Environment**

### **Geology and Minerals**

#### **Introduction**

**Issues, Cause and Effect Relationships of Concern**

**Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)**

**Analysis Methodology, Assumptions, Uncertain and Unknown Information**

#### **Affected Environment**

**Relevant Laws, Regulations, Policies and Plans**

#### **Environmental Consequences**

**Impacts Common to All Alternatives**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Impacts Specific to Each Alternative**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

### **Landforms, Soils and Reclamation**

#### **Introduction**

**Issues, Cause and Effect Relationships of Concern**

**Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)**

**Analysis Methodology, Assumptions, Uncertain and Unknown Information**

**Affected Environment**

**Relevant Laws, Regulations, Policies and Plans**

**Environmental Consequences**

**Impacts Common to All Alternatives**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Impacts Specific to Each Alternative**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Water Resources**

**Groundwater Quantity**

**Introduction**

**Issues, Cause and Effect Relationships of Concern**

**Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)**

**Analysis Methodology, Assumptions, Uncertain and Unknown Information**

**Affected Environment**

**Relevant Laws, Regulations, Policies and Plans**

**Environmental Consequences**

**Impacts Common to All Alternatives**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Impacts Specific to Each Alternative**

**Mitigation Effectiveness and Remaining Effects**

Direct, Indirect, Cumulative

**Groundwater Quality**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

**Affected Environment**

Relevant Laws, Regulations, Policies and Plans

**Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

**Surface Water Quantity**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

**Affected Environment**

Relevant Laws, Regulations, Policies and Plans

**Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

**Direct, Indirect, Cumulative**

**Impacts Specific to Each Alternative**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Surface Water Quality**

**Issues, Cause and Effect Relationships of Concern**

**Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)**

**Analysis Methodology, Assumptions, Uncertain and Unknown Information**

**Affected Environment**

**Relevant Laws, Regulations, Policies and Plans**

**Environmental Consequences**

**Impacts Common to All Alternatives**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Impacts Specific to Each Alternative**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**The Biological Environment**

**Vegetation and Habitats**

**Seeps and Springs and Riparian Habitats**

**Relative Value**

**Sky Islands**

**Plant Communities**

**Botanical Species of Concern**

**Wildlife Species of Concern**

**Livestock Grazing**

**Air Quality**

**Introduction**

**Issues, Cause and Effect Relationships of Concern**

**Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)**

**Analysis Methodology, Assumptions, Uncertain and Unknown Information**

**Affected Environment**

**Relevant Laws, Regulations, Policies and Plans**

**Environmental Consequences**

**Impacts Common to All Alternatives**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Impacts Specific to Each Alternative**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**The Social Environment**

**Visual Quality**

**Recreation**

**Public Safety**

**Hazardous Materials**

**Fire and Fuels Mgt**

**Transportation Safety**

**Light, Noise and Vibrations**

**Dark Skies and Astronomy**

**Heritage Resources**

**Archeological Resources**

**Traditional Tribal Resources**

**Socio-economics**

**Environmental Justice**

## **CHAPTER 3**

### **3.1 INTRODUCTION**

#### **3.1.1 How chapter is organized**

#### **3.1.2 Relevant information about Mining that will Inform all sections (referenced to avoid redundancy sections)**

#### **3.1.3 The Santa Rita Mountains, general geography, climate, topography, main place names and communities, land uses, overall management direction**

#### **3.1.4 Basis for Cumulative Effects – Foreseeable Future Activities**

### **3.2 THE PHYSICAL ENVIRONMENT**

#### **3.2.1 Geology and Minerals**

##### **3.2.1.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

##### **3.2.1.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

##### **3.2.1.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

#### **3.2.2 Soils and Reclamation**

##### **3.2.2.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

**3.2.2.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

**3.2.2.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

**3.2.3 Air Quality**

**3.2.3.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

**3.2.3.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

**3.2.3.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

**3.2.4 Water Resources**

**3.2.4.1 Groundwater Quantity**

Introduction

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

Affected Environment

Relevant Laws, Regulations, Policies and Plans

**Environmental Consequences**

**Impacts Common to All Alternatives**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Impacts Specific to Each Alternative**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**3.2.4.2 Groundwater Quality**

**Introduction**

**Issues, Cause and Effect Relationships of Concern**

**Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)**

**Analysis Methodology, Assumptions, Uncertain and Unknown Information**

**Affected Environment**

**Relevant Laws, Regulations, Policies and Plans**

**Environmental Consequences**

**Impacts Common to All Alternatives**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Impacts Specific to Each Alternative**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**3.2.4.3 Surface Water Quantity**

**Introduction**

**Issues, Cause and Effect Relationships of Concern**

**Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)**

**Analysis Methodology, Assumptions, Uncertain and Unknown Information**

**Affected Environment**

**Relevant Laws, Regulations, Policies and Plans**

**Environmental Consequences**

**Impacts Common to All Alternatives**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Impacts Specific to Each Alternative**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

#### **3.2.4.4 Surface Water Quality**

##### **Introduction**

**Issues, Cause and Effect Relationships of Concern**

**Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)**

**Analysis Methodology, Assumptions, Uncertain and Unknown Information**

##### **Affected Environment**

**Relevant Laws, Regulations, Policies and Plans**

##### **Environmental Consequences**

**Impacts Common to All Alternatives**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Impacts Specific to Each Alternative**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

### **3.3 THE BIOLOGICAL ENVIRONMENT**

#### **3.3.1 Seeps and Springs and Riparian Habitats**

##### **3.3.1.1 Introduction**

**Issues, Cause and Effect Relationships of Concern**

**Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)**

**Analysis Methodology, Assumptions, Uncertain and Unknown Information**

##### **3.3.1.2 Affected Environment**

**Relevant Laws, Regulations, Policies and Plans**

##### **3.3.1.3 Environmental Consequences**

**Impacts Common to All Alternatives**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

**Impacts Specific to Each Alternative**

**Mitigation Effectiveness and Remaining Effects**

**Direct, Indirect, Cumulative**

#### **3.3.2 Sky Islands**

##### **3.3.2.1 Introduction**

**Issues, Cause and Effect Relationships of Concern**

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

**3.3.2.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

**3.3.2.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

**3.3.3 Plant Communities**

**3.3.3.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

**3.3.3.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

**3.3.3.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

**3.3.4 Botanical Species of Concern**

**3.3.4.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

- 3.3.4.2 Affected Environment
  - Relevant Laws, Regulations, Policies and Plans
- 3.3.4.3 Environmental Consequences
  - Impacts Common to All Alternatives
    - Mitigation Effectiveness and Remaining Effects
    - Direct, Indirect, Cumulative
  - Impacts Specific to Each Alternative
    - Mitigation Effectiveness and Remaining Effects
    - Direct, Indirect, Cumulative

### **3.3.5 Wildlife Species of Concern**

- 3.3.5.1 Introduction
  - Issues, Cause and Effect Relationships of Concern
  - Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)
  - Analysis Methodology, Assumptions, Uncertain and Unknown Information
- 3.3.5.2 Affected Environment
  - Relevant Laws, Regulations, Policies and Plans
- 3.3.5.3 Environmental Consequences
  - Impacts Common to All Alternatives
    - Mitigation Effectiveness and Remaining Effects
    - Direct, Indirect, Cumulative
  - Impacts Specific to Each Alternative
    - Mitigation Effectiveness and Remaining Effects
    - Direct, Indirect, Cumulative

### **3.3.6 Livestock Grazing**

- 3.3.6.1 Introduction
  - Issues, Cause and Effect Relationships of Concern
  - Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)
  - Analysis Methodology, Assumptions, Uncertain and Unknown Information
- 3.3.6.2 Affected Environment
  - Relevant Laws, Regulations, Policies and Plans
- 3.3.6.3 Environmental Consequences
  - Impacts Common to All Alternatives
    - Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative  
Impacts Specific to Each Alternative  
Mitigation Effectiveness and Remaining Effects  
Direct, Indirect, Cumulative

## **3.4 THE SOCIAL ENVIRONMENT**

### **3.4.1 Land Use**

#### **3.4.1.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

#### **3.4.1.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

#### **3.4.1.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

### **3.4.2 Dark Skies and Astronomy**

#### **3.4.2.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

#### **3.4.2.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

#### **3.4.2.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

### **3.4.3 Visual Quality**

#### **3.4.3.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

#### **3.4.3.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

#### **3.4.3.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects  
Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects  
Direct, Indirect, Cumulative

### **3.4.4 Recreation**

#### **3.4.4.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

#### **3.4.4.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

#### **3.4.4.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects  
Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects  
Direct, Indirect, Cumulative

### **3.4.5 Hazardous Materials**

#### **3.4.5.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

**3.4.5.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

**3.4.5.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

**3.4.6 Fire and Fuels Mgt**

**3.4.6.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

**3.4.6.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

**3.4.6.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

**3.4.7 Transportation/Access**

**3.4.7.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

- 3.4.7.2 Affected Environment
  - Relevant Laws, Regulations, Policies and Plans
- 3.4.7.3 Environmental Consequences
  - Impacts Common to All Alternatives
    - Mitigation Effectiveness and Remaining Effects
    - Direct, Indirect, Cumulative
  - Impacts Specific to Each Alternative
    - Mitigation Effectiveness and Remaining Effects
    - Direct, Indirect, Cumulative

### **3.4.8 Noise and Vibrations**

- 3.4.8.1 Introduction
  - Issues, Cause and Effect Relationships of Concern
  - Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)
  - Analysis Methodology, Assumptions, Uncertain and Unknown Information
- 3.4.8.2 Affected Environment
  - Relevant Laws, Regulations, Policies and Plans
- 3.4.8.3 Environmental Consequences
  - Impacts Common to All Alternatives
    - Mitigation Effectiveness and Remaining Effects
    - Direct, Indirect, Cumulative
  - Impacts Specific to Each Alternative
    - Mitigation Effectiveness and Remaining Effects
    - Direct, Indirect, Cumulative

### **3.4.9 Public Safety**

- 3.4.9.1 Introduction
  - Issues, Cause and Effect Relationships of Concern
  - Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)
  - Analysis Methodology, Assumptions, Uncertain and Unknown Information
- 3.4.9.2 Affected Environment
  - Relevant Laws, Regulations, Policies and Plans
- 3.4.9.3 Environmental Consequences
  - Impacts Common to All Alternatives
    - Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative  
Impacts Specific to Each Alternative  
Mitigation Effectiveness and Remaining Effects  
Direct, Indirect, Cumulative

### **3.4.10 Heritage Resources**

#### **3.4.10.1 Archeological Resources**

##### **Introduction**

Issues, Cause and Effect Relationships of Concern  
Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)  
Analysis Methodology, Assumptions, Uncertain and Unknown Information

##### **Affected Environment**

Relevant Laws, Regulations, Policies and Plans

##### **Environmental Consequences**

Impacts Common to All Alternatives  
Mitigation Effectiveness and Remaining Effects  
Direct, Indirect, Cumulative  
Impacts Specific to Each Alternative  
Mitigation Effectiveness and Remaining Effects  
Direct, Indirect, Cumulative

#### **3.4.10.2 Traditional Tribal Resources**

##### **Introduction**

Issues, Cause and Effect Relationships of Concern  
Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)  
Analysis Methodology, Assumptions, Uncertain and Unknown Information

##### **Affected Environment**

Relevant Laws, Regulations, Policies and Plans

##### **Environmental Consequences**

Impacts Common to All Alternatives  
Mitigation Effectiveness and Remaining Effects  
Direct, Indirect, Cumulative  
Impacts Specific to Each Alternative  
Mitigation Effectiveness and Remaining Effects  
Direct, Indirect, Cumulative

### **3.4.11 Socioeconomics**

#### **3.4.11.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

#### **3.4.11.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

#### **3.4.11.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

### **3.4.12 Environmental Justice**

#### **3.4.12.1 Introduction**

Issues, Cause and Effect Relationships of Concern

Summary of Effects by Issue Measures by Alternative (table that will be used also in chapter 2?)

Analysis Methodology, Assumptions, Uncertain and Unknown Information

#### **3.4.12.2 Affected Environment**

Relevant Laws, Regulations, Policies and Plans

#### **3.4.12.3 Environmental Consequences**

Impacts Common to All Alternatives

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Impacts Specific to Each Alternative

Mitigation Effectiveness and Remaining Effects

Direct, Indirect, Cumulative

Debby Kriegel /R3/USDAFS  
06/29/2010 04:02 PM

To "Melissa Reichard" <mreichard@swca.com>, Melinda D  
Roth/R3/USDAFS@FSNOTES, Beverley A  
Everson/R3/USDAFS@FSNOTES  
cc Debby Kriegel/R3/USDAFS@FSNOTES

bcc

Subject Rosemont - Item for project record and to forward to RCC -  
Landforming Process Paper 

Melissa: Another item to file the project record. Please let me know if you have questions, and let me know when this is complete. Thanks.



Project\_record\_cover\_sheet\_landforming\_paper.docx 20100629\_landforming\_professional\_report.docx

Mindee and Bev: I'd like to share this report with Rosemont, specifically the recommendations below. What is the best way to do this?

#### Recommended Next Steps:

1. Overlay Schor's 3D digital model with the current Barrel Only alternative to determine what parts of the proposed heap leach and tailings would (and would not) fit under the landform.
2. Hire Golder Associates to review Schor's report and landforming concept to determine whether there are major erosion or stability concerns, and to provide advice on how to correct any problems.
3. Obtain Rosemont's review of Schor's landformed design to determine where to best place the heap leach, tailings, and waste rock within the landforms, to evaluate buildability, and to identify concerns.
4. Find answers to each of the constraints Rosemont provided on March 31, 2010, in response to Schor's design work (all are included in Schor's report), including exact requirements for setbacks, the precise location of the ball court heritage site, and maps for Sonoran Desert Conservation Plan Biological Core habitat and Riparian Management Areas. Obtain requirements for each from the Forest Service.
5. Establish a landforming team comprised of Horst Schor, Tetra Tech, and if needed, George Annandale, to work together (and in consultation with SWCA and the Forest Service) to:
  - Resolve issues (from the first 4 steps) and provide for feasible mine operations, while retaining the essential design concepts and objectives including irregular ridgelines, dendritic drainage patterns, no uniform slopes, no large plateaus, no benches, no repetitive artificial undulations, etc. (see Schor report, page 5).
  - Consider the revised Barrel Only alternative provided by Rosemont (via email from Dale Ortman) on June 27.
  - Restore landforms to allow the establishment of mature hydrology and minimize the use of engineered drainage structures that would require maintenance.

This team would first work on the Barrel Only alternative, and then explore landforming options for each of the other alternatives. The recommended first step would be a workday with just Horst Schor (and if needed, his assistant) and David Krizek (Tetra Tech's reclamation engineer); the results would then be shown to a larger group comprised of Forest Service and Rosemont representatives.

~~~~~  
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# Rosemont Copper Project

## Project Record Outline

[NOTE THE CATEGORY (from the list below) IN WHICH THIS ITEM SHOULD BE FILED]: 7h

1. **Project Management**
  - a. Formal recommendations
  - b. Formal meeting minutes & memos
  - c. General Correspondence
  - d. Third Party Mgmt (contracts, agreements, MOU)
  - e. Other
2. **Public Involvement**
  - a. Announcements & Public Meetings
  - b. Mailing Lists
  - c. Scoping Public Comments
  - d. Scoping Reports
  - e. DEIS Public Comments
3. **Agency Consultation**
  - a. Army Corps of Engineers (404 permit)
  - b. US Fish & Wildlife Service (Sec 7 T&E)
  - c. State Historic Preservation Ofc (Sec 106)
  - d. Tribes (Sec 106)
  - e. Advisory Council on Historic Preservation (Sec 106)
4. **Communication**
  - a. Congressional
  - b. Cooperating Agencies
  - c. Organizations
  - d. Individuals
  - e. FOIA
  - f. Internal
  - g. Proponent
5. **Proposed Action**
  - a. Mine Plan (including compilation)
6. **Alternatives**
  - a. Cumulative Effects Catalog
  - b. Connected Actions
  - c. Dismissed from Detailed Analysis
  - d. Considered for Detailed Analysis
7. **Resource Reports**
  - a. Biodiversity
  - b. Heritage
  - c. Inventoried Roadless Areas
  - d. Land Status & Special Uses
  - e. Plants (TES & Invasive) & Vegetation
  - f. Recreation & Roadless Areas
  - g. Riparian
  - h. Scenery
  - i. Socioeconomics
  - j. Soils & Geology
  - k. Transportation
  - l. Water
  - m. Wildlife & TES Animals
  - n. Air
  - o. Noise & Vibration
  - p. Facilities (Tails, designs, etc)
  - q. Night Skies
8. **DEIS**
9. **FEIS**
10. **Geospatial Analysis**
11. **FOIA Exempt Documents**
12. **ROD**

DATE: June 29, 2010

TITLE/SUBJECT Process Memorandum to File, Landforming

PUBLISHER/AGENCY Coronado National Forest

AUTHOR/CALLER Debby Kriegel

RECIPIENT/PERSON CALLED NA

SUMMARY Professional paper on background of landforming, landforming work to date, and recommended next steps

PATHNAME

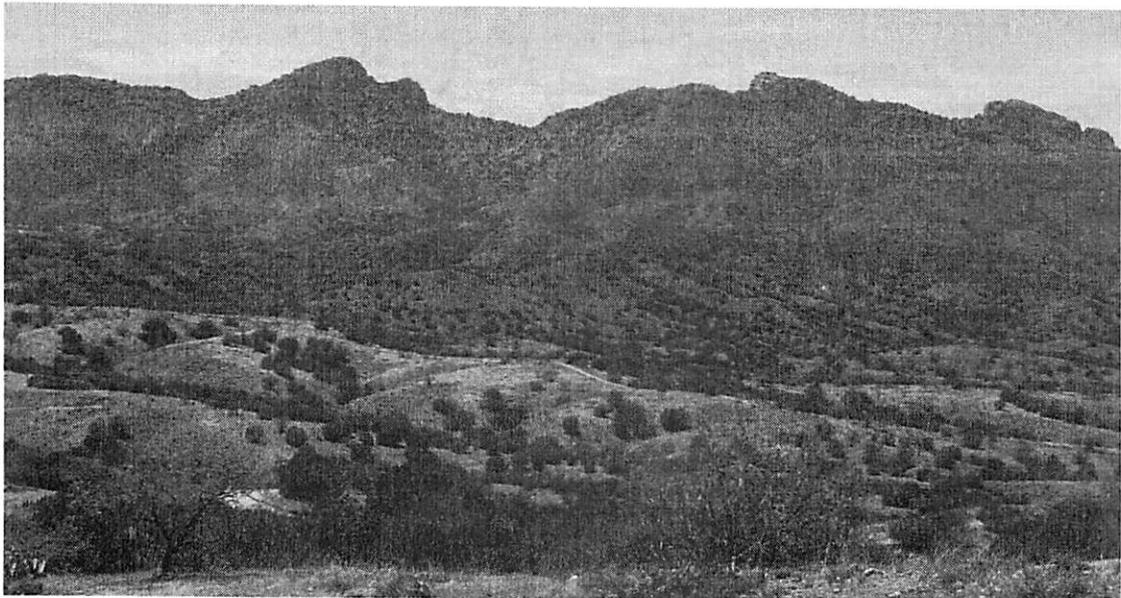
(Please name documents with "yyyymmdd\_short\_description". Please use lower-case letters and understandable abbreviations).

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# Process Memorandum to File

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## Landforming



Prepared By:

Debby Kriegel

Forest Landscape Architect

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# **Process Memorandum to File Landforming**

June 2010

/s/ Debby Kriegel

Debby Kriegel, Forest Landscape Architect  
Coronado National Forest

6/29/10

Date

## Introduction

Landforming can be defined as the restoration of natural landforms and hydrologic function on human-modified landscapes. Also referred to as geomorphic restoration, the primary goals of landforming are to mitigate visual impacts and reduce the need for engineered surface water management structures that require maintenance over an extensive period of post-mine time. In addition, landforming can help encourage natural revegetation patterns, stable soils and wildlife habitat.

This memo documents landforming work associated with the proposed Rosemont Copper Mine (Rosemont), describing how the need for landforming was identified, guidance for applying landforming techniques at Rosemont, as well as the research I have completed to date, and my recommendations for the next steps.

**“An important aspect of mine site mitigation and reclamation can be the recognition of basic natural forms and then creatively applying those patterns to design opportunities with nature. ... Design work for reclamation needs to respond to a site’s physiography, ecology, function, artistic form, and public perception.”** USGS (2000:10,13)

**“Landforming refers to the engineering of natural-looking hill slopes that maintain functionality (i.e., the ability to pass runoff events) and stability (i.e., resistance to significant erosion and geotechnical slope failures).”** Golder Associates (2010:1)

**“[The principles of landform grading for land-reclamation following mining operations include] creating stable landforms that are visually compatible with the surrounding natural landscape and in harmony with regional vegetation patterns and surface hydrology.”** Horst J. Schor (2007:12)

## Guidance and Directives that Support Landforming Work

### Rosemont’s Reclamation and Closure Plan

Rosemont Copper’s 2007 *Reclamation and Closure Plan* includes statements that indicate an intention to landform, including:

- In section 3.0, Rosemont Reclamation and Closure Concepts, one initiative includes “Shaping the facilities to blend with surrounding topography”, and specifically “the final reclaimed surface contours of Rosemont Ridge will reflect the natural topography in the area surrounding the Rosemont Site.” (page 10)
- In section 5.6, Surface Treatments and Stormwater Control, one of the options is a “dendritic pattern.” The text in this section also states “Augusta plans on reclaiming the Rosemont site with methods that mimic natural landform terrain” and a goal of “combining continuous slopes with natural landform features.” (page 22)
- In section 5.7, the benefits of Ridge and Valley design include “Final design provides a landform similar to adjacent natural terrain.” (page 24)

## **Federal and Forest Service Law, Regulation, and Policy**

Applicable Federal and Forest Service law, regulation, and policy that support landforming on the proposed Rosemont mine site include, but are not limited to:

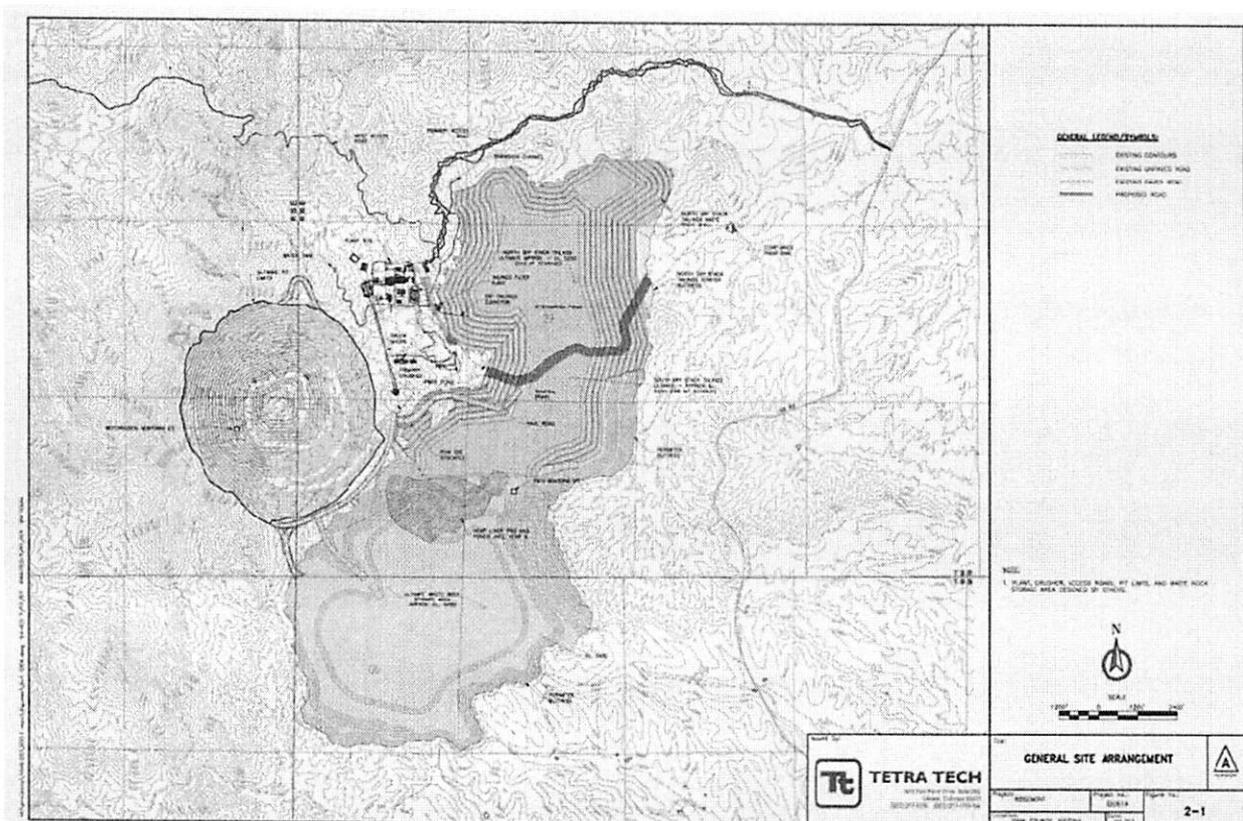
- The *National Environmental Policy Act (NEPA) of 1969* requires the Federal Government to use all practicable means to “assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.”
- Title 36 of the Code of Federal Regulations (CFR), Part 219, Subpart A, National Forest System Land and Resource Management Planning, requires consideration of treatment and protection of intangible resources such as scenery and aesthetics.
- Title 40 CFR, Parts 1500-1508, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act requires the NEPA process to “identify and assess the reasonable alternatives to a proposed action that will avoid or minimize adverse effects.”
- Forest Service Manual (FSM) 2380, Landscape Aesthetics, section 2380.15 – Minerals Management, requires “harmonizing mineral operations with scenic values ([36 CFR, Subpart A,] sec. 228.8), and protecting scenic values when approving access to those operations (sec. 228.12).”
- FSM 2300 – Recreation, Wilderness, and Related Resource Management, section 2330.3, sets basic policies including “Protect the natural environment of the site.”
- FSM 2382 – Scenery Management requires “Applying the principles of scenery management and environmental design in project-level planning.”
- FSM 2380 – Landscape Management, section 2382.4, Applications to Project Management requires project-level work to “Determine how scenery management techniques and principles can be used to mitigate any land altering activity or introduced elements on the land to achieve and maintain desired scenic integrity objectives and landscape character goals.”
- FSM 2800 – Minerals and Geology, section 2840, Reclamation Policy, requires “All lands disturbed by mineral activities shall be reclaimed to a condition that is consistent with forest land and resource management plans;” and “To the extent practicable, reclaimed National Forest System land shall be free of long-term maintenance requirements.”
- FSM 2800 – Minerals and Geology, section 2840.5, Definitions, defines mine reclamation as: “Those actions performed during or after mineral activities to shape, stabilize, revegetate, or otherwise treat the affected lands in order to achieve a safe and ecologically stable condition and land use that is consistent with long-term forest land and resource management plans and local environmental conditions.”

## **Initial Landforming Work**

### **Background**

In summer 2008, I was assigned to the Rosemont Copper Project Interdisciplinary Core Team. In the Project Initiation Letter (PIL), I was designated as the specialist responsible for “Scenery Resources, including reclamation” along with Marcie Bidwell, a landscape architect with SWCA. The PIL further explained that I was to “Provide guidance to SWCA” and “rigorously explore all reasonable alternatives that would avoid or minimize adverse effects” (Coronado National Forest, 2008).

As I reviewed the Rosemont *Mine Plan of Operations and Reclamation and Closure Plan* (both dated July 2007), and reflected on several recent mine site visits, it was clear to me that the most significant visual impact of the project was the proposed waste rock and tailings pile. As proposed, this structure was a flat-topped, monolithic mass with even 3:1 side slopes that would be nearly 3,000 acres in size, 4 miles long, and in some places over 600 feet tall (figure 1). This waste pile would be highly visible from State Route 83 (a scenic byway), the Arizona Trail (a National Scenic Trail), and numerous Forest Service roads used by visitors to access recreation opportunities in the area. It would contrast sharply with the valued landscape character (which has jagged ridgelines, irregular slopes, and meandering drainages), would convert the setting to an “industrial” appearance, and would obliterate many scenic views of the Santa Rita Mountains along portions of State Route 83 (including a picnic site and a scenic overlook) and along the Arizona Trail. Shaping this waste pile to mimic natural landforms would help mitigate the visual impact.



**Figure 1: Proposed facility plan from the Mine Plan of Operations (WestLand).**

In November 2008, I provided initial direction to Marcie Bidwell. Two of the recommended tasks were:

- “Research reclamation efforts that protected scenery on other projects. Contact reclamation experts who have successfully completed reclamation of other large-scale mining projects on public lands and where scenic resources were protected or restored. This research would include landform issues, revegetation issues, etc.”
- “Create one or more alternatives that better protects scenic resources...The goals would be to achieve long-term scenic quality (by creating a natural landscape when mining activities are complete)...This task would include experimenting with radically different shaping of the waste rock and tailings to avoid the monolithic form and flat tops, and if possible create undulating topography that mimics natural canyons and foothills in the area.”

These work items were repeated in scope of work documents dated April 2009 and November 2009. Unfortunately, Rosemont has not funded SWCA to do this work and SWCA has not proceeded with work on either task . The second task has made some progress in a more roundabout way...(see next item: Consultant Work).

### **Consultant Work**

In September 2009, Bev Everson, the Forest Service Interdisciplinary Team Leader gave me a book titled "*Landforming: An Environmental Approach to Hillside Development, Mine Reclamation and Watershed Restoration*" by Horst J. Schor and Donald H. Gray. Rosemont had purchased the book and provided it to the Forest Service. I reviewed the book and realized that Mr. Schor's expertise was exactly what the Rosemont team needed to make progress with land sculpting. I called Mr. Schor to discuss whether he could help with the Rosemont project. Mr. Schor told me that he has a consulting business which specializes in geomorphic restoration and revegetation, has 30 years of experience in this type of work, and has a background that includes civil engineering, environmental studies, geotechnical, and urban planning. On my request, Mr. Schor provided a proposal for an initial visit to the project site.

At the same time, Dale Ortman, SWCA's consulting mining engineer recommended a related landforming study by George Annandale with Golder Associates. Mr. Annandale is an engineer with expertise in geotechnical slope stability and erosion.

By mid-December 2009, both Mr. Annandale and Mr. Schor had visited the Rosemont site and Rosemont had funded a study by Annandale of the potential to successfully apply landforming concepts and techniques to the Rosemont mine proposal. By late winter 2010, Schor's initial work (creating a landformed version of the Barrel Only alternative) was also funded by Rosemont.

### **Golder Associates Study**

The Golder study evaluated the erosion stability limits of the three basic types of slopes proposed for the Rosemont mine (planar concave, flow expanding concave, and flow concentrating concave) to determine whether it was feasible to engineer stable, natural-looking landforms.

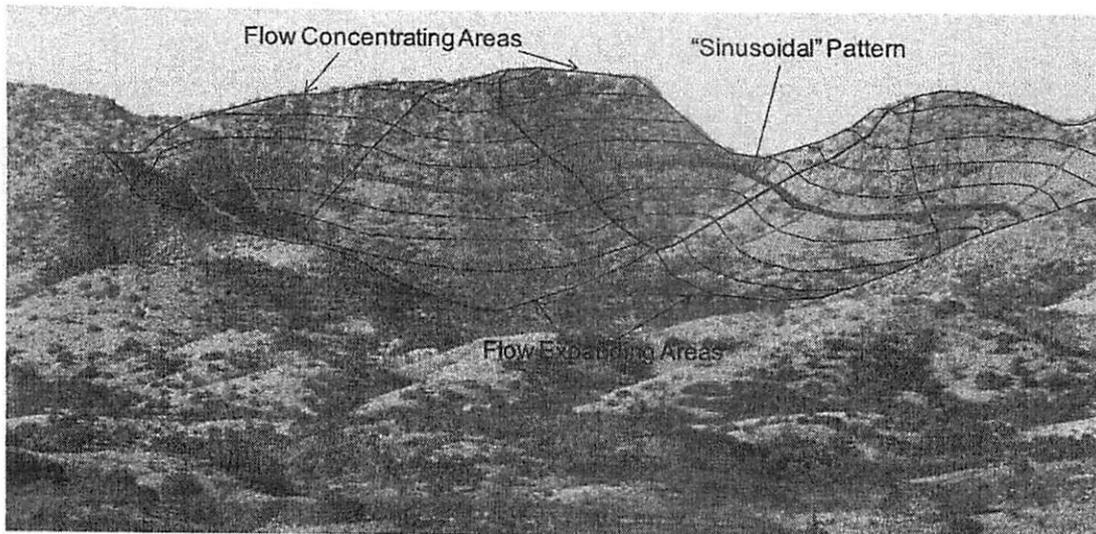
In addition to slope geometry, Golder's work evaluated the effectiveness cover materials planned for the Rosemont mine with consideration of precipitation in the area based on a 100-year storm event.

The final report (*Rosemont Mine Landforming: Evaluation of Mine Waste Slope Geometry*, February 2010) confirms that landforming on the proposed Rosemont mine is possible, and established limits for landform geometries (slope grade, length, etc.).

### 3.1 Natural Landscape

Photos from the vicinity of the Rosemont site were analyzed to determine what types of natural landforms were present so that these geometries could be considered in the development of the engineered landforms. Below are some of the key elements observed:

- Irregular ridgelines
- Basins (of varying sizes)
- Flow expanding / flow concentrating areas
- "Sinusoidal" pattern across contours
- Concave slope profiles
- Presence of vegetation on the landforms



**Figure 2: A natural landscape in the Rosemont area that was used by Golder Associates to define natural-looking landform geometries (Golder:5).**

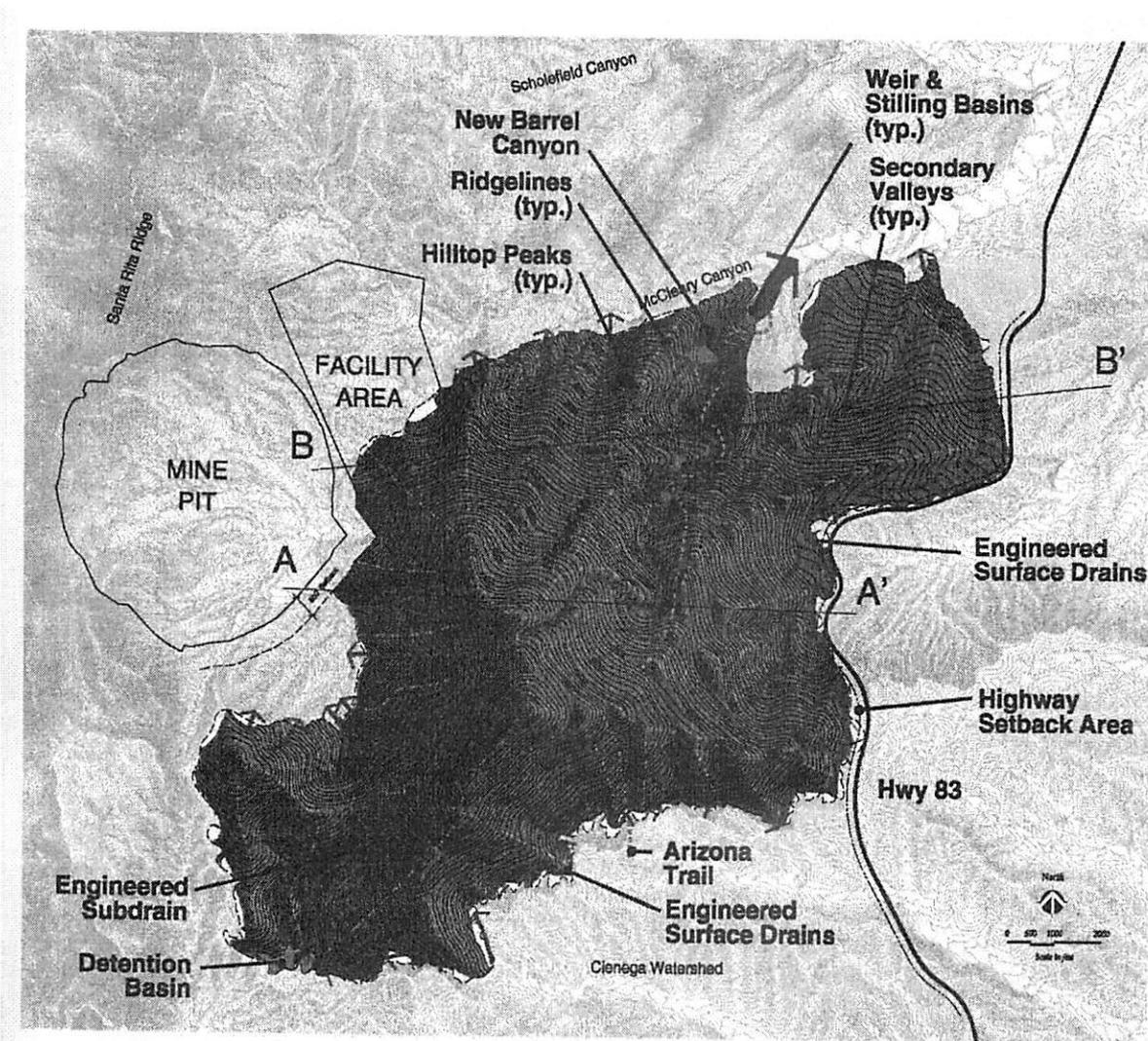
### Schor Study

Horst Schor's study utilized the results of the Golder study to design a waste material formation that would accommodate the Rosemont mine waste in a way that mimics the forms and character of the natural topography in the project area and smoothly ties to surrounding lands. Schor's design replicates the distinctive topography in the area, creates a dendritic drainage pattern that mimics and restores natural hydrologic functions, and flattens slopes to increase stability and improve revegetation potential .

Schor's design focuses on the Barrel Only Alternative. In order to meet objectives, the footprint expanded (approximately 25%). Due to physical constraints to the north (McCleary Canyon), south (Cienega

Watershed), and west (pit, plant, and Santa Rita ridgeline); the additional acres were added primarily to the east.

In addition to a landformed design, Schor's report (*Landform Design Report for the Rosemont Mine Project*) also recommends a other treatments to restore a more natural appearance and provide more stable slopes and drainageways.



**Figure 3: Horst Schor's landformed design concept for the Rosemont waste rock and tailings (Schor 2010:22).**

### **Summary of Consultant Work**

Both consultants confirmed that opportunities are available to apply landforming techniques and concepts to the Rosemont mine proposal. Their work provides insight and guidance on the opportunities to meet Federal law, regulation, and policy, as well as Rosemont Copper Company's stated goals for reclamation of mined lands using the art and science of landforming.

I presented an overview of the results my study of landforming to leadership, consultants, and interdisciplinary team members at a number of Rosemont meetings including:

- a Cooperating Agency meeting
- a Forest Service Interdisciplinary Team meeting
- a meeting with Rosemont and the Forest Supervisor
- a meeting with the Coronado Wildlife Program Manager and the Nogales Acting District Ranger, and
- a meeting with the Regional Director of Recreation and Regional Landscape Architect

### Critique of Rosemont Copper Company Redesign Effort

At the same time the Forest Service was exploring landforming, Rosemont and its subcontractor, Tetra Tech, were doing similar work. In March 2010, Rosemont provided a Reclamation Concept Update. The update includes a re-shaping of the Phased Tailings alternative, with undulations on the slopes of the waste rock and tailings piles and mounds on their tops. While this concept provides a marked improvement over the initial proposal, the proposed shaping does not mimic natural landforms in the area, and the stormwater management on the structure includes horizontal benches which will create unnatural forms and ultimately, linear revegetation patterns. Additionally, the landforms do not restore natural or mature hydrology, and includes engineered drop structures which would require maintenance for many decades.

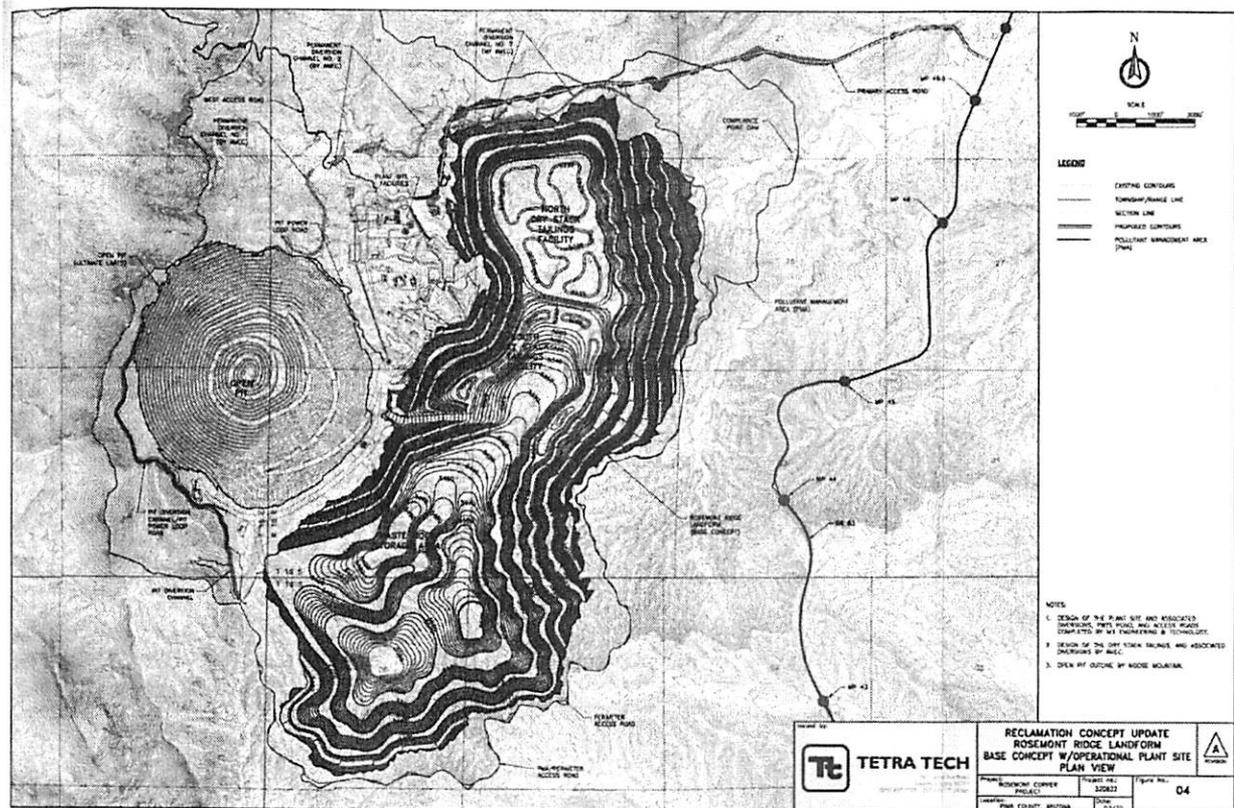


Figure 4: Rosemont's Phased Tailings alternative landforms from the Reclamation Concept Update (Tetra Tech 2010)

## **Evaluation of Landforming Work to Date**

While work by Rosemont, Golder, and Schor provides an excellent starting point for landforming on the Rosemont mine, there remain a number of unaddressed issues. The major ones include:

- The Golder study did not address the large-scale landforms such as valleys, ridgelines, and streambeds created by Schor.
- Rosemont's mine engineers were not involved throughout Schor's work, so the feasibility of incorporating the heap leach and tailings have not yet been addressed.
- Landforming has not been considered as an element or mitigation practice in all alternatives.

Additionally, I am very concerned whether landforming work can be sufficiently explored and resolved prior to publication of the Draft Environmental Impact Statement (DEIS). The current schedule would provide less than 3 months to complete needed work.

**People need natural-appearing landscapes to serve as psychological and physiological "safety valves,"...Once plentiful natural-appearing landscapes are becoming more scarce."**

(USDA Forest Service:14)

## **Recommendations**

Landforming, as described in Schor's design, could result in a potential new alternative (or could be applied as mitigation to any alternative). The concepts of landforming may not apply equally well to all alternatives, and each alternative need not have landforming applied to all areas. For example, landforming on the current Scholefield alternative may be somewhat limited because the location of the waste materials is high on the side of the Santa Rita Mountains; therefore, the footprint expansion could be large. Other alternatives could be landformed on the most visible faces, while less-visible areas could be designed with steeper grades that would reduce total acres.

**It is important to effectively shape reclaimed mining lands so they appear natural."**

(Utah Oil Gas and Mining:11)

### **Recommended Next Steps:**

1. Overlay Schor's 3D digital model with the current Barrel Only alternative to determine what parts of the proposed heap leach and tailings would (and would not) fit under the landform.
2. Hire Golder Associates to review Schor's report and landforming concept to determine whether there are major erosion or stability concerns, and to provide advice on how to correct any problems.
3. Obtain Rosemont's review of Schor's landformed design to determine where to best place the heap leach, tailings, and waste rock within the landforms, to evaluate buildability, and to identify concerns.
4. Find answers to each of the constraints Rosemont provided on March 31, 2010, in response to Schor's design work (all are included in Schor's report), including exact requirements for setbacks, the precise location

of the ball court heritage site, and maps for Sonoran Desert Conservation Plan Biological Core habitat and Riparian Management Areas. Obtain requirements for each from the Forest Service.

5. Establish a landforming team comprised of Horst Schor, Tetra Tech, and if needed, George Annandale, to work together (and in consultation with SWCA and the Forest Service) to:

- Resolve issues (from the first 4 steps) and provide for feasible mine operations, while retaining the essential design concepts and objectives including irregular ridgelines, dendritic drainage patterns, no uniform slopes, no large plateaus, no benches, no repetitive artificial undulations, etc. (see Schor report, page 5).
- Consider the revised Barrel Only alternative provided by Rosemont (via email from Dale Ortman) on June 27.
- Restore landforms to allow the establishment of mature hydrology and minimize the use of engineered drainage structures that would require maintenance.

This team would first work on the Barrel Only alternative, and then explore landforming options for each of the other alternatives. The recommended first step would be a workday with just Horst Schor (and if needed, his assistant) and David Krizek (Tetra Tech's reclamation engineer); the results would then be shown to a larger group comprised of Forest Service and Rosemont representatives.

I remain optimistic that landforming could successfully be applied to the Rosemont project in a manner that provides for mineral extraction and processing, yet results in a restored natural landscape with healthy watershed function upon completion of the mining and reclamation operations.

## References

Coronado National Forest. Interdisciplinary Team Project Initiation Letter for Rosemont Copper Project EIS. Letter from Jeanine A. Derby, July 25, 2008.

Golder Associates. Rosemont Mine Landforming; Evaluation of Mine Waste Slope Geometry. Submitted to SWCA Environmental Consultants, February 2010.

Schor, H.J. and Gray, D. H. Landforming. 2007. John Wiley & Sons.

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Utah Oil Gas and Mining. The Practical Guide to Reclamation in Utah.

WestLand Resources. Rosemont Project Mine Plan of Operations. Prepared for Augusta Resource Corporation, July 2007.



"DeAnne Rietz"  
<drietz@swca.com>  
08/16/2010 03:43 PM

To <mroth@fs.fed.us>  
cc  
bcc  
Subject FW: Status of Rosemont surface water sections

Mindee – Sorry, I had your address wrong.  
DeAnne

**From:** DeAnne Rietz  
**Sent:** Monday, August 16, 2010 3:39 PM  
**To:** 'Salek Shafiqullah'  
**Cc:** 'beverson@fs.fed.us'; 'tjchute@msn.com'; 'mroth@fs.fed.gov'; 'Dale Ortman PE'; Tom Furgason; 'CHRISTOPHER GARRETT'; Jonathan Rigg  
**Subject:** Status of Rosemont surface water sections

Hello Selek,

As discussed and requested in last Tuesday's meeting, attached is our memo outlining the status of the surface water section. For this memo we looked at (1) what significant surface water issues were identified during scoping, (2) what resource indicators we are using to assess those issues, (3) what technical documents were provided and any associated third-party reviews, and (4) what deficiencies exist that are critical to the impacts assessment.

I am still working on the springs GIS layers and will be in touch with you on that shortly.  
Thank you for your time,  
DeAnne

DeAnne Rietz, MS  
Hydrologist

**SWCA Environmental Consultants**  
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Phoenix, AZ 85012  
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Tel 602.274.3831, ext. 1141  
Fax 602.274.3958



Rosemont SW-Status.pdf



"Tom Furgason"  
<tfurgason@swca.com>  
03/25/2010 02:39 PM

To "Salek Shafiqullah - USFS " <sshafiqullah@fs.fed.us>  
cc <beverson@fs.fed.us>, "Melinda D Roth"  
<mroth@fs.fed.us>, "Rochelle Desser" <rdesser@fs.fed.us>,  
"Dale Ortman PE" <daleortmanpe@live.com>  
bcc  
Subject Water Supply Alternatives

Salek,

It is my understanding that you have been researching alternatives to Rosemont's proposed water supply. I'm currently finalizing a document on alternatives considered but eliminated from detailed study. Can you please provide a list of alternative water supply options that you have considered but should be eliminated from detailed study?

Of equal importance, can you please provide alternative water supply options, if any, that you will recommend to the IDT Lead to be considered in the EIS? We also need to know any options that you are considering that you still do not have enough information on to make either determination. I think that this information is essential for the briefing to Region on April 5 to demonstrate that we have taken a thorough look at that portion of the water resource issue. Thanks.

**Tom Furgason**  
Office Director  
SWCA Environmental Consultants  
343 West Franklin Street  
Tucson, AZ 85701  
(520) 325-9194 ext. 110  
(520) 820-5178 mobile  
(520) 325-2033 fax



Kathy Arnold  
<karnold@rosemontcopper.com>  
07/21/2009 12:32 PM

To Tom Furgason <tfurgason@swca.com>  
cc Beverley A Everson <beverson@fs.fed.us>, Reta Laford <rlaford@fs.fed.us>, Melinda D Roth <mroth@fs.fed.us>, Charles Coyle <ccoyle@swca.com>, Melissa Reichard  
bcc  
Subject RE: Alternative 6c (Upper Barrel Only)

Tom –

I think your assessment was correct however my notes say Hold on Rosemont doing anything additional to the alternative until we get some clarification from the Forest on specific locations so that we don't do iterations on the alternatives. The discussion as I remember it was we needed to look at a range of alternatives but not every iteration so the Forest was going to look at what concerns they had on 6b and we would make the adjustments.

Jamie – can you please help me clarify with the resolution of this alternative so that we can get it moving internally as appropriate?

Thanks –  
Kathy

Kathy Arnold | Director of Environmental and Regulatory Affairs  
Cell: 520.784.1972 | Main: 520.297.7723 | Fax 520.297.7724  
[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com)



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**From:** Tom Furgason [mailto:tfurgason@swca.com]  
**Sent:** Tuesday, July 21, 2009 11:59 AM  
**To:** Kathy Arnold  
**Cc:** Beverley A Everson; Reta Laford; Melinda D Roth; Charles Coyle; Melissa Reichard  
**Subject:** Alternative 6c (Upper Barrel Only)

Kathy,

I left the meeting on Friday without a clear understanding of how SWCA is to proceed with Alternative 6c. It is my understanding that Alternative 6a is not technically feasible; therefore, SWCA has ceased all work on that alternative. It was also my understanding that, while feasible, Alternative 6b needed refinement and that Rosemont was going to provide the Forest with a revised footprint that was going to be approximately 0.5 miles from SR 83 (similar to the proposed action). This is to be Alternative 6c.

I know that Jamie suggested a site visit by the ID Team, but we may be able to simply present a plan view and crude 3D model for their review. This has satisfied the IDT in the past and I think everybody is familiar with the view of the area from SR 83.

Would you please let me know how Rosemont expects SWCA to proceed on Alternative 6c? I'm concerned that no work will occur on this with Bev on personal leave this week and no clear direction to SWCA.

Also, as an FYI, Debby Kriegel requested that SWCA present the 3D model of Alternative 6a at tomorrow's IDT meeting. I informed her that 6a was deemed infeasible and that we would not present this information. She then asked for SWCA to create a 3D model of Alternative 6b (this afternoon) and present it to the IDT tomorrow. I informed her that SWCA would not expend any further effort on Alternative 6b because we expected it to be modified into Alternative 6c.

## **Tom Furgason**

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(520) 820-5178 mobile  
(520) 325-2033 fax



Kathy Arnold  
<karnold@rosemontcopper.com>

02/10/2010 08:14 AM

To Debby Kriegel <dkriegel@fs.fed.us>

cc David Krizek <david.krizek@tetrattech.com>, Marcie Bidwell  
<mbidwell@swca.com>, Tom Furgason  
<tfurgason@swca.com>, Trent Reeder

bcc

Subject Re: For USFS direction: RCC Viewshed analysis

Debby -

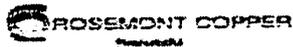
I don't want to overstate, but I also don't want to minimize the potential for needing to review the site conditions. Let's see what Golder says – if they say something like: "this material requires no special whatever regardless of terrain" we're good. If it says something like "in this location....." we may need to look at it a little more closely. It could probably help (although I don't know their workload) or maybe someone like Dale who is a geotech kind of guy. Let's hope for the clarifying statements.

Cheers!

Kathy

Katherine Ann Arnold, P.E. | Director of Environmental and Regulatory Affairs  
Cell: 520.784.1972 | Main: 520.297.7723 | Fax 520.297.7724

[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com)



Rosemont Copper Company  
P.O. Box 35130 | Tucson, AZ 85740-5130  
3031 West Ina Road | Tucson, AZ 85741 | [www.rosemontcopper.com](http://www.rosemontcopper.com)

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---

**From:** Debby Kriegel <dkriegel@fs.fed.us>

**Date:** Wed, 10 Feb 2010 09:04:17 -0600

**To:** Katherine Arnold <karnold@rosemontcopper.com>

**Cc:** David Krizek <david.krizek@tetrattech.com>, Marcie Bidwell <mbidwell@swca.com>, Tom Furgason <tfurgason@swca.com>, Trent Reeder <treeder@swca.com>, Debby Kriegel <dkriegel@fs.fed.us>,  
Beverley Everson <beverson@fs.fed.us>, Mindee Roth <mroth@fs.fed.us>

**Subject:** Re: For USFS direction: RCC Viewshed analysis

Hmmm. Sounds like there is a need to confirm what is possible for each alternative. Is this something that Tetra Tech can help with? Could they start with Golder's report next week? Alternatives like the McCleary/Scholefield ("perched on the top of a hill") might need very different treatment, huh?!

Kathy Arnold <[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com)> 02/10/2010 07:44 AM

To

Debby Kriegel <[dkriegel@fs.fed.us](mailto:dkriegel@fs.fed.us)>, Marcie Bidwell <[mbidwell@swca.com](mailto:mbidwell@swca.com)>

cc

David Krizek <[david.krizek@tetrattech.com](mailto:david.krizek@tetrattech.com)>, Tom Furgason <[tfurgason@swca.com](mailto:tfurgason@swca.com)>, Trent Reeder <[treeder@swca.com](mailto:treeder@swca.com)>

Subject

Re: For USFS direction: RCC Viewshed analysis

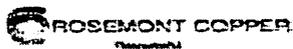
Debby -

I agree with everything that you are saying (in concept) my concern is that Horst and Golder's work is being developed on a landform in a drainage – supported on several sides by the natural ground and not a free-form structure perched on the top of a hill or a drainage. That effects the stability and the stormwater management requirements. I do not think that you can evenly apply ALL grading on all shapes – it will give an indication yes, but needs to be judiciously applied. I am hoping that you get the disclaimers from Golder and Horst as to the applicability of applying their design techniques to other drainages or other locations – possibilities aren't necessarily reality.

Cheers!

Kathy

**Katherine Ann Arnold, P.E.** | Director of Environmental and Regulatory Affairs  
Cell: 520.784.1972 | Main: 520.297.7723 | Fax 520.297.7724  
[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com) <[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com)>



**Rosemont Copper Company**  
P.O. Box 35130 | Tucson, AZ 85740-5130  
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---

**From:** Debby Kriegel <[dkriegel@fs.fed.us](mailto:dkriegel@fs.fed.us) <[dkriegel@fs.fed.us](mailto:dkriegel@fs.fed.us)> >

**Date:** Wed, 10 Feb 2010 08:34:47 -0600

**To:** Marcie Bidwell <[mbidwell@swca.com](mailto:mbidwell@swca.com) <[mbidwell@swca.com](mailto:mbidwell@swca.com)> >  
**Cc:** David Krizek <[david.krizek@tetrattech.com](mailto:david.krizek@tetrattech.com) <[david.krizek@tetrattech.com](mailto:david.krizek@tetrattech.com)> >, Katherine Arnold <[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com) <[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com)> >, Tom Furgason <[tfurgason@swca.com](mailto:tfurgason@swca.com) <[tfurgason@swca.com](mailto:tfurgason@swca.com)> >, Trent Reeder <[treeder@swca.com](mailto:treeder@swca.com) <[treeder@swca.com](mailto:treeder@swca.com)> >, Debby Kriegel <[dkriegel@fs.fed.us](mailto:dkriegel@fs.fed.us) <[dkriegel@fs.fed.us](mailto:dkriegel@fs.fed.us)> >  
**Subject:** Re: For USFS direction: RCC Viewshed analysis

Simulations created for visual resource analysis and the EIS must be honest and accurate depictions of what the alternative would look like. They need to include stormwater management features, such as benches, if these features would be required. It is not appropriate to simulate 3:1 smooth top-to-bottom slopes if benches will be necessary (I'm assuming that this is what you're calling "angular grading" from Tetra Tech).

Golder's work will be complete on Monday, and the results may indicate that fewer benches are required. Horst Schor's work is expected to create more natural forms to deal with stormwater. Both of these would lessen effects to visual quality and should be incorporated as much as possible into alternatives and resulting simulations.

The exception would be the MPO, which doesn't have a stormwater grading plan. I recommend printing a disclaimer statement regarding this on the MPO simulations.

Thanks.

Debby Kriegel

"Marcie Bidwell" <[mbidwell@swca.com](mailto:mbidwell@swca.com) <[mbidwell@swca.com](mailto:mbidwell@swca.com)> > 02/09/2010 02:36 PM  
To  
"Krizek, David" <[David.Krizek@tetrattech.com](mailto:David.Krizek@tetrattech.com) <[David.Krizek@tetrattech.com](mailto:David.Krizek@tetrattech.com)> >, "Debby Kriegel" <[dkriegel@fs.fed.us](mailto:dkriegel@fs.fed.us) <[dkriegel@fs.fed.us](mailto:dkriegel@fs.fed.us)> >, "Tom Furgason" <[tfurgason@swca.com](mailto:tfurgason@swca.com) <[tfurgason@swca.com](mailto:tfurgason@swca.com)> >, "Kathy Arnold" <[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com) <[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com)> >, "Trent Reeder" <[treeder@swca.com](mailto:treeder@swca.com) <[treeder@swca.com](mailto:treeder@swca.com)> >  
cc  
Subject  
For USFS direction: RCC Viewshed analysis

Hello Debby and Kathy,

I wanted to check in with you for direction to SWCA and Tetra Tech regarding what level of engineering resolution that we should all use in visual analysis and supporting efforts.

Please see David's message below and use the two attachments to place the questions in

reference.

1. David has sent a pdf map of the Barrel only alternative that shows the angular grading of the "raw process."
2. I have attached a GIS view of the MPO with the benches etc, rather than smoothing, i.e. the "Raw process."

Due to the level of engineering development of the alternatives, David is proposing that both companies work from the raw version of the alternatives.

It is my understanding that working from the "raw" images would provide the "typical stormwater and benching" design that the Visual Coordination Meeting directed us to use (see KOP 12 attached).

**Debby**, Please confirm that we should all be working on the "raw" data that shows benching, to create a fair comparison.

**David**, I am still waiting for response to the questions that I submitted to Tt on Feb. 2 regarding the presentation of the MPO; I think my questions overlap with yours.

---

**From Marcie to SWCA, Tt, and USFS on 2/2/2010: RE: Visualization Coordination Follow Up and Minutes.**

**MPO- Specific Questions-**

1. Please confirm **which presentation of the MPO grading** we should use for **vizualizations at Y10** is as presented in **Figure 9** of the Reclamation and Closure Plan (RCP).
2. Please confirm **which presentation of the MPO grading** we should use for **visualizations at Y20**- should the MPO be shown as **Figure 11 or Figure 12** of the RCP.
3. Please indicate what the **geodatabase layer name** is that will have the "**composite of yearly reclamation areas**" in the data provided by Tt.
4. SWCA understands that the MPO should show benches as the following: waste rock, as 100 ft running slopes for each bench and approximately 100 ft wide road/bench surface; and tailings as 50 ft benches and running surface; the attached KOP 12 image shows the output from the MPO with benches as submitted. **Please confirm if this is what we should use for final grading.**

---

**From:** Krizek, David [<mailto:David.Krizek@tetrattech.com> <<mailto:David.Krizek@tetrattech.com>> ]

**Sent:** Tuesday, February 09, 2010 11:59 AM

**To:** Marcie Bidwell

**Cc:** Keepers, Ashley; Carrasco, Joel

**Subject:** RCC Viewshed analysis

Marcie,

This e-mail is being sent just to clarify the shapes we are using for our viewshed analysis.

Depending on the alternative, the various alternatives have been developed to three different stages. These stages are:

1. Raw Stage
2. Smoothed Stage
3. Advanced Stage

For the ultimate footprint, the following stages have been done:

1. Barrel and McCleary Alternative advanced design raw stage
2. MPO raw stage smoothed shape
3. Barrel Only Alternative raw stage
4. Sycamore Tailings and Barrel Waste Alternative raw stage
5. Scholefield Tailings and McCleary Waste Alternative raw stage

For the Year 10 footprint, the following stages have been done:

1. Barrel and McCleary Alternative raw stage
2. MPO raw stage
3. Barrel Only Alternative raw stage
4. Sycamore Tailings and Barrel Waste Alternative raw stage
5. Scholefield Tailings and McCleary Waste Alternative raw stage

For the viewshed analysis, we are just planning on using the raw stage for all (Barrel Only Alternative attached for example). The raw stage is the angular version used to determine volumes, etc. Otherwise it won't be an equal analysis.

Is this what you were anticipating?

Sincerely,

**David Krizek | Principal**

Main: 520-297-7723 | Mobile: 520-260-3490 | Fax: 520-297-7724

Tetra Tech

3031 West Ina Road | Tucson, AZ 85741 | [www.tetrattech.com](http://www.tetrattech.com) <<http://www.tetrattech.com/><  
<http://www.tetrattech.com/>>>

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system.

[attachment "Barrel Only\_raw shape.pdf" deleted by Debby Kriegel/R3/USDAFS] [attachment "11204\_KOP12\_PAb.jpg" deleted by Debby Kriegel/R3/USDAFS]



United States  
Department of  
Agriculture

Forest  
Service

Coronado National Forest  
Supervisor's Office

300 W. Congress  
Tucson, Arizona 85701  
Phone (520) 388-8300  
FAX (520) 388-8305  
Deaf & Hearing Impaired 711

File Code: 1950-3/2810  
Date: January 6, 2009

Tom Furgason  
Rosemont Project Manager  
SWCA Environmental Consultants  
343 West Franklin Street  
Tucson, AZ 85701

Mr. Furgason:

This letter provides direction for preparing camera-ready versions of the Rosemont Copper Project draft and final environmental impact statements for publication and distribution.

Pursuant to the Memorandum of Understanding (MOU) between the Coronado National Forest and Rosemont Copper Company for the Rosemont Copper Project (MOU #08-MU-11030510-010, as modified), as the selected third-party environmental contractor, SWCA Environmental Consultants (SWCA) is to prepare the required environmental analysis and documentation consistent with applicable law, regulation, and policy (MOU Sections A, B, C1, C6, D20, E1, E3, E8, E12, F2, F6, and MOU Attachment 1 Items I4, I5, and IC – NEPA Review).

SWCA is further specifically required to prepare camera-ready versions of the draft and final environmental impact statements in accordance with Forest Service requirements (MOU Sections D11, E1, E12, E13, E14, and MOU Attachment 1 Items I5, I9, IC – NEPA Review, II, and IV). In completing this task, SWCA is under direct supervision and control of the Forest Service (MOU Sections C1, C5, C6, D3, D10, D14, D18, D19, and F1).

MOU Attachment 1 Items I9 and IC – NEPA Review need to be clarified regarding the printing and distribution of the agency's approved draft and final environmental impact statements. SWCA's responsibilities do not extend to the actual printing and distribution of these documents. Printing and distribution of the agency's approved draft and final environmental impact statements must be done by the Southwestern Regional Office, who will procure appropriate services through the Government Printing Office. However, SWCA is expected to contribute to the Regional Office efforts in providing appropriate camera-ready material and relevant distribution lists.

It is anticipated that several iterations of the environmental impact statements will be drafted as the content progresses through various internal reviews. While only the agency's approved camera-ready draft and final environmental impact statements must conform to the following requirements, it is recommended that draft components of the environmental impact statements be created with these requirements in mind to reduce editing time. It is also recommended that other project materials be created with these requirements in mind.



The following items are hereby incorporated by reference as relevant direction:

- Government Printing Office Style Manual, 29<sup>th</sup> Edition (2000) available at [www.gpoaccess.gov/stylemanual/index.html](http://www.gpoaccess.gov/stylemanual/index.html)
- Forest Service Handbook 1609.11 – Publications Management Handbook (attached)
- Using MS-Word to Create Documents for Publishing (attached)
- Template Setting Quick Reference (attached)
- Southwestern Region EIS Template (attached)

Follow the “Government Printing Office Style Manual” for fundamentals such as grammar, spelling, use of abbreviations, capitalization, etc. Follow “Forest Service Handbook 1609.11” for agency-specific direction such as that for citations, standard statements, etc., not found in the “Government Printing Office Style Manual.” Use “Using MS-Word to Create Documents for Publishing” as a guide for managing document structure and presentation to create documents that meet print and Web standards with a minimum of reformatting. The “Template Setting Quick Reference” provides layout specifications for margins, headers, footers, columns, sections, and landscape graphics. The “Southwestern Region EIS Template,” containing the required pre-set layout specifications, must be used in preparing the environmental impact statements.

The following Forest Supervisor expectations, expressed in her Interdisciplinary Team Project Initiation Letter dated July 25, 2008, are hereby incorporated as direction: “I expect the EIS to be written in plain language. Your work will not only be scrutinized for its technical accuracy, but also for its brevity and clarity. Write-ups that are encyclopedic or that contain extraneous information will not be accepted. Technical material is to be summarized in the body of the EIS with specific reference to supporting information in the appendices and/or record. Graphics are to be used to the fullest extent where they could improve reader understanding and reduce the amount of text. Of course, graphics should have appropriate complementary interpretive text.”

Additionally, adhere to the following direction in preparing the environmental impact statements:

- Submit all text documentation in MS-Word 2003 format (.doc format).
- Submit materials without embedded ‘Track Changes’ that may be viewed.
- Label each graphic with a unique caption identifier that is referenced in the text body.
- Provide a separate file containing the original electronic graphic files of each graphic included in the camera-ready environmental impact statements. (Preferred file formats are .jpg, .tif, and .png. Do not submit graphics in a .pdf file format.)
- Include parenthetical or footnote explanations when technical terms or jargon are used.
- Use incorporation by reference and tiering techniques as appropriate to summarize voluminous information and reports.
- Provide citations for incorporated materials.
- File complete copies of incorporated materials in the Administrative Record.
- Use appendices as appropriate for supporting in-depth explanatory materials.
- Refer to appendices in the text body.

SWCA is authorized to use its professional discretion in complying with this direction. However, products developed by SWCA remain subject to review and approval by the Forest.

Questions or concerns about the direction provided herein should be directed to the Forest Service Project Manager for the Rosemont Copper Project, Teresa Ann Ciapusci, at (520) 388-8350 or tciapusci@fs.fed.us.

Sincerely,

/s/ Reta Laford  
RETA LAFORD  
Deputy Forest Supervisor

Attachments:

Forest Service Handbook 1609.11 – Publications Management Handbook (2/2/2007)  
Using MS-Word to Create Documents for Publishing (9/2005)  
Template Setting Quick Reference (9/22/2005)  
Southwestern Region EIS Template (9/2005)

ec:

Southwestern Region Printing Specialist, Sandy Roberts  
Forest Rosemont Copper Project Interdisciplinary Team Agency Management Oversight  
Forest Rosemont Copper Project Interdisciplinary Team Core and Extended Members

cc:

Jamie Sturgess  
Vice-President, Projects and Environment  
Rosemont Copper Company  
4500 Cherry Creek South Drive, Suite 1040  
Denver, Colorado 80246



"Blaine, Marjorie E SPL "  
<Marjorie.E.Blaine@usace.army.mil>

01/28/2010 12:11 PM

To "Tom Furgason" <tfurgason@swca.com>, "Teresa Ann Ciapusci" <tciapusci@fs.fed.us>  
cc "Brian Lindenlaub" <blindenlaub@westlandresources.com>, <Goldmann.Elizabeth@epamail.epa.gov>, "Reta Laford" <rlaford@fs.fed.us>, "Beverley A Everson"  
bcc

Subject RE: Alternatives considered but eliminated

Tom

Thanks very much. I understand their focus was NOT 404 and that's fine because that is what we will do. However, just based on the process we went through on other mines, I expected more alternatives regarding the actual footprint of the mine.

Thanks again.

Marjorie

In the interest of the environment, please print only if necessary and recycle

-----Original Message-----

From: Tom Furgason [mailto:tfurgason@swca.com]  
Sent: Thursday, January 28, 2010 12:01 PM  
To: Blaine, Marjorie E SPL; Teresa Ann Ciapusci  
Cc: Brian Lindenlaub; Goldmann.Elizabeth@epamail.epa.gov; Reta Laford; Beverley A Everson; Melinda D Roth; Melissa Reichard  
Subject: RE: Alternatives considered but eliminated

Marjorie,

Thank you for taking time to review the Alternatives Considered but Dismissed document. The document was prepared for the Coronado's ID Team to confirm part of their alternatives development process. The ID Team did not focus on developing alternatives that avoided or minimized impacts to WUS. They did consider impacts to riparian vegetation. The Coronado will have to rely on the 404 (b) (1) document to satisfy the Corps requirements for demonstrating alternative development for avoidance/minimization of impacts to WUS.

Tom Furgason

Office Director  
SWCA Environmental Consultants

343 West Franklin Street

Tucson, AZ 85701  
(520) 325-9194 ext. 110

(520) 820-5178 mobile

(520) 325-2033 fax

---

From: Blaine, Marjorie E SPL [mailto:Marjorie.E.Blaine@usace.army.mil]  
Sent: Wednesday, January 27, 2010 4:55 PM  
To: Tom Furgason; Teresa Ann Ciapusci  
Cc: Brian Lindenlaub; Goldmann.Elizabeth@epamail.epa.gov  
Subject: Alternatives considered but eliminated

Tom

I've received and reviewed the document. Actually, there were only two alternatives in this document which might possibly be Sec 404 alternatives (i.e. would reduce impacts to WUS). One would be waste rock dump and tailings on the west side of the Santa Ritas which I believe is not practicable due to the haulage costs, the increase in pollutants from trucks, the visual impact, etc...in other words, it has cost and logistics problems and it increases other environmental impacts without the great possibility of avoiding WUS. The other was in situ mining. Other than those two, this document does not really provide us with a lot of information for avoidance/minimization of impacts to WUS.

Thanks, Tom.

Marjorie Blaine  
Senior Project Manager/Biologist  
U.S. Army Corps of Engineers  
Tucson Project Office, Regulatory Division  
5205 E. Comanche Street  
Tucson, AZ 85707  
(520)584-1684 (phone)  
(520)584-1690 (fax)

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"Jonathan Rigg"  
<jrigg@swca.com>  
06/29/2010 02:12 PM

To "Beverley A Everson" <beverson@fs.fed.us>  
cc "Melissa Reichard" <mreichard@swca.com>, "Melinda D  
Roth" <mroth@fs.fed.us>, "Tom Furgason"  
<tfurgason@swca.com>  
bcc

Subject Rosemont DEIS GW Quality and Quantity Sections

Bev,

Per our discussion at the status meeting, the updated groundwater quality and groundwater quantity draft Affected Environment sections originally submitted on May 28 are attached. I will have Dale follow up with Salek to work out a plan to get these sections reviewed and approved, pending gw reports finalizations aside.

Best,

Jonathan Rigg  
Environmental Planner  
SWCA Environmental Consultants  
343 West Franklin Street  
Tucson, Arizona  
Phone: (520) 325-9194  
Fax: (520) 325-2033



Email: jrigg@swca.com NEW Groundwater Quality\_HG.doc NEW Groundwater Quantity\_HG.doc

The indirect impact on groundwater quantity in the Upper Santa Cruz Sub-basin due to mine water supply pumping is the potential reduction in water availability for users of shallow residential wells within the area adjacent to the mine water supply wells. However, as there is no reliable method of predicting whether or to what extent individual residential wells may be affected, Rosemont has instituted a Well Owner's Protection Program to mitigate such an impact by having Rosemont bear the cost of well modification or repairs caused by the mine withdrawal drawdown for well owners who subscribe to the program.

The cumulative impact on groundwater quantity in the Upper Santa Cruz Sub-Basin due to mine water supply pumping is accounted for by the inclusion of all known present and future groundwater demand in the sub-basin into the predictive groundwater model. However, as actual future water use may vary, the cumulative impact would change accordingly.

The direct impact on groundwater quantity in the Upper Cienega Basin due to groundwater flow into the mine pit is the withdrawal of approximately 300 gpm by the end of mine life, with an approximate 120 gpm withdrawal in perpetuity once equilibrium conditions are established. In addition, the direct impact includes the predicted drawdown of the water table. Indirect impacts include the potential effects on flow in the perennial reaches of Davidson Canyon and springs and seeps in the area. Impacts to riparian habitat and other resources from any such effects are described elsewhere. There are no future major groundwater withdrawals projected for the Upper Cienega Basin; therefore, the cumulative impacts to groundwater quantity are reasonably predicted by the existing modeling work. However, as actual future water use may vary, including the possible expansion of mining, the cumulative impact would change accordingly. Any expansion of mining would require additional agency action, including compliance with all relevant rules and regulations in effect at the time.

## **IMPACTS SPECIFIC TO EACH ALTERNATIVE**

### **Mitigation Effectiveness and Remaining Effects**

#### **Direct, Indirect, and Cumulative Effects**



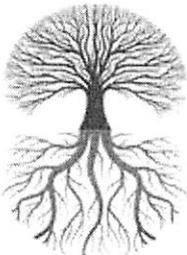
John Able/WO/USDAFS  
07/22/2010 04:30 PM

To Barbara A Schneider/WO/USDAFS@FSNOTES,  
mreichard@swca.com  
cc Melinda D Roth/R3/USDAFS@FSNOTES  
bcc

Subject Fw: rosemonteis.us

History: This message has been replied to.

Barb and Melissa, I sent the reply below to Mindee, then realized she had CC'd the original to you both. So, just wanted you to see my reply, too.



John A. Able  
Time Zone: Pacific  
USDA, Forest Service, ODE  
(Organizational Development Enterprises)  
Text/Voice/Voicemail: 520-903-8800  
[john.able@usda.gov](mailto:john.able@usda.gov)  
[@ForestJohn](#)

----- Forwarded by John Able/WO/USDAFS on 07/22/2010 04:27 PM -----



John Able/WO/USDAFS  
07/22/2010 04:26 PM

To Melinda D Roth/R3/USDAFS  
cc

Subject Re: rosemonteis.us

Hi, Mindee.

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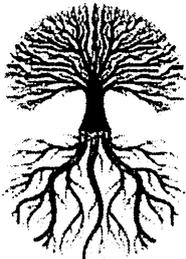
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Call me if you want to discuss. I'm available tomorrow.



John A. Able  
Time Zone: Pacific  
USDA, Forest Service, ODE  
(Organizational Development Enterprises)  
Text/Voice/Voicemail: 520-903-8800  
[john.able@usda.gov](mailto:john.able@usda.gov)  
[@ForestJohn](#)

Melinda D Roth/R3/USDAFS



Melinda D Roth/R3/USDAFS  
07/22/2010 10:42 AM

To John Able/WO/USDAFS@FSNOTES  
cc Barbara A Schneider/WO/USDAFS@FSNOTES, Melinda D  
Roth/R3/USDAFS@FSNOTES, mreichard@swca.com  
Subject rosemonteis.us

Reta supports the idea that we need a disclaimer on the web site stating that all documents should be considered draft and are subject to modification; and that the documents contained on the web site should not be construed to constitute the project record or administrative

record. How would you suggest we easily accomplish that?

Mindee Roth  
Coronado National Forest  
300 W. Congress, FB42  
Tucson, AZ 85701  
(520) 388-8319  
(520) 396-0715 (cell)  
(520) 388-8305 (FAX)

see 4.15.6 - Transportation

Larry Jones/R3/USDAFS  
05/24/2010 09:55 AM

To jrigg@swca.com  
cc Melinda D Roth/R3/USDAFS@FSNOTES, Deborah K  
Sebesta/R3/USDAFS@FSNOTES, Salek  
Shafiqullah/R3/USDAFS@FSNOTES, Robert  
bcc

Subject mitigation language

History: This message has been replied to.

Jonathan et al.--

In the undated (filename dated as 5/10/2010, but not recorded on document) Rosemont Mitigation Table that Mindee just sent me, it says the following under plants and animals:

1.3.2. Rosemont shall develop a Noxious Weed and Invasive Species Management Plan that includes periodic monitoring and eradication of designated noxious plants on Forest Lands.

Per a note that Julia Fonseca, Pima Co., sent us on 5/20/2010, we need to ensure that aquatic invasive species are eradicated and monitored, as well as invasive plants, so I recommend we replace 1.3.2. with something more encompassing, such as (bold-added):

*reworded*  
1.3.2. Rosemont **Copper Company** shall develop a Noxious Weed and Invasive Species Management Plan that includes **initial eradication, as practicable, and periodic monitoring and eradication of designated noxious plants and invasive animals . (e.g., warmwater fishes) on Forest Lands. Prior to ground disturbance, non-native aquatic species must be eradicated from within the boundaries of the Rosemont Copper Company patented and unpatented mining claims, to ensure there is no downstream transport of invasive aquatic organisms during any phase of mining operations. The Plan must ensure there will not be concomitant deleterious effects to threatened, endangered, and sensitive species of plants and animals coexisting with undesirable non-natives during control operations, except as authorized under the federal regulatory framework (e.g., Endangered Species Act consultation).**

Melissa--can you file in project record under biological resources? If anybody has a better way to state this, I'm all ears, or wordsmithing can wait till later, and it can be a placeholder now.

As an aside, this is a plea to always have the date of a draft on the draft document itself. I also like to see the name of the compiler (author), so we know who receives official comments, to keep book-keeping straight. Thanks!

Larry Jones  
Wildlife, Fish, and Rare Plants  
Coronado National Forest  
300 W Congress  
Tucson, AZ 85701

*Chapt 1 review*

Reta Laford/R3/USDAFS  
04/14/2010 08:50 AM

To "Melinda Roth" <mroth@fs.fed.us>  
cc tfurgason@swca.com  
bcc  
Subject Fw: Rosemont scheduling question: RO Review and Cooperating Agency

For your consideration . . .  
Reta Laford

----- Original Message -----

**From:** Reta Laford  
**Sent:** 04/14/2010 07:39 AM CDT  
**To:** Jackie Andrew  
**Subject:** Re: Rosemont scheduling question: RO Review and Cooperating Agency

As usual, good input. Thank you. I will let you know when we have a revised timeline.  
Jackie C Andrew

----- Original Message -----

**From:** Jackie C Andrew  
**Sent:** 04/14/2010 06:36 AM MDT  
**To:** Reta Laford  
**Subject:** Re: Rosemont scheduling question: RO Review and Cooperating Agency

As with all things NEPA, it depends. You have a number of cooperating agencies, some of whom have jurisdiction by law, regulation or policy over parts of the Rosemont decision. If review by these cooperators is likely to cause big changes in the document, then those cooperators should review the draft before you send it in for RO review. Many of your cooperators are just interested parties. They may suggest changes, but its up to you to decide if you will change the document based on their input

At the RO, we prefer to see a document when all the changes have been made. However, we can probably work with one where all the major changes that are likely have been incorporated.

Jackie C. Andrew  
NEPA Coordinator  
Southwestern Region  
telephone: 505-842-3256  
Reta Laford/R3/USDAFS

*ACOE +  
BLM  
dec. space*

Reta Laford/R3/USDAFS  
04/13/2010 06:09 PM

To Jackie C Andrew/R3/USDAFS@FSNOTES  
cc  
Subject Rosemont scheduling question: RO Review and Cooperating Agency

Hi Jackie. We are assessing the time line for the Rosemont Cooper Project DEIS. We anticipate informal input from the Region as we work through various things. We also still plan to have a formal RO review at key points, such as "Chapters 1 and 2", "Chapter 3", etc. We were planning to concurrently provide Cooperating Agencies the same products we submit to the RO for formal review. What are your thoughts on doing

this? We thought it would be good to put our best foot forward to both the RO and Cooperating Agencies at the same time. We can discuss further by phone if you'd like.

Reta Laford  
Deputy Forest Supervisor  
Coronado National Forest  
Phone: 520-388-8307

---



Melinda D Roth /R3/USDAFS

01/08/2010 12:25 PM

To karnold@rosemontcopper.com

cc Debby Kriegel/R3/USDAFS@FSNOTES, Melinda D  
Roth/R3/USDAFS@FSNOTES

bcc

Subject Information Request



20100107\_kriegel\_request.docx

Mindee Roth  
Coronado National Forest  
300 W. Congress, FB42  
Tucson, AZ 85701  
(520) 388-8319  
(520) 396-0715 (cell)  
(520) 388-8305 (FAX)

To: Kathy Arnold, Rosemont Copper  
From: Debby Kriegel, Coronado National Forest, 388-8427  
Date: January 7, 2010  
Re: Information Request

The following information will be needed for visual quality and recreation analysis. Please call me if you have questions.

1. GIS layers for the new alternatives (revised Phased Tailings, and Barrel Only) with Z-values assigned to the contours and georeferences to their locations.
2. 3D model of the plant facilities and infrastructure locations (powerline, waterline easement, etc), with detail to the point that USFS and Rosemont can agree is sufficient for simulations. These need to be georeferenced as well.
4. Information on which plant buildings and facilities cannot be painted earthtones.
5. Contours: the best resolution of the existing landform topography that Tetra Tech has. Currently SWCA is currently working off of 10m DEMs.
6. Details about what mitigation lands and/or conservation easements would be offered by Rosemont (plat maps, easement language, and timeline).
7. Map or GIS point for Sentinal Peak (and recommendations for possible spur trail location, if available)
8. Information about the appearance of the outermost waste rock (sometimes referred to as "growth medium" or "topsoil") and visible back parts of the pit. This data will be necessary for both analysis of visual resources and for creating accurate simulations. Information needed:
  - The color range of the rock types that will comprise the outermost waste rock. This could be as simple as providing samples of the rock, identifying field sites where the material can be viewed (such as on the test plots), and photographs.
  - Desert varnish (Permeon and/or Natura) tests to determine application rates for the back of the pit, and outermost waste rock if it will be lighter than surrounding landscape colors. Representatives from both companies are in the Tucson area periodically. If Rosemont could provide locations to test the correct rock types (which should be newly excavated rock, not weathered locations), they are willing to travel to the site to test various application rates. The test areas do not need to be on test plots, and could be located on National Forest land if the rock type is correct.
  - Post-mine options for breaking up the uppermost horizontal benches in the back of the pit, or if this is not possible, a description of what natural failing might be expected over time. Depending on alternative, up to 20 benches would be visible from travelways, including Highway 83.
9. A study of establishing trees and shrubs on reclaimed slopes. The current research on seeding is an excellent start, but reclamation should also include trees and shrubs (and possibly cacti) in order to more quickly stabilize the slopes and meet visual quality goals. Coordination with U of A's Dr. Fehmi would be a good place to start, and perhaps he could recommend a consultant. The study would answer the following questions:
  - Which species and sizes of plants would be most successful on the outermost material? Native plants should be selected from those currently growing at the site, and would include salvage/transplants, seedlings, and/or container plants. Patterns of plants on the new slopes should mimic those of the surrounding landscape.

- Where can the needed plants be obtained in sizes and quantities that would likely be necessary? Options include salvaging from the site, purchasing from local nurseries, contracting propagation, or some combination. Landforming work and alternative selected will affect the exact quantities, but a rough examination of existing numbers of plants and species per acre in the area would provide a good starting point,. And I know of one local plant expert with a nursery who might be available to provide information on the success of propagating species not typically sold in nurseries and/or to could help propagate plants.
- If there are different suites of native plants best adapted to different "growth mediums", a plan should be developed to place that material/plant or seed those suites of vegetation to achieve targeted reveg and biology needs. Specifically this applies to Agave/bat concerns, but also to many plant species obligates. An example of how this could go wrong inadvertently would be that if a "growth medium" which is best for Agave survival is placed on slopes which are not conducive to Agave survival (north facing, south facing, whatever), we all would have missed a huge opportunity. At a later date, this information would be used to resolve what "growth medium" goes where--for visual and plant growth needs--solves problems for the proponent and the land manager.



Melinda D Roth /R3/USDAFS  
10/22/2009 02:46 PM

To karnold@rosemontcopper.com,  
jsturgess@augustaresource.com  
cc

bcc Melinda D Roth/R3/USDAFS

Subject Tech report tracking

FYI... The attached spreadsheet lists all Technical reports we know of to date . You will see some color-coded blocks that indicate a need or question . Along with looking into the status of outstanding reports, would you help us fill in some gaps with missing reports . Also, we have received reports that weren't identified on your previous listings . Give me a call if you have questions . Thanks.



20091022\_Tech Report\_FS\_tracking sheet.xlsx

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Resource Area	Title	Author	Date	Receipt
Air	Ambient Air Quality and Meteorological Data	Applied Environmental Consultants	4/1/2009	
Biology	2008 Rapid Survey of the Rosemont Holdings and Vicinity	WestLand Resources	4/24/2009	
Biology	Agave Survey	WestLand Resources	3/11/2009	
Biology	Bat Survey	WestLand Resources	3/11/2009	
Biology	Draft: Biological Assessment, Rosemont Copper Mine Project	SWCA	5/27/2009	
Biology	Migratory Bird Analysis, Rosemont Copper Drilling Project, Nogales Ranger District, Coronado National Forest [chapter from larger report?]	SWCA	4/27/2009	
Biology	Revised Draft: Biological Assessment, Rosemont Copper Mine Project	SWCA	7/14/2009	
Biology Corp	Waterline Pima Pineapple Cactus Survey Clarification of Land Control	WestLand Resources Cheniae & Associates, Inc.	3/11/2009 10/30/2007	
Corp	Definition of Land Position	Cheniae & Associates, Inc.	10/30/2007	
Corp	Mineral Resource Estimate for Rosemont Deposit	WLR Consulting	2/15/2006	
Corp	Mineral Resource Update for Rosemont Deposit- 2007	WLR Consulting	4/26/2007	
Corp	Tech Report of the Rosemont Property	Wardrop	6/3/2005	
Corp	Tech Report of the Rosemont Property revision 1	Wardrop	8/16/2005	
Economics	Preliminary Economic Assessment	Washington Group Intl	6/13/2006	
Facilities	Conceptual Heap Leach Pad Design Layout	Vector/TetraTech	6/1/2006	
Facilities	Disposition of Existing Mine Workings	Augusta Resource	11/28/2007	
Facilities	Dry Tailings Facility Design	Tetra Tech	6/1/2007	
Facilities	Leaching Facilities Design Report	Tetra Tech	6/1/2007	
Facilities	Rosemont Heap Leach Facility Permit Design Report Volumes I and II	Tetra Tech	5/1/2009	
Facilities	Staging Areas for Pre-Production	M3 Engineering & Technology	11/13/2007	
Facilities	Staging Areas for Pre-Production	M3 Engineering & Technology	11/13/2007	
Facilities	Temporary Shut-down procedures	Tetra Tech	11/12/2007	
Facilities	Waste Management Plan	Tetra Tech	7/1/2007	
Facilities	Waste Rock Facility designs	Tetra Tech	11/28/2007	
Geology	Baseline Geochemical Characterization	Tetra Tech	6/1/2007	
Geology	Draft Policy for the Evaluation of Mining Rock Materials for the Determination of Inertness	ADEQ	1/1/1999	
Geology	Geochemical Characterization. Addendum 1	Tetra Tech	11/1/2007	
Geology	Geologic Hazards Assessment	Tetra Tech	6/1/2007	
Geology	Geology & Seismotectonic Review of Mine Siting Study	Vector/TetraTech	4/20/2006	

Geology	Geology and Seismotectonic Review	Vector/TetraTech	4/20/2006
Geology	Geotechnical Addendum	Tetra Tech	2/1/2009
Geology	Geotechnical Addendum Volumes 1, 2, and 3,	Tetra Tech	2/1/2009
Geology	Geotechnical Study Assessment	Tetra Tech	6/1/2007
Geology	Late Cenozoic Tectonism in Arizona and Its Impact on Regional Landscape Evolution; Preliminary Trip Report & Phase 1 Sampling & Analysis Plan	Menges, C. M., and Peartree, P. A	1/1/1989
Geology	Study of Mineral Production with Reference to the Rosemont Copper Project	Vector/TetraTech	7/26/2006
Geology	Tectonic Setting of Arizona through Geologic Time;	AZ Dept of Mines & Minerals	7/1/2009
Geology	The Helvetia Area Porphyry Systems, Pima County	Dickinson, W. R.,	1/1/1989
Geology	Unpatented Incorporation Documents	Anzalone, S. A.	1/1/1995
Geology	Unpatented Mining Claims & Sites Map	Fennemore Craig	11/1/2007
HAZMAT	Hazardous and Industrial Materials and Quantities	Fennemore Craig	11/30/2007
MPO	Map of BLM areas	Tetra Tech	11/28/2007
MPO	Mine Plan of Operations	WestLand Resources	12/3/2007
MPO	MPO- Response to comments & matrix for FS and BLM comments	WestLand Resources	7/11/2007
MPO	Second Revision Figures	WestLand Resources	11/21/2007
Night Skies	Outdoor Lighting and Pima County Outdoor Lighting Code	WestLand Resources	2/18/2008
Noise	Background Ambient Noise Study	M3 Engineering & Technology	6/1/2009
Noise	Supplemental Noise Study	Tetra Tech	10/1/2008
Reclamation	Greenhouse Studies - Phase II Prelim Report	Tetra Tech	4/1/2009
Reclamation	Greenhouse Studies- Phase I Final Report	U of A (Jeffrey S. Fehmi)	3/12/2008
Reclamation	Greenhouse Studies- Phase 1 Final Report	U of A	7/6/2007
Reclamation	Greenhouse Studies- Phase 2 Final Report	U of A	12/18/2008
Reclamation	Operational Areas Soil Salvage Estimates	Tetra Tech	6/1/2007
Reclamation	Reclamation & Closure Plan	Tetra Tech	6/1/2007
Reclamation	Reclamation Plan (multiple BLM numbers)	WestLand Resources	11/28/2007
Reclamation	Soil Salvage Estimates-Operational Areas	Tetra Tech	6/1/2007
Reclamation	Storage Area Soil Salvage Estimates	Tetra Tech	6/1/2007
Reclamation	Survey of Salvage Topsoil Resources	Tetra Tech	6/1/2007
Socioeconomics	Feasibility Study Volume I Technical Report	M3 Engineering & Technology	8/24/2007
Socioeconomics	The Impact of the Rosemont Mine on the Economies of Pima County, Arizona, and the United States	WEAC	8/20/2007

Socioeconomics	Updated Feasibility Study Volume I NI43-101 Tech Report	M3 Engineering & Technology	1/14/09
Tails	Dry Stack Tailings Storage Facility Final Design Report	AMEC	4/1/2009
Tails	Filtered Tailings Dry Stacks Current State of Practice	AMEC	11/1/2008
Tails	Tailings Siting Study	Vector/TetraTech	5/26/2006
Transportation	Roadway Assessment	Tetra Tech	7/1/2009
Transportation	State Route (SR) 83 Scenic Road Evaluation	Tetra Tech	5/11/2009
Transportation	Traffic Analysis Report	Tetra Tech	4/1/2009
Utilities	Electrical Power Supply & Water Supply Supplement	WestLand Resources	7/25/2007
Visual	Viewshed Analysis	Tetra Tech	6/29/2007
Water	Aquifer Protection Permit Application	Tetra Tech	2/27/2009
Water	Conceptual Groundwater Model	Errol Montgomery & Assoc	11/1/2007
Water	Dewatering for the Planned Rosemont Mine	Call & Nichols	11/16/2007
Water	Dewatering for the Planned Rosemont Mine Memo	WestLand Resources	11/16/2007
Water	Groundwater Flow Modeling Conducted for Simulation of Rosemont Copper's Proposed Mine Supply Pumping Sahuarita, Arizona	Errol Montgomery & Assoc	4/30/2009
Water	Groundwater Monitoring Program	Errol Montgomery & Assoc	11/5/2007
Water	Groundwater Monitoring Program	Errol Montgomery & Assoc	2/13/2008
Water	Groundwater Protection Plan	Tetra Tech	6/1/2007
Water	Groundwater Well Information Tech Memo	Errol Montgomery & Assoc	11/2/2007
Water	Hydrogeologic Investigations & Monitoring Phase 2	Errol Montgomery & Assoc	2/26/2009
Water	Letter responding to a Request for Clarification Response by Roger Congdon	Rosemont Copper	2/1/2008
Water	Preliminary Groundwater Monitoring Program for Rosemont Mine	Errol Montgomery & Assoc	11/5/2007
Water	Preliminary Springs Assessment	WestLand Resources	12/3/2007
Water	Process Water Pond, Temporary Storage Pond, and Settling Basin Design Report	M3 Engineering & Technology	5/1/2009
Water	Results of Construction, Development, and testing for Exploration Water Well (D-17- 14)17bdd[E-1], Pima County, Arizona	Errol Montgomery & Assoc	4/27/2007
Water	Rosemont Ridge Perimeter Stormwater Retention Basins	Tetra Tech	11/28/2007
Water	Rosemont Stream Classification	Tetra Tech	11/19/2007
Water	Second Update to ADWR Model in Sahuarita/Green Valley Area	Errol Montgomery & Assoc	4/27/2009

Water	Site Water Management Plan	Tetra Tech	6/1/2007
Water	Siting Study- Pond Sizing	Vector/TetraTech	6/2/2006
Water	Storm and Precipitation Data/Design Criteria	Tetra Tech	4/7/2009
Water	Supporting Documents Volume 1	Tetra Tech	6/07
Water	Supporting Documents Volume 2	Tetra Tech	6/07
Water	Supporting Documents Volume 3	Tetra Tech	6/07
Water	Update to ADWR Model in Sahuarita/Green Valley Area	Errol Montgomery & Assoc	12/1/2008
Water	Update to ADWR Model in Sahuarita/Green Valley Area	Errol Montgomery & Assoc	5/21/2009
Water	Water Balance Plan	M3 Engineering & Technology	6/1/2007
Water	Water Balance Plan	WestLand Resources	12/3/2007
Water	Water Rights Data	Fennemore Craig	11/1/2007
Water	Water Rights Data	Maquire & Pearce	11/20/2007
Water	Water Supply Pipeline Design	Stantec	1/1/2007
Water	Water Supply Project Design Concept Report	Stantec	7/14/2009
Water	Water Well Results Report RC-2	Errol Montgomery & Assoc	4/24/2009
	Need a copy		
	Not in Rosemont's list		

Distribution Review

Comment

Finalized

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Melinda D Roth/R3/USDAFS

06/29/2009 10:19 AM

*deleted T.A.  
from  
mail list*

To

Beverley A Everson/R3/USDAFS@FSNOTES, "Mary M Farrell" <mfarrell@fs.fed.us>, "Melissa Reichard" <mreichard@swca.com>, Sarah L

bcc

Subject RE: 1950-3/2360/2800; transmit Rosemont archaeology report

My note below, if clear, is accurate. A couple of additional details: Melissa needs any green or white cards for certified and return receipt mailings. She also needs any attachments and the original and electronic copies of any hardcopy CCs (electronic CCs - emails- not needed). Sarah Davis is the primary FS employee for the Project Record and questions should go to her.

Thanks everyone. It will be very important to get this record started on the right foot.

Mindee Roth  
Coronado National Forest  
300 W. Congress, FB42  
Tucson, AZ 85701  
(520) 388-8319  
(520) 396-0715 (cell)  
(520) 388-8305 (FAX)

Melinda D Roth/R3/USDAFS



Melinda D Roth/R3/USDAFS

06/29/2009 09:16 AM

*added Bev +  
Sarah to the  
mail list*

To "Melissa Reichard" <mreichard@swca.com>

cc "Mary M Farrell" <mfarrell@fs.fed.us>, "Suzanne Griset" <sgriset@swca.com>, "Teresa Ann Ciapusci" <tciausci@fs.fed.us>, "Tom Furgason" <tfurgason@swca.com>, Beverley A Everson/R3/USDAFS@FSNOTES, Melinda D Roth/R3/USDAFS@FSNOTES, Sarah L Davis/R3/USDAFS@FSNOTES

Subject RE: 1950-3/2360/2800; transmit Rosemont archaeology report

Melissa needs all originals and all electronic versions.

*I shared my response w/ TA  
and sent above added info.*

Generally, for the record we need 1) the original document for the hard copy of the official record, 2) an electronic copy (scanned) that contains the real signature for the official record (that is not shared with the public), and 3) an electronic version for public posting electronically that does not have a "real" signature (for privacy). Tribal and archeological info is treated differently when there is sensitive information like details about sites or culturally significant places or practices. It is part of the record, but is not public info. My experience has been that this sensitive stuff is included in the record and is either sealed and marked "confidential" or has a placeholder in the record but resides separately. I would think that basic letters to and from tribes that contain no specific information should be part of the public record. If a tribe is sensitive to privacy, I would say leave it out when in doubt. I will check with others and share a definitive answer ASAP.

Mindee Roth  
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"Melissa Reichard" <mreichard@swca.com>



"Melissa Reichard"  
<mreichard@swca.com>  
06/26/2009 01:26 PM

To "Mary M Farrell" <mfarrell@fs.fed.us>, "Melinda D Roth"  
<mroth@fs.fed.us>, "Teresa Ann Ciapusci"  
<tciapusci@fs.fed.us>  
cc "Suzanne Griset" <sgriset@swca.com>, "Tom Furgason"  
<tfurgason@swca.com>  
Subject RE: 1950-3/2360/2800; transmit Rosemont archaeology  
report

Mary-

I really appreciate your attention to the record!! That is a great question. Honestly, I'm not sure if any requirements are different for Tribal Consult., but I think I should get hard copies of signed letters that are going out for each tribe. I will also need the word copy for the electronic file. Since I have not received formal direction, I will defer to Mindee or TA.

What do you ladies think?

*Melissa*

"Science is organized knowledge. Wisdom is organized life." -Immanuel Kant

---

**From:** Mary M Farrell [mailto:mfarrell@fs.fed.us]  
**Sent:** Friday, June 26, 2009 12:45 PM  
**To:** Melissa Reichard  
**Cc:** Suzanne Griset  
**Subject:** Fw: 1950-3/2360/2800; transmit Rosemont archaeology report

Hi, Melissa,

This is one example of the letters being mailed today to transmit the archaeology report. Do you want the rest of them in this electronic format, or would you prefer just the hard copies? or?

Mary

Mary M. Farrell  
Heritage Program Leader and Tribal Liaison  
Coronado National Forest  
300 W. Congress  
Tucson, AZ 85701  
(520) 388-8391  
(520) 388-8305 (fax)



"Melissa Reichard"  
<mreichard@swca.com>  
08/17/2009 09:44 AM

To "Melinda D Roth" <mroth@fs.fed.us>  
cc "Tom Furgason" <tfurgason@swca.com>, "John Able"  
<jable@fs.fed.us>  
bcc  
Subject RE: Scoping Report 1

Mindee-

We provided our entire back-end data to Udall. I thought the web conversion was the online database. Excel truncates cells and would definitely cut off comments, which would be an issue. Our database only generates pdf reports for this reason. I'm not really sure where to go from here.

I cc'd Tom and John, because they may need to be kept in the loop on this.

*Melissa*

*"Science is organized knowledge. Wisdom is organized life." -Immanuel Kant*

---

**From:** Melinda D Roth [mailto:mroth@fs.fed.us]  
**Sent:** Friday, August 14, 2009 2:46 PM  
**To:** Melissa Reichard  
**Subject:** RE: Scoping Report 1

John is hoping to have Scop. Rpt #2 appendix material as a database or spreadsheet for conversion to the web. Where does that exist?

Mindee Roth  
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300 W. Congress, FB42  
Tucson, AZ 85701  
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"Melissa Reichard" <mreichard@swca.com>  
08/14/2009 11:27 AM

To "Melinda D Roth" <mroth@fs.fed.us>  
cc  
Subject RE: Scoping Report 1

They are in the pdf file only because the database outputs pdfs.

*Melissa*

*"Science is organized knowledge. Wisdom is organized life." -Immanuel Kant*

---

**From:** Melinda D Roth [mailto:mroth@fs.fed.us]  
**Sent:** Friday, August 14, 2009 11:26 AM  
**To:** Melissa Reichard  
**Subject:** Re: Scoping Report 1

Where is Appendix A to Report #2 - the actual public comments organized by theme?

Mindee Roth  
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"Melissa Reichard" <mreichard@swca.com>

08/14/2009 10:00 AM

To: "Melinda D Roth" <mroth@fs.fed.us>  
cc  
Subject: Scoping Report 1

I posted the corrected version. I researched the State Land comment and it was from the Deputy Commissioner. So, I left it with just the State Land Dept to be consistent. I posted both word and pdf versions on WebEx.

Thanks!

*Melissa Reichard*  
Project Administrator  
SWCA Environmental Consultants  
343 West Franklin Street  
Tucson, Arizona 85701  
(520)325-9194, (520)325-2033 fax



"Blaine, Marjorie E SPL "  
<Marjorie.E.Blaine@usace.army.mil>

08/11/2010 05:48 PM

To "Brian Lindenlaub" <blindenlaub@westlandresources.com>

cc "Reta Laford" <rlaford@fs.fed.us>, "Melinda D Roth" <mroth@fs.fed.us>

bcc

Subject Montenore Review

History: This message has been forwarded.

Brian

Here are some comments on the Montenore Practicability document. I hope this assists you in providing a revised Section 404(b)(1) alternatives analysis for the Rosemont project.

1.2.1: Basic project purpose: Tiffany and I discussed and agreed that it should just state "to mine copper and silver" and shouldn't go on to state "to meet a portion of current and future demands". The latter does not go to determination of water dependency.

1.2.2: Overall project purpose: it is too restrictive. It should not specify an exact amount of ore but should approximate or give a range and it should also not state "in an economically viable manner". That portion of the overall project purpose unduly restricts the alternatives.

1.2.3: They didn't document a need for THIS project. They documented a need for copper and silver but did not indicate why this specific mine was necessary or the amount of copper/silver it would contribute to help with supply/demand of copper/silver. They did indicate that Montana produces the least amount of copper of the principal domestic mining states.

3.1: They just skipped through the alternative mine location section....it doesn't justify selection of the one they are proposing and it just makes a broad statement that there were no others that were available. It should have listed them and indicated why they were not available. What I don't understand is this document indicates that the USFS DID look at offsite alternatives in accordance with NEPA. **Reta: this makes me wonder further regarding Coronado's contention that the USFS never looks at offsite alternatives? I'm just confused.**

3.2: Way too much time/detail explaining why a joint venture wasn't possible. Federal agencies cannot force two companies to form a joint venture so that one operation is undertaken so why print pages and pages just to justify that concept?

4.1.1: This is very interesting in that the applicant is going forward with an application for a mine where they are only at the preliminary assessment stage; obviously this has given them enough information to determine they can mine this ore body. At what stage is RM in respect to the Rosemont ore body but more importantly, the Broad Top Butte, Copper World, and Peach Elgin resources? Just from the descriptions, it seems like the latter three mineral resources are at some stage of preliminary assessment.

4.3.1: Their summary that dry backfilling is not practicable is confusing. They document the required system to place the dry backfill but then, in the last paragraph, state they can't get it

close to the roof so considering that and other things (being what?), this alternative is not practicable. It may not be practicable but they haven't documented it well enough.

4.3.2: They needed to document that bringing in additional sand-sized material for the dam would not be practicable due to costs. So without that, they shouldn't have eliminated this alternative.

Due to my limited time in looking at this document, I'm going to skip down a bit.

4.5: Assessment of Economic Feasibility: they start out by stating they are discussing costs, but they aren't...they are discussing economic feasibility which is a different thing all together. Their entire discussion is based on a cost per unit which is a revenue consideration, not simply a cost consideration (cost of this alternative as compared to costs normally associated with that type of operation).

5.2 I think their site screening was too restrictive. Yes, availability is first but then it needs to be practicability in light of cost, logistics, technology any of which can cause an alternative to not be practicable. Once you have the practicable alternatives, then you start looking at the impacts to WUS and the other environmental impacts. So they put the cart before the horse since they looked at availability and then they started looking at environmental issues.

I did not go any further because I think my comments above illustrate the problems with this particular study. If you have any questions or want to discuss it, please let me know.

Also, Brian, I am attaching the guidance to which I referred the other day regarding the transportation project. I found it was no problem to release it. I am happy to assist and answer questions in any way I can as you are working on revising the 404(b)(1).

*Marjorie Blaine*

Senior Project Manager/Biologist  
U.S. Army Corps of Engineers  
Tucson Project Office, Regulatory Division  
5205 E. Comanche Street  
Tucson, AZ 85707  
(520)584-1684 (phone)  
(520)584-1690 (fax)

Assist us in better serving you!

You are invited to complete our customer survey, located at the following link:

<http://per2.nwp.usace.army.mil/survey.html>

Note: If the link is not active, copy and paste it into your internet browser.



rev sunk costs memo.pdf



Beverley A  
 Everson/R3/USDAFS  
 08/03/2009 06:12 PM

To "Tom Furgason" <tfurgason@swca.com>  
 cc "Charles Coyle" <ccoyle@swca.com>, jdmacivor@frontiernet.com, "Melissa Reichard" <mreichard@swca.com>, "Melinda D Roth"  
 bcc  
 Subject Re: Alternative Development

Tom,

Thank you for lining out what you felt I had asked you to do in fleshing out the alternatives. The scope of work you provide is quite a bit larger than what I believe is necessary at this point in the analysis, and I would like to further discuss some strategy for more fully describing the alternatives. For now, I would like SWCA and their subcontractors to focus on an Alternative 3 "b" that would not require hauling waste rock over the ridge (ie., would utilize quarrying on the west side of the ridge in the Sycamore Canyon area), and would involve piping slurry to the west side for dewatering at a filter plant (this is pretty much what Dale had described in a couple of the IDT meetings as what would be necessary in order for the Sycamore Canyon tailings placement to work). Access routes for this alternative should be shown as Rosemont did in their alternative diagrams, and the slurry pipeline route should also be shown.

Bev

Beverley A. Everson  
 Forest Geologist  
 Coronado National Forest  
 300 W. Congress Street, 6th Floor  
 Tucson, AZ. 85701

Voice: 520-388-8428  
 Fax: 520-388-8305

"Tom Furgason"  
 <tfurgason@swca.com>

To "Beverley A Everson" <beverson@fs.fed.us>  
 cc "Melinda D Roth" <mroth@fs.fed.us>, <rlaford@fs.fed.us>, <jdmacivor@frontiernet.com>, "Charles Coyle" <ccoyle@swca.com>, "Melissa Reichard" <mreichard@swca.com>  
 Sub Alternative Development  
 ject

07/31/2009 10:44 AM

Bev,

I'd like to confirm your expectations of SWCA's approach to drafting the Alternatives for detailed consideration for the Rosemont Copper Project. It is our understanding that you would like SWCA to engage our subconsultants SRK and MWH to "flesh out" all alternatives

developed to date. We will be mindful to develop the alternatives as they pertain to the issues that are the primary drivers and to the extent possible, the units of measurement that will demonstrate differences between alternatives. The alternatives presently include:

- No Action
- Scholefield (tailings) and McClearly (waste) Canyons
- Rosemont's Alternative in Response to Comments
- Sycamore (tailings) and Upper McClearly/Upper Barrel (waste) Canyons
- Upper Barrel Only (currently referred to as Alternative 6c)
- MPO

We anticipate developing the following key elements for each action alternative:

- Waste Rock and Tailings Facilities (actual placement and staging/timing)
  - Transportation Infrastructure within the mine operations
  - Heap Leach Pad and appurtenant structures
  - Electrical Transmission Corridors (to the extent possible w/o ACC approval of the final alignment)
  - Access Road(s)
  - Surface Water Management
  - Reclamation and Closure
  - Cost ??
- by 8-19 for IDT*

SWCA will also define the No Action Alternative with the understanding that no Mine Plan of Operation would be approved regardless of any mitigation or ability for Rosemont Copper Company's ability to design a legally permissible mine.

Please let me know if there are other key elements that you feel are required to develop these alternatives.

**Tom Furgason**

Program Director  
SWCA Environmental Consultants  
343 West Franklin Street  
Tucson, AZ 85701  
(520) 325-9194 ext. 110  
(520) 820-5178 mobile  
(520) 325-2033 fax



# ROSEMONT COPPER

Resourceful.

## Water Well Protection Plan



AMERICAN HOME GUARDIAN

1839 S Alma School Rd #350  
Mesa, AZ 85210

Well Number:

Policy Number:

Phone: 1-866-710-3700

# ***Congratulations!***

By becoming a Qualified Well Owner in the Rosemont Copper Company United Sahuarita Well Owner's Protection Program, your well is now protected by the Rosemont Residential Water Well Protection Plan. This warranty program is provided by American Home Guardian (AHG), a leader in home warranty programs in Arizona and the Southwest. It is there for you for the life of our agreement, whether or not Rosemont withdraws any water from your surrounding area.

Rosemont is committed to limiting its water use and finding ways to use reclaimed water or other renewable supplies for our mining operations. We will closely monitor changes in groundwater levels in your area and if your well is impacted by our project in any way, the Rosemont Well Protection Plan Master Agreement will cover the modification or replacement of your well.

Please review this brochure and become familiar with the pump warranty offered by AHG. We think they will live up to your expectations, and you will enjoy the peace of mind offered by this warranty. Thank you again for being a part of this innovative program.

Sincerely,

***Jamie Sturgess***

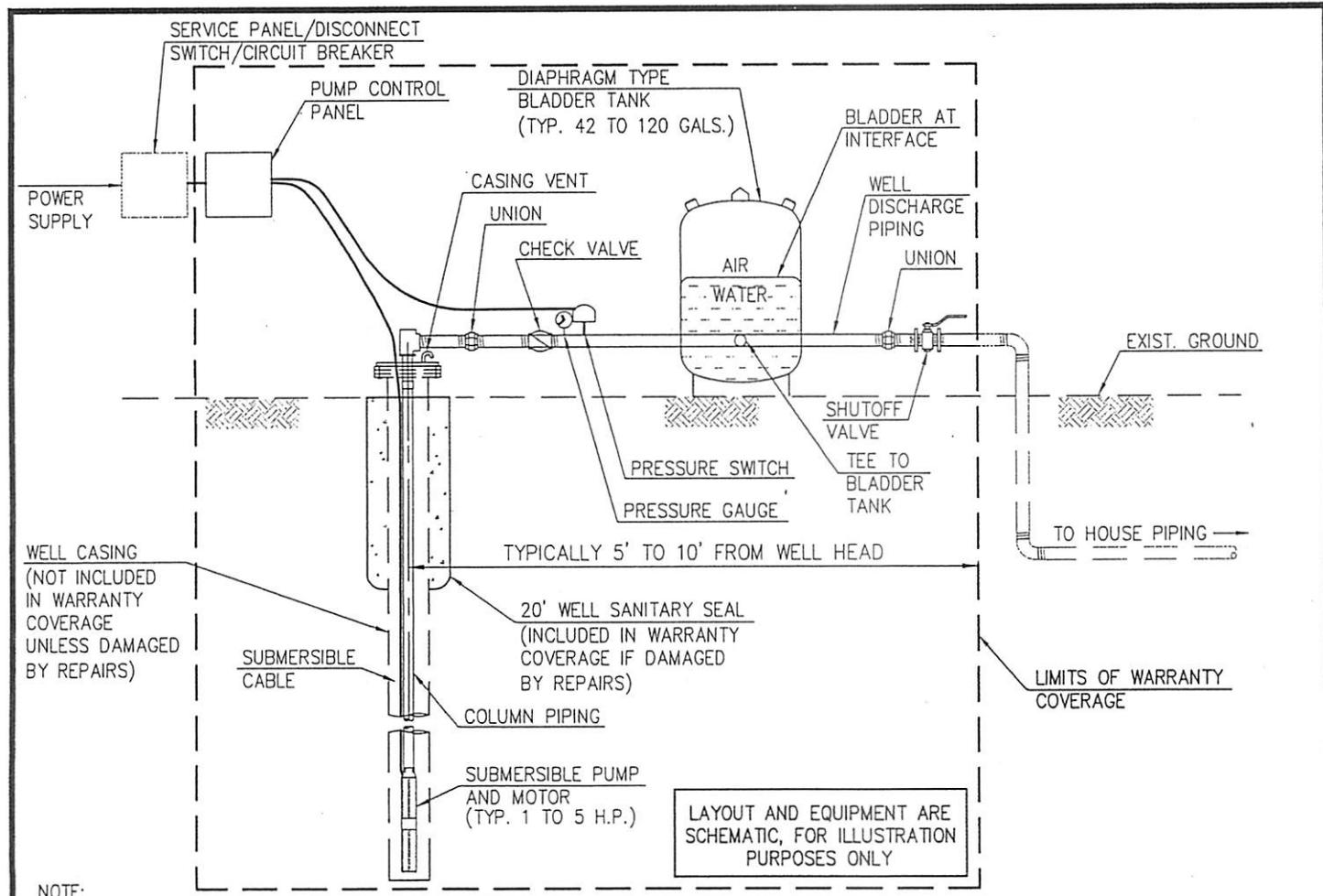
Vice President, Sustainable Development  
Rosemont Copper Company

# ROSEMONT WA

## 1.0 WATER WELL COVERAGE

**1.1 COVERAGE INCLUDES:** Diagnostic, repair or replacement of all mechanical parts or components between the ground surface and the bottom of the pump and motor, all electronic controls, pressure switches, valves and piping required to operate the submersible pump and motor, as well as the bladder or hydro-pneumatic tank as illustrated in the drawings below labeled Rosemont Well Protection Program Potential Existing Configuration 1, 2 or 3.

**1.2 COVERAGE EXCLUDES:** Any item outside the dashed lines, or not shown or labeled in the drawings referenced below. All wells not on the approved list provided by Rosemont when this contract starts and updated by Rosemont from time to time. All windmill-type wells, solar powered wells, and all wells that do not provide water to a residence. The cost associated with replacing or extending an existing well for any reason, or establishing a new well is not included in this contract. Repetitive abuse, gross neglect or willful damage is also not included. In addition, all failures that are a



**NOTE:**  
 CONFIGURATION OF PIPING AND EQUIPMENT IS SCHEMATIC.  
 ABOVE GROUND PIPING MAY INCLUDE VARIOUS BENDS,  
 TEES, UNIONS, HOSE BIBS, DRAIN VALVES, SHUT-OFF  
 VALVES, AIR RELEASE VALVES, PRESSURE RELIEF VALVES,  
 PRESSURE GAUGES AND OTHER MISCELLANEOUS FITTINGS.  
 MATERIALS OF CONSTRUCTION MAY BE GALVANIZED IRON,  
 PVC, CAST IRON, COPPER OR OTHER.

ROSEMONT  
 WATER WELL PROTECTION PROGRAM  
 POTENTIAL EXISTING CONFIGURATION 1

# WATER WELL PRO

result of a natural disaster including, but not limited to: earthquake, fire, lightning strikes or flood are not included.

1.3 In the event of pump failure requiring replacement, AHG is to replace pumps with a NEW stainless steel pump that is equal to or more suitable than the size and capacity of the failed pump.

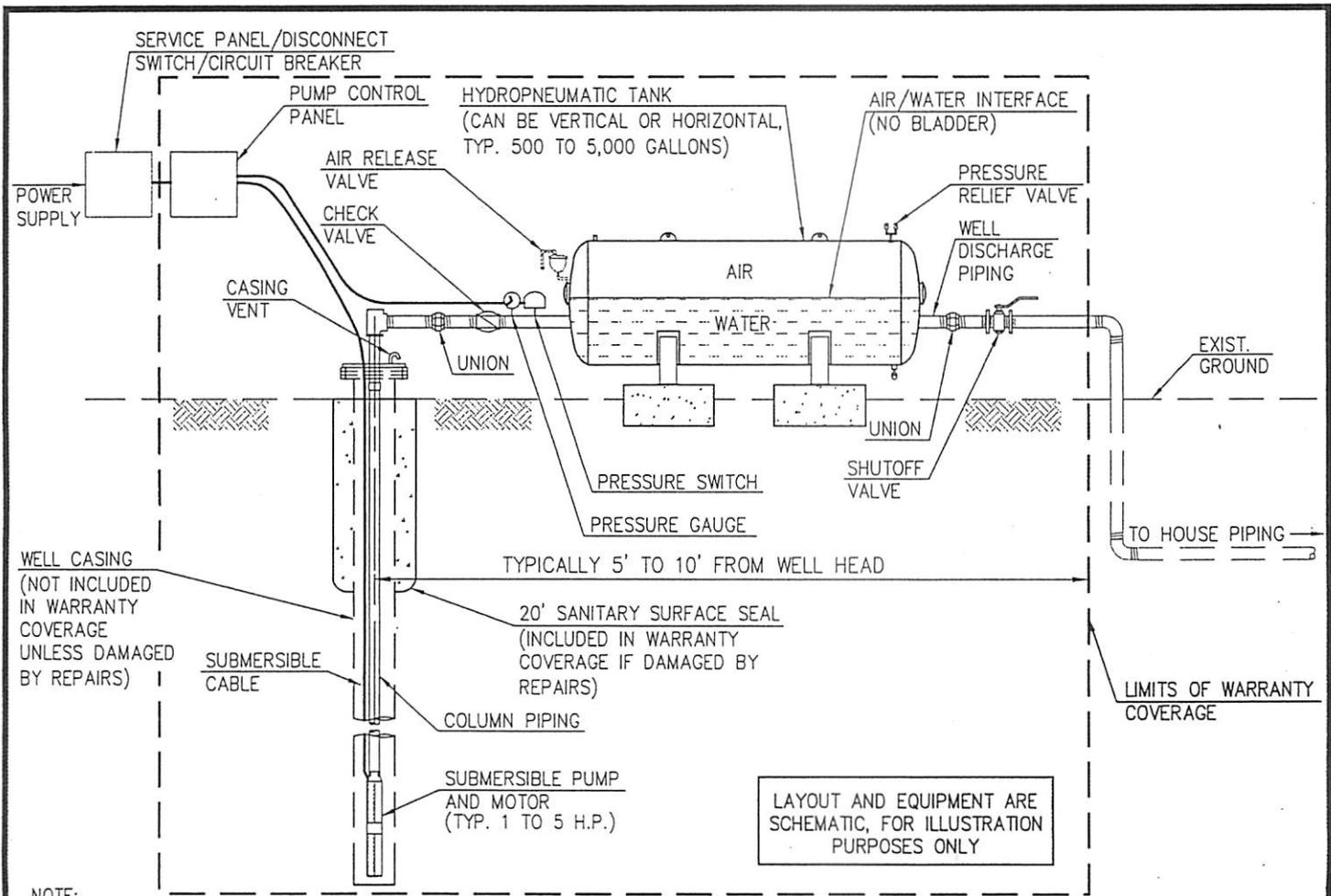
## 2.0 FILING A CLAIM OR REQUESTING SERVICE

2.1 Well owners can call AHG's toll free service number: 1-866-710-3700 to ask general questions

or to request a service dispatch 24-hours per day, 7 days per week, 365 days per year.

2.2 All service requests will be dispatched between the hours of 8:00 AM to 6:00 PM Monday-Friday and 9:00 AM to 4:00 PM Saturday Arizona Standard Time.

2.3 AHG will contact a preferred vendor(s) to have them schedule the diagnostic and repair appointment directly with the well owner. The vendor(s) must contact the well owner within 4 hours (as indicated in above) from the time a service request is dispatched.



NOTE: CONFIGURATION OF PIPING AND EQUIPMENT IS SCHEMATIC. ABOVE GROUND PIPING MAY INCLUDE VARIOUS BENDS, TEES, UNIONS, HOSE BIBS, DRAIN VALVES, SHUT-OFF VALVES, AIR RELEASE VALVES, PRESSURE RELIEF VALVES, PRESSURE GAUGES AND OTHER MISCELLANEOUS FITTINGS. MATERIALS OF CONSTRUCTION MAY BE GALVANIZED IRON, PVC, CAST IRON, COPPER OR OTHER.

# TECTION PLAN

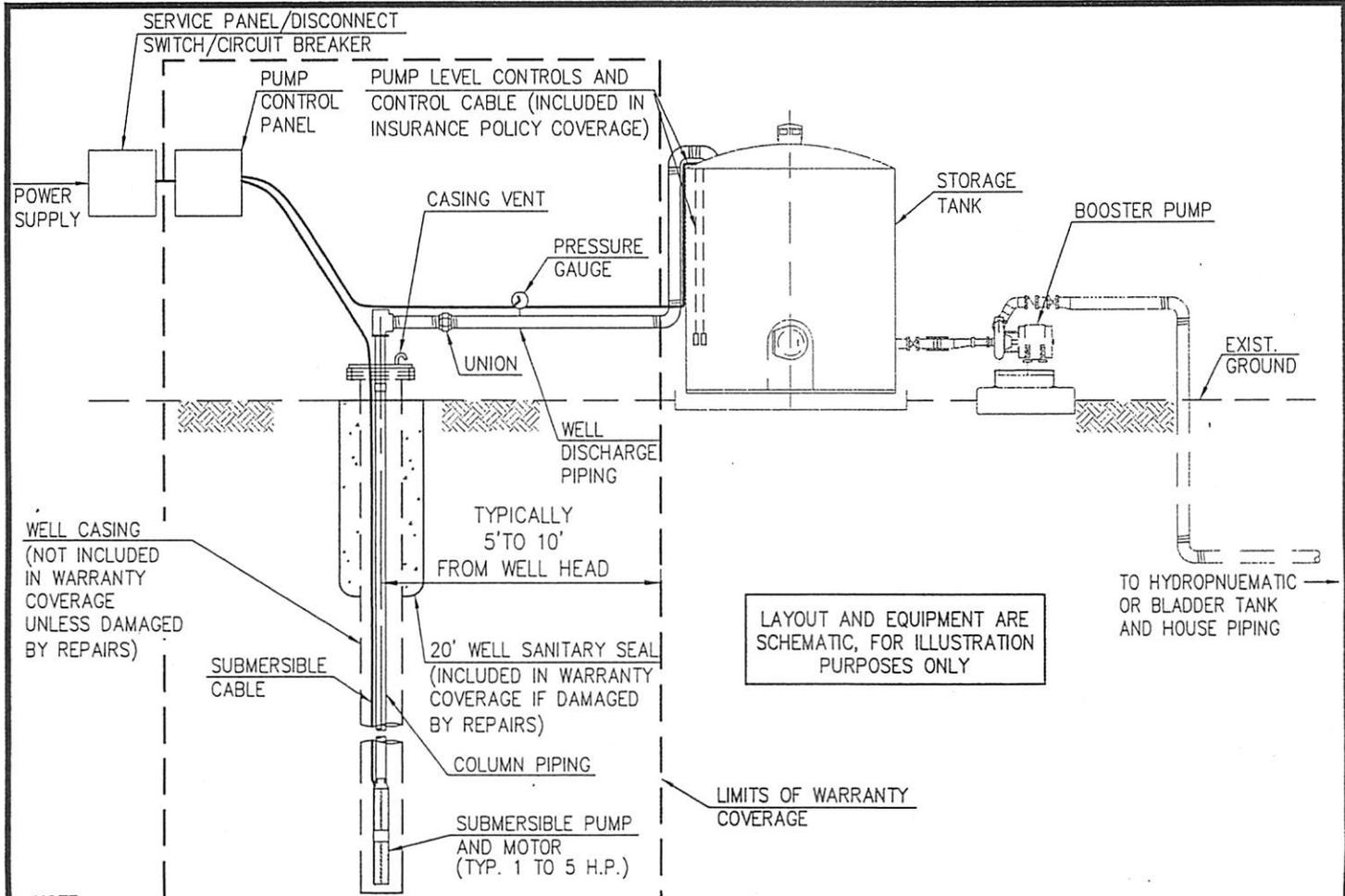
2.4 All service requests received after service hours (as indicated above) will be dispatched the following day. If service is requested on Sundays or holidays, a 24-hour response time is granted.

2.5 In the event the well owner is without water for 24 consecutive hours AHG will arrange for a temporary water tank to be installed.

2.6 Customer satisfaction surveys will be provided by AHG to Rosemont after each service request has been completed to ensure service was satisfactory.

### 3.0 TRANSFER OF CONTRACT

3.1 In the event any home covered by this contract is sold, AHG will provide copies of this agreement and a fridge magnet to the new homeowner within 10 days of providing transfer documents to AHG. Please call 1-866-710-3700 to obtain required documents.



LAYOUT AND EQUIPMENT ARE SCHEMATIC, FOR ILLUSTRATION PURPOSES ONLY

NOTE:  
 CONFIGURATION OF PIPING AND EQUIPMENT IS SCHEMATIC. ABOVE GROUND PIPING MAY INCLUDE VARIOUS BENDS, TEES, UNIONS, HOSE BIBS, DRAIN VALVES, SHUT-OFF VALVES, AIR RELEASE VALVES, PRESSURE RELIEF VALVES, PRESSURE GAUGES AND OTHER MISCELLANEOUS FITTINGS. MATERIALS OF CONSTRUCTION MAY BE GALVANIZED IRON, PVC, CAST IRON, COPPER OR OTHER.

ROSEMONT  
 WATER WELL PROTECTION PROGRAM  
 POTENTIAL EXISTING CONFIGURATION 3

# Water Well Protection Plan Overview

- At The First Indication Well Pump Service Is Needed, Call 1-866-710-3700 For Service.
  - Around The Clock Customer Support.
  - 4-Hour Response Guarantee.\*
  - New Parts And Components Used For All Repairs.
  - Free Emergency Water Delivery.\*
  - No Age Restrictions On Covered Items.
  - Pre-Screened, Licensed, Bonded And Insured Contractors Will Perform All Repairs.
  - Quick Service Response And Flexible Repair Scheduling.
  - Pre-Existing Conditions Are Not Excluded.
  - No Part Obsolescence Clause.
  - If We Can't Fix It, We'll Replace it, Guaranteed!
- \*=See Contract For Details.

## Information About American Home Guardian

### Total Customer Satisfaction Is Our Goal!

- **American Home Guardian (AHG)** is an Arizona-based corporation that provides and administers innovative home service contracts. We are dedicated to providing quality protection, financial security, and the highest standard of service to homeowners. The following is a sampling of AHG's Guiding Values:
  - **Quality Comes First:** We are on a relentless quest for perfection. We strive to perform all tasks correctly the first time to ensure customer satisfaction.
  - **Customers And Customer Service Is Our Focus:** American Home Guardian has not forgotten that only our customers make our business possible.
  - **Safety Is Never Compromised:** We place our concern for safety of our employees and homeowners at the forefront of our decisions, policies and actions.
  - **Communication Is Vital:** We encourage appropriate, honest, constructive and timely communication in company, customer and community relationships to resolve issues, exchange information and share knowledge.
  - **Professional Ethics Are Practiced:** We manage our business and treat customers, employees, contractors, suppliers, community, environment and government in a manner that exemplifies our honesty, ethics and integrity. We recognize our responsibility and are proud of the service and products we provide and the manor we operate.
  - **Continuous Improvement is Essential:** We concentrate our resources on continuously improving Quality and Customer Service while empowering each employee to make continuous improvements in their area of responsibility.

*American Home Guardian Is  
A Proud Participant In  
The Ethical Arizona Program.*



*Multi-Year Best Of Arizona  
Award Recipient In  
The Home Warranty Category.*

For more information about AHG or the service contracts we offer, please go to:  
[www.AmericanHomeGuardian.com](http://www.AmericanHomeGuardian.com)



"Tom Furgason"  
<tfurgason@swca.com>  
10/21/2009 11:18 AM

To "Melinda D Roth" <mroth@fs.fed.us>, "Beverley A Everson"  
<beverson@fs.fed.us>  
cc "Sturgess Jamie" <jsturgess@augustaresource.com>,  
"Melissa Reichard" <mreichard@swca.com>,  
<jdmacivor@frontiernet.net>

bcc

Subject Admin Record Guidance

Mindee,

Thank you for providing the draft guidance for the Admin Record (AR) last Tuesday. I have reviewed this with Melissa and, while structured somewhat differently than we had previously worked out with Teresa Ann and Reta last year, it is sufficient for SWCA to continue our work on the AR. I should point out that the revised structure will not result in any "rework" on the AR nor result in the need to abandon any previous efforts on this task. We understand that this is merely guidance and agree that there is sufficient flexibility within the categories to accommodate subjects within the coding schema. I would like the Coronado to consider providing Rosemont with a copy of the guidance at next Tuesday's meeting so that it can substantiate our scope of work and cost estimate to complete this task.

### **Tom Furgason**

Program Director  
SWCA Environmental Consultants  
343 West Franklin Street  
Tucson, AZ 85701  
(520) 325-9194 ext. 110  
(520) 820-5178 mobile  
(520) 325-2033 fax

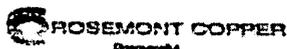
Tom -

Last week at a meeting, Salek mentioned that SWCA needed updated weather data to finalize some of the sections of the draft. I wanted to provide the information that Rosemont has so that you are not held up. The information is in spreadsheet format per month - (I also summarized as Temperature, Evaporation, and Precipitation spreadsheets on a monthly basis for July 2009-2010). You will note the evaporation data is not complete as we are having trouble with the evaporation instrumentation. While this data is local, it is not "official" in the sense that it is part of the weather station data accumulated for NOAA and we do not rely on it to provide anything more than a snapshot of the current data. We rely on the official weather stations for trend data over a long period for all of our designs. That information can be found in an April 2009 Tetra Tech technical memorandum.

Please don't hesitate to let me know if you require any additional information to make your document complete .

Happy New Year!  
Kathy

**Katherine Ann Arnold, P.E.** | Director of Environmental and Regulatory Affairs  
Cell: 520.784.1972 | Main: 520.297.7723 | Fax 520.297.7724  
[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com)



Rosemont Copper Company  
P.O. Box 35130 | Tucson, AZ 85740-5130  
3031 West Ina Road | Tucson, AZ 85741 | [www.rosemontcopper.com](http://www.rosemontcopper.com)

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----- Forwarded Message

**From:** Holly Lawson <[hlawson@rosemontcopper.com](mailto:hlawson@rosemontcopper.com)>  
**Date:** Fri, 24 Dec 2010 07:37:51 -0700  
**To:** Katherine Arnold <[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com)>  
**Subject:** RE: Weather data

Hi Kathy,

I've attached all of my weather data, though it stops at September. I hope this helps!

Merry Christmas!  
Holly

**From:** Kathy Arnold [<mailto:karnold@rosemontcopper.com>]  
**Sent:** Thursday, December 23, 2010 12:32 PM  
**To:** Holly Lawson  
**Subject:** Weather data

Holly -  
Do you have weather data from Louis? Would you mind sharing?

Thanks -

Kathy

Kathy Arnold | Director of Environmental and Regulatory Affairs

Cell: 520.784.1972 | Main: 520.297.7723 | Fax 520.297.7724

[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com)



Rosemont Copper Company

P.O. Box 35130 | Tucson, AZ 85740-5130

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ACOE conf call 8/4

Marjorie, Reta, Bob, Tiffany, ~~Tress~~ <sup>Larry Minch</sup>,  
Steve H. (Bw, Salik)

Bob - agency limitations, examples we've found. Reg. Lands + Minerals Director w/o / Dept. interested. FS lead agency FS policy - foster minerals development. Property right concerns per Constitution. Recognize ACOE reqs differ.

- 1) 404 permit process status
- 2) agency (FS) limitations
- 3) NEPA alts - in pit size, off-site alts.

Hope to reach agrmt.

Steve. - USDA / OGC Abq. -  
FS / USDA understand <sup>+ accept.</sup> COE  
broader analysis.  
FS req → P+N tied to claim block.  
36 CFR 228A., FSM 2810.  
require reasonable access to  
mining claims per  
1872 + other laws.  
mission to min. impact to  
surface resource w/o  
undue limit to mineral

Neither BLM or FS has considered  
off-site alt - not resp. to  
P+N.

claims on FS => prety rights.

Case law re: P+N

balancing public P+N + put  
applicant's needs

P+N tied to claim deposit =>  
offsite doesn't meet P+N.

Montanore + Carlota

Feas. anal. incl. in EIS/appendix  
practicability of offsite + pit size  
anal. - not practicable

COE position: full anal. in EIS  
of pit size + off-site alt.

(not in EIS)

MB - Carlota: considered several off-site alts.  
overall proj purpose - State of Az.

→ Info from Rosemont - not documented  
enough to determine practicability.

MB has asked RCC for more.

404b1 is draft.

is there guidance  
for this?

"public interest review" - req. by COE  
What is this?

= our comment/analysis process.

Reta - Mountaineer example /

NEPA P+N - "basic" "overall"

better understanding

Chapt 1 - latest draft - could be improved. Additional comments this week. -

Need to coord. applic. of comments.

Tiffany - we aren't that far off on P+N.

Steve - use examples to revise 404b1 anal. to determine practicability, then understand set of alts fully analyzed.

Reta - likes ERO analysis - beef up exist 404b1 analysis (append in EIS) to determine practicability.

Rge. of alts include ACD too.

DEIS - 5 alts forward. Comments then other alt in FEIS?

If practicable? ACOE would be req. to fully analyze.

mine copper.

see Mary's  
Chapt 1  
comments

Alts.

~~Is this~~

MB saw problems w/ Montanose example.

what about  
Carloha is  
different now?

ACOE - send more examples?

Des Potes? - 10 yrs. old now.

off-site alts. - ACOE says practicable to  
explore to prove "unpracticable."

Timeframes / RCC commitments

- RCC agrees to ~~to~~ <sup>pay for</sup> addit. 404b analysis
- Reta needs a more <sup>consistent</sup> engagement w/ COE.
- MB - needs lead time

phone conf. OK.

- MB - "give us a deadline, we will meet it"

MB - willing to set a std. time slot  
for a standing telecon.

\* Mon. 2:00

Agree - practicability study from RCC.  
weekly conf. calls

Notes to Bot C. for review, 8/24/10.

Will WO have our back if we say  
no to pit config. alt full analysis?

R

✓ email  
✓ email  
h.c.  
✓ email  
h.c.  
✓ email

✓  
✓  
email  
✓  
email  
h.c.  
email  
✓  
email  
✓

✓  
?  
h.c.  
✓



"Tom Furgason "  
<tfurgason@swca.com>  
08/30/2010 02:34 PM

To "Melinda D Roth" <mroth@fs.fed.us>  
cc  
bcc

Subject FW: MPO landform

History: This message has been forwarded.

Mindee,

Attached are the landform contours for the Proposed Action. This should be useful for Pima County.

**Tom Furgason**

Office Director  
SWCA Environmental Consultants  
343 West Franklin Street  
Tucson, AZ 85701  
(520) 325-9194 ext. 110

**From:** Lara Mitchell  
**Sent:** Monday, August 30, 2010 2:11 PM  
**To:** Tom Furgason  
**Subject:** MPO landform

Attached are the contours for the MPO reclamation phase. landform\_contours.shx landform\_contours.cpg  
 landform\_contours.dbf landform\_contours.idx landform\_contours.prj landform\_contours.shp landform\_contours.shp.xml

SWCA



Beverley A  
Everson/R3/USDAFS  
05/24/2010 04:52 PM

To daleortmanpe@live.com, Melinda D  
Roth/R3/USDAFS@FSNOTES, Salek  
Shafiqullah/R3/USDAFS@FSNOTES

cc

bcc

Subject Fw: list of potential alternative water sources for Rosemont

Dale,

Mindee asked me to get back to you to give you a better idea of what we're thinking about for this work.

We need the following:

Ownership or water rights to the various alternative water sources

Availability or potential availability of each water source

Technical feasibility of obtaining the water and getting it to the project area (general, ie., distance from the water source to the project area and how it could be transported, depth of groundwater, whether or not desalinization of available seawater is occurring, etc.)

The applicability of using the water for the project (such as how much of the yearly or project life water need the source would provide).

We would like to have a hydrologist do the work, with the objective being to explore the potential water sources, but in a fairly general way. I envision the report not exceeding 8 to 10 pages (at the very most), and am thinking that most of the information could be summarized in a table. I'm not suggesting that the report be formatted that way, but am hoping to give you an idea of the level of detail that we're looking for.

I've asked Kathy Arnold to give me some information on the studies that the company has done on alternative water sources, and will pass that on to you later in the week when I receive it from her.

Please give me a call if you need more clarification. For questions about the water sources that Salek listed, I'd suggest that you talk to him directly (388.8377).

We can talk some more about this in the regular coordination meeting tomorrow or next Tuesday if you'd like.

Bev

*Dale & Salek discussed descriptions of these  
alts.*

Beverley A. Everson  
Forest Geologist  
Coronado National Forest  
300 W. Congress Street, 6th Floor  
Tucson, AZ. 85701

Voice: 520-388-8428  
Fax: 520-388-8305

— Forwarded by Beverley A Everson/R3/USDAFS on 05/24/2010 03:51 PM —



Melinda D Roth/R3/USDAFS



05/24/2010 03:21 PM

To Beverley A Everson/R3/USDAFS@FSNOTES

cc

Subject Fw: list of potential alternative water sources for Rosemont

Mindee Roth  
Coronado National Forest  
300 W. Congress, FB42  
Tucson, AZ 85701  
(520) 388-8319  
(520) 396-0715 (cell)  
(520) 388-8305 (FAX)

--- Forwarded by Melinda D Roth/R3/USDAFS on 05/24/2010 03:21 PM ---



"Dale Ortman PE"  
<daleortmanpe@live.com>  
05/24/2010 06:48 AM

To "Melinda D Roth" <mroth@fs.fed.us>

cc

Subject RE: list of potential alternative water sources for Rosemont

Mindee,

We need to do a much better job of defining what the CNF needs and just what the potential water sources are before turning this over to a sub-contractor. I am pretty much booked this week and will likely be leaving town the end of next week for about 10 days, so I suggest we schedule something on June 1<sup>st</sup> or 2<sup>nd</sup> to work this out. In the interim I suggest the CNF do the following:

1. Prepare the specific question(s) you need the sub-consultant to address, such as, "What is the technical feasibility of the potential water source to meet the water needs of the project?" Although the tasks in the SOW may not be posed as a question, by posing the need as a question it may help to develop the SOW.
2. Develop detailed descriptions of each potential water source and what it may do to mitigate the environmental consequences of the proposed action.

Let me know what works for you.

Cheers,

Dale

**From:** Melinda D Roth [mailto:mroth@fs.fed.us]  
**Sent:** Friday, May 21, 2010 12:18 PM  
**To:** daleortmanpe@live.com  
**Subject:** Fw: list of potential alternative water sources for Rosemont

Dale, Did I give you enough info to go one here? If not, give me a call. Thanks.

Mindee Roth  
Coronado National Forest  
300 W. Congress, FB42  
Tucson, AZ 85701  
(520) 388-8319  
(520) 396-0715 (cell)  
(520) 388-8305 (FAX)

----- Forwarded by Melinda D Roth/R3/USDAFS on 05/21/2010 12:15 PM -----

**Melinda D Roth/R3/USDAFS** To: jrigg@swca.com, daleortmanpe@live.com  
cc: Beverley A Everson/R3/USDAFS@FSNOTES, Salek Shafiqullah/R3/USDAFS@FSNOTES, Melinda D Roth/R3/USDAFS@FSNOTES  
05/18/2010 04:50 PM Subject: Fw: list of potential alternative water sources for Rosemont  
ct

Jonathan and Dale,

Please use the list below to prepare a SOW for SRK to provide input on the feasibility of these alternative water sources. Several of these water sources have been dismissed as infeasible, impractical, etc. We want an objective review of those determinations. This is very similar to our request of SRK to review the alternatives considered but dropped and provide input on feasibility, etc. If you have questions, contact Bev, Salek, or me. And please keep the 3 of us in the info loop on this. Thanks.

Mindee Roth  
Coronado National Forest  
300 W. Congress, FB42  
Tucson, AZ 85701  
(520) 388-8319  
(520) 396-0715 (cell)  
(520) 388-8305 (FAX)

----- Forwarded by Melinda D Roth/R3/USDAFS on 05/18/2010 04:42 PM -----

**Beverley A Everson/R3/USDAFS** To: Melinda D Roth/R3/USDAFS@FSNOTES  
cc  
05/18/2010 03:31 PM Subject: Fw: list of potential alternative water sources for Rosemont

Mindee,

Here's the list of alternative water sources that Salek put together. I've told him that I would be forwarding it to you to forward to SRK for a preliminary feasibility analysis. Salek asked to be kept in the loop on the correspondence with this, and would also like to review SRK's work.

Thank you,

Bev

Beverley A. Everson  
Forest Geologist  
Coronado National Forest  
300 W. Congress Street, 6th Floor  
Tucson, AZ. 85701

Voice: 520-388-8428

Fax: 520-388-8305

----- Forwarded by Beverley A Everson/R3/USDAFS on 05/18/2010 03:22 PM -----

Salek Shafiqullah/R3/USDAFS

To Beverley A Everson/R3/USDAFS@FSNOTES

cc

05/18/2010 02:56 PM

Subject Re: list of potential alternative water sources for Rosemont [Link](#)

Hello Bev,

I came up with some additional ideas. If I think of others, I'll let you know. Lets discuss and keep me in the loop. Thanks.

Potable sources to the East:

- Davidson Canyon
- Cienega Creek
- Sonoita Creek
- San Pedro River

Potable sources to the West

- Santa Cruz River basin (existing M&E permit in Sahuarita)
- Other private property adjacent to Santa Cruz River or Sahuarita (buffer distance from residences or businesses)
- State Land groundwater (buffer distance from residences or businesses)
- Santa Rita Experimental Range groundwater (buffer distance from residences or businesses)
- CAP direct delivery
- T.O. nation groundwater direct delivery
- RO water from Yuma Treatment

Localized CAP recharge and recovery (not wet water)

- Pima mine road recharge as space permits (Augusta has some existing credit)
- Fico groundwater savings facility
- 841 facility (T.O. recharge). ASARCO has used this facility
- Future Community Water facility

TAMA CAP recharge and recovery (not wet water and distant)  
Lower Santa Cruz Constructed facility (Augusta has some existing credit)  
Avra Valley Constructed facility (Augusta has some existing credit)

Non potable sources to the West  
Green Valley waste water effluent  
Nogales waste water effluent  
Tucson waste water effluent  
Tucson reclaimed water  
Sierrita Sulfate Plume consent water from FMI  
Secretary of Interior effluent  
Secretary of Interior managed recharge credit recovery (not wet water)  
Deep aquifer brackish water  
Ocean water from sea of cortez, desalinized

Salek Shafiqullah, Hydrologist  
Coronado National Forest  
520-388-8377

Beverley A Everson/R3/USDAFS

05/18/2010 01:16 PM

To Salek Shafiqullah/R3/USDAFS@FSNOTES  
cc  
Subject: list of potential alternative water sources for Rosemont

Sal,

Per our phone conversation just now, here are the ideas that I've heard:

effluent

desalinized water

CAP water from the T.O. Nation

other CAP water

water from the Las Cienegas Watershed

water from the Sierrita sulfate plume

Are there any others that need to be considered as possible alternative water sources for the project?

Please respond today if you can.

Thanks!

Bev

Beverley A. Everson  
Forest Geologist  
Coronado National Forest  
300 W. Congress Street, 6th Floor  
Tucson, AZ. 85701

Voice: 520-388-8428  
Fax: 520-388-8305



"Tom Furgason "  
<tfurgason@swca.com>  
10/13/2009 01:43 PM

To "Teresa Ann Ciapusci" <tciapusci@fs.fed.us>  
cc "Melinda D Roth" <mroth@fs.fed.us>, "Beverley A Everson"  
<beverson@fs.fed.us>, "Ken Kertell" <kkertell@swca.com>,  
"Geoff Soroka" <gsoroka@swca.com>, "Melissa Reichard"  
bcc

Subject Pima County GIS layers

Teresa Ann,

My biologists can't get the latest Pima County GIS layers for biological resources. Apparently, the Forest has a policy not to release another jurisdiction's data. Probably a good policy, but SWCA still needs to acquire this GIS data for our analysis. Can we contact the County directly or can you request that Julia deliver the layers on a cd? Thanks.

**Tom Furgason**

Program Director  
SWCA Environmental Consultants  
343 West Franklin Street  
Tucson, AZ 85701  
(520) 325-9194 ext. 110  
(520) 820-5178 mobile  
(520) 325-2033 fax



Kathy Arnold  
<karnold@rosemontcopper.com>

10/08/2009 01:28 PM

To Reta Laford <rlaford@fs.fed.us>

cc Melinda D Roth <mroth@fs.fed.us>

bcc

Subject FW: FYI: Pima County Flood control visited Rosemont today

History:

 This message has been replied to and forwarded.

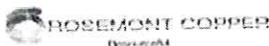
Reta –

I wanted to see if you were aware of this and if Pima County Flood Control is really representing the Forest Service. Can you let me know?

Thanks -

Kathy

Kathy Arnold | Director of Environmental and Regulatory Affairs  
Cell: 520.784.1972 | Main: 520.297.7723 | Fax 520.297.7724  
[karnold@rosemontcopper.com](mailto:karnold@rosemontcopper.com)



Rosemont Copper Company  
P.O. Box 35130 | Tucson, AZ 85740-5130  
3031 West Ina Road | Tucson, AZ 85741 | [www.rosemontcopper.com](http://www.rosemontcopper.com)

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**From:** Jeff Cornoyer

**Sent:** Thursday, October 08, 2009 1:16 PM

**To:** Rod Pace; Fermin Samorano; Kathy Arnold; Jamie Sturgess

**Cc:** Holly Lawson; Dennis Fischer

**Subject:** FYI: Pima County Flood control visited Rosemont today

All:

Late this morning Pima County Flood control was at the Mine sight. Dennis first observed them at the old smelter site photographing the road surface and the scrapers driving by. At the time they didn't identify themselves and were driving a white suburban with regular plates. Later they tried to gain entry to the upper test plot site claiming they had permission from the Forest Service. Oscar was at the gate and told them he would have to check with his supervisor to allow them in. They didn't pursue it and drove away, but mentioned they were interested in seeing containment at the bottom of the plots. Nothing further from them today.



Jeff Pima Flood.pdf

Pima County Regional  
**FLOOD CONTROL**  
DISTRICT



**DR. GREG SAXE, M.R.P.**  
ENVIRONMENTAL PLANNING MANAGER  
PLANNING & DEVELOPMENT DIVISION  
REGIONAL FLOOD CONTROL DISTRICT

97 E. CONGRESS STREET, 2ND FLOOR  
TUCSON, ARIZONA 85701-1797

PHONE: (520) 243-1800  
FAX: (520) 243-1821  
greg.saxe@rfdc.pima.gov



"Terry Chute"  
<tjchute@msn.com>  
12/14/2010 10:59 PM

To "Melinda D Roth" <mroth@fs.fed.us>  
cc "Tom Furgason" <tfurgason@swca.com>, "Jonathan Rigg"  
<jrigg@swca.com>, "Beverley A Everson"  
<beverson@fs.fed.us>

bcc

Subject Re: Brief input from RO NEPA person

Mindee tells me my comments did not come across on the last version I responded to . So – I'll try this again.

Reta - thanks for the briefing today. The bio/physical effects are probably well covered (except that pesky MIS question - latest appeal decision was reversed on MIS analysis .) I had a few NEPA-related comments but didn't want to bog down the call, so if you're interested:

I'd suggest making sure the **Alternatives considered but eliminated from detailed study** (which is correct title, not "dismissed" which sounds dismissive) is contains full description of the "consideration - i.e., preliminary effects which cause the elimination because they really are part of the range and sometimes we get dinged for not really disclosing that we really did consider and analyze the alternative , then eliminate, so it indicates the full range. (Hoover Dam bridge has great discussion on the 17 alternatives they studied before deciding on about 5 to put in DEIS.... ) Tom is handling

One other question I had that didn't seem to fit in was about the **socio-economic effects** . I hate that heading because it can mean 2 things --1: economic effects that are social (like tourism, jobs, but not the economics of the mine itself), and 2: social effects and economic effects, which are two different things. Well – this section addresses social and economic issues. We could change the title, but I'd suggest we do it after the RO review

Someone mentioned the Save the Santa Ritas organization and I wondered what their main issues were about, and were they adequately covered? Seems like some social aspect might be involved -- like **change in culture /sense of place** /that sort of thing. Heritage analysis tends to focus on actual sites and visuals/scenery on VQO etc. and recreation on access to hiking/camping/etc. EJ is about measuring "disproportionate effects" on low income/minority populations.... none of them getting to that "specialness of this place" kind of effects.... but if non one brought that up you're ok... I think all the topics raised here are addressed in the effects analysis for Socioeconomics. Whether they are "adequately" addressed in pretty much in the eye of the reviewer, but since there are really no laws specifying what we have to do here - other than disclose effects so the decision is not arbitrary and capricious - I think we are OK .

Another thing is that the **timeline** is at least 3 months off.... but you know that. The DEIS should be as final as you can get so that you will have fewer "responses to comments" about inadequate analysis, and you definitely don't want to do a supplement for missing things, which happens all the time with mining EISs.

On the Schedule, they need to change the "publish NOA..." to "**send DEIS to EPA who publishes the NOA which starts the comment period .**" (1506.9 and 1506.10) (also requires that EIS be filed with EPA "no earlier than they are also transmitted to agencies and public" which ensures folks get the whole comment period (which probably ought to be 120 days which might preclude requests for extensions, which is likely). Corbin mentioned he wanted more detail so that fits in there.

I don't know who will be the Rosement NEPA liaison when the new regional coordinator starts (new year) but since she's from BLM, it will likely be her..... Geneen

I don't know who will be the Rosement NEPA liaison when the new regional coordinator starts (new year) but since she's from BLM, it will likely be her ..... Geneen

Geneen Granger  
R3 Assistant NEPA Coordinator  
Coconino NF SO  
1824 S. Thompson St., Flagstaff, AZ 86001  
Office phone: 928-527-3536  
Cell phone: 505-263-8656  
Fax: 928-527-3620



Please consider the environment before printing this e-mail

Geneen Granger  
R3 Assistant NEPA Coordinator  
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Please consider the environment before printing this e-mail



"Melissa Reichard "  
<mreichard@swca.com>  
11/23/2009 12:19 PM

To "Kathy Arnold" <karnold@rosemontcopper.com>, <mroth@fs.fed.us>  
cc <blindenlaub@westlandresources.com>, <hbarter@elmontgomery.com>, <jamie.joggerst@tetrattech.com>, <jwood@epgaz.com>, bcc

Subject Rosemont GIS files

History: This message has been forwarded.

Hi Ladies-

We have recently received the assignment to gather ALL GIS data for the EIS. I need everyone to bundle up ALL GIS data files that you have- even if you may have already sent some. I would like ALL the files you have, so we can be sure that nothing gets missed. Knowing that these files can be extremely large, I would like them in a tangible form (i.e. DVD or external hard drive).

I'm sure that everyone is aware of our newly published, extremely tight, deadline for the DEIS. Therefore, I will be collecting these next Thursday morning- December 3rd . I plan on driving to all necessary locations to pick these up for you. If you have them done ahead of time, I can make other arrangements. I am also happy to help in any way I can to make this happen. The point being, that I need to make this happen in short order. So, please let me know if you encounter any obstacles that require my help.

This is the current list of companies/agencies that I have thought of to respond to this request:

Montgomery & Assoc  
TetraTech  
Rosemont Copper  
Westland  
AEC  
Stantec  
AMEC  
M3  
EPG  
Forest Service  
Pima County

I have tried to include all the necessary contacts, but there are a few that I didn't have contact information for. So, please look at the distribution and forward this on to whomever necessary and cc me.

I appreciate all of your attention and time on this task- especially in the Holiday season.

*Melissa Reichard*  
Project Administrator  
SWCA Environmental Consultants  
343 West Franklin Street  
Tucson, Arizona 85701

(520)325-9194, (520)325-2033 fax

Sound Science. Creative Solutions.

*"Man's mind, once stretched by a new idea, never regains its original dimensions."  
-Oliver Wendell Holmes*



"Tom Furgason"  
<tfurgason@swca.com>  
11/05/2009 03:02 PM

To "Robert Lefevre" <rlfevre@fs.fed.us>, "VSIENV"  
<vsienv@cox.net>, "Beverley A Everson"  
<beverson@fs.fed.us>, "Melinda D Roth" <mroth@fs.fed.us>

cc

bcc

Subject RE: Chapter 3 Air Quality example

Bob,

Thanks for the information and posting it to WebEx. I'll let you work it out with Bev to decide if there is a specific action item for SWCA to incorporate format or content into the Rosemont EIS. It would work best if this came with all of the other comments that Bev is compiling. These types of examples are very useful for our specialists in determining the level of effort to meet your expectations. Again, thank you.

Tom

---

**From:** Robert Lefevre [mailto:rlfevre@fs.fed.us]  
**Sent:** Thursday, November 05, 2009 12:54 PM  
**To:** VSIENV; Tom Furgason; Beverley A Everson; Melinda D Roth  
**Subject:** Chapter 3 Air Quality example

I received a copy of an air quality chapter 3 section for an FEIS in California from our Regional Office air quality coordinator -- Jack Triepke. Actually, it is the whole chapter 3. It might interesting to look at as an example of how to present the air quality information. I put it on webex in "group documents/team working/resources/air quality" and it is called "r5 example feis chapter 3".

Robert E Lefevre  
Forestry and Watershed Program Manager  
Coronado National Forest  
520-388-8373