



United States
Department of
Agriculture

Forest
Service

Southwestern
Region

517 Gold Avenue, SW
Albuquerque, NM 87102-0084
FAX (505) 842-3800
V/TTY (505) 842-3292

File Code: 1570-1

Date: October 30, 1997

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RE: Appeal of FEIS and ROD for the Proposed Carlota Copper Project
Tonto National Forest

Dear

This is the review decision on appeals of the Tonto National Forest Supervisor's Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) for the Proposed Carlota Copper Project.

On July 22, 1997, Tonto National Forest Supervisor, Charles R. Bazan, issued a ROD concerning the selection of the Alternative describing Carlota's proposed action as the agency preferred alternative with the following modifications:

1. Require additional backfill of the Eder South pit.
2. Require a combination of low-quality water, water supply and dewatering wells.
3. Require use of access road alternative A to the well field.

The proposal is within the Globe Ranger District of the Tonto National Forest.

Five timely appeals were received for administrative review. Appeals were received from the following parties:

Appellant	Appeal Number
Citizens for the Preservation of Powers Gulch and Pinto Creek (Citizens)	97-03-00- 0062 -A215
Grand Canyon Chapter of the Sierra Club; the Maricopa Audubon Society; and the Southwest Center for Biological Diversity (Sierra Club, et al.)	97-03-00- 0061 -A215
American Rivers	97-03-00- 0060 -A215
Mineral Policy Center	97-03-00- 0059 -A215
L. W. Hardy, Richard G. Amado, Lupe Gaona and the heirs of John V. Bustamante, Jr. (L. W. Hardy, et al.)	97-03-00- 0063 -A215



Appellants Mineral Policy Center (97-03-00-0059-A215); American Rivers (97-03-00-0060-A215); and Sierra Club, et al., (97-03-00-0061-A215) notices of appeal fail to meet the appeal content requirements of 36 CFR §215.14. They fail to recite the specific appeal points contained in the appeal filed by Citizens for the Preservation of Powers Gulch and Pinto Creek (97-03-00-0062-A215), which was their intent in adopting and incorporating Citizen's appeal by reference. Because those appellants have failed to provide sufficient written evidence and rationale why the Forest Supervisor's decision, to approve the Carlota Project, should be remanded or reversed, with regard to contentions raised by Citizens, their appeals could be dismissed. However, the Appeals Reviewing Officer has recommended that the "referenced" appeals be incorporated in a consolidated decision. Since these appellants (with the exception of Sierra Club, et al.) have not raised any unique issues in their appeals, and apparently have nothing to add to the appeal record in that regard, a copy of this consolidated decision will be sent to them as the official response to their appeals.

The fifth appeal, by L. W. Hardy, et al., is addressed in a separate decision.

A review of these appeals has been conducted pursuant to, and in accordance with, 36 CFR §215.17. The project record (Record) has been reviewed; the Record and the recommendations of the Appeal Reviewing Officer (copy enclosed), were relied on in coming to a decision on the disposition of these appeals. The review decision hereby incorporates the entire Record including the FEIS and ROD. In addition, I have been apprised of the unfortunate slope failure which occurred at the adjacent BHP Pinto Valley Mine on October, 22. This incident was not considered by the Forest Supervisor since it occurred after the decision on Carlota's proposal and therefore, it is not appropriate to consider it in this review. The Forest Supervisor will determine whether that event presents new information which warrants further analysis prior to final authorization for Carlota to proceed under an approved Plan of Operation.

As directed in 36 CFR §215.16, the Forest Supervisor offered to meet with all appellants for the purpose of seeking informal disposition of the appeals. Meetings were held on September 29, 1997, to discuss resolution of the appeals. Representatives of all appellants participated at the informal disposition meetings. However, there was no resolution of the appeals as a result of the meetings.

Interested party comments regarding the Forest Supervisor's decision and the appeals, were provided by Carlota Copper Company (through the law firm of Parcel, Mauro, Hultin & Spaanstra, P.C.); The Ecological, Environmental Experiment for Everyone, Inc. (EEEE) through Thomas W. Sonandres; and the White Mountain Apache Tribe, Raymond Kane, Director. All these comments were considered in the review decision [36 CFR §215.13(e)].

BACKGROUND

The decision appealed is to approve Carlota's Copper Mine Project along with three alternative components when all requirements for the approval of a Plan of Operations have been met. The Project Alternatives are briefly: to place additional backfill into the Eder South pit; to combine low-quality water with water supply wells and dewatering wells; and, to substitute access road Alternative A for the proposed north access road. Numerous detailed requirements which will be part of the approved Plan of Operations, are described in the ROD as well.

FINDINGS

The findings of the review are discussed in detail in the enclosed decision analysis. Each of the issues is responded to and closed with a conclusion.

SUMMARY

NEPA - The FEIS and ROD appropriately disclosed the anticipated effects on soil, air, water, vegetation, and wildlife, in a public arena.

NFMA - The project is consistent with all requirements of the Forest Plan.

CWA and CAA - The project is not in violation of either the Clean Water Act or the Clean Air Act.

Mitigation and Monitoring requirements are adequate and will be included in the Plan of Operation to insure appropriate protective measures are in place to protect the environment. Mitigation and monitoring requirement safeguards may be adjusted throughout the life of the project.

DECISION

All required monitoring and mitigation measures identified in the Record, and FEIS and ROD, will be incorporated in the approved Plan of Operation. The Forest Supervisor is hereby affirmed as to all issues.

This decision constitutes the final administrative determination of the Department of Agriculture [36 CFR §215.18(c)].

Sincerely,

/s/ Gilbert Vigil
GILBERT VIGIL
Appeal Deciding Officer
Acting Deputy Regional Forester, Resources

Enclosure

cc:
Interested Parties
L. W. Hardy, et al.

The issues are laid out as they were presented by the Citizens for the Preservation of Powers Gulch and Pinto Creek (Appeal No. 0062). Where the Sierra Club, et al.'s (Appeal No. 0061), issues were similar to the Citizens' they can be found within that format. The issue on Mitigation and Monitoring was unique to Sierra Club, et al., and is discussed lastly in this analysis.

ISSUE: NEPA disclosure and mitigation (Appeal No. 0062 and 0061)

General Contention: Appellant asserts that the Forest Service failed to adequately analyze the resource and expected impacts, postponed study and tests necessary prior to decision, and failed to provide adequate mitigation or set out mitigation in adequate detail. Appellant's resource-specific contentions and agency responses follow:

General Conclusion: Based upon the discussion for Issues A-I following, and under the major heading of NEPA, the Forest Supervisor adequately analyzed the affected environment and environmental consequences of the action. The Forest Supervisor appropriately identified mitigation measures necessary to protect the environment, and described monitoring measures to determine if environmental effects deviate from those predicted. The Forest Supervisor is affirmed on the issue of NEPA analysis and disclosure.

A. GEOLOGY (Appeal No. 0062)

Contentions:

1. The potential impacts from excavating four pits and creating three huge waste rock dumps have been only partially evaluated.
2. The Forest Service has refused to take the final steps to get a realistic and accurate assessment of the hazards.
3. Significant tests have not been performed and that additional testing is needed to disclose slope stability.
4. A number of evaluations and investigations should have been performed already and the results disclosed in the Final EIS and Record of Decision.
5. Without better knowing the hazards, the Forest Service is also unable to give reasonable detail for mitigation.
6. Uncertain mitigation is proposed as a substitute for the required evaluation of impacts.

Response: The FEIS and ROD address the question of slope stability in several places:

1. Mitigation measures are summarized in the ROD, Section 2.1, page 5 - Monitoring and Mitigation--Geology and Minerals.
2. In the ROD, Section 2.2, page 11 - Impact Differences of Agency Selected Alternative, the key impact differences with respect to slope stability are evaluated.

3. In the FEIS, Summary, Vol. 1, p. xiv - Geology and Minerals, it is stated that "Relatively low risks would exist for potential damage to facilities from major landslides, slope instability, pit wall instability, and seismicity."

4. In the FEIS, Summary, Vol. 1, p. xxiii - Agency Preferred Alternative, the key impact differences associated with the additional backfill of the Eder south pit for Geology and Minerals are described.

5. In the FEIS, Section 3.2.2.1, Vol. 2, p. 3-52 through 3-54, the FEIS provides a detailed analysis of slope stability concerns, particularly those raised by Inman (Record Vol. 16, Doc. 21). The section discusses the findings, conclusions and recommendations of the various studies conducted by Ellis and Baum of the USGS (Record Vol. 23, Doc. 12), Womack & Associates (Record Vol. 34, Doc. 8), Call and Nicholas, Inc. (Record Vol. 6, Doc. 1; Vol. 7, Doc. 1), and Knight Piesold (Record Vol. 5, Doc. 3, Appendix A).

6. In the FEIS Sec. 3.2.4.2, Vol. II, p. 3-58, mitigation measures are set forth related to slope stability- GM-3, GM-4, GM-5, and GM-6:

GM-3 adopts many of the recommendations for testing and monitoring suggested by Call and Nicholas, Inc. (Record Vol. 6, Doc. 1; Vol. 7, Doc. 1) and the USGS (Record Vol. 23, Doc. 12).

GM-4 calls for designing the road based on the results of a geotechnical investigation to determine existing slope conditions and appropriate grading design and erosion control measures.

GM-5 addresses site specific mitigation of potential slope stability problems associated with the Powers Gulch diversion and embankment, Eder mine rock disposal area, Eder side-hill leach pad alternative, and low-quality water pipeline associated with the low-quality water supply alternative.

GM-6 calls for the final design for the mine rock disposal areas to be approved by the Forest Service, with final approval dependant upon demonstration, through geotechnical analysis, that the mine rock disposal facility would be stable during both the operational and postclosure periods.

In addition to the final EIS and ROD, there are a number of documents included in the Record that have bearing on the issue of slope stability:

1. The Record Vol. 5, Doc. 3, Appendix A, is a July, 1992, geotechnical report prepared by Knight Piesold and Co. of the Carlota project area. The scope of work consisted of field examination of 16 test pits; bulk sampling; evaluation of 14 test borings, with depths ranging from 3.5 to 50 feet; and laboratory testing of soil and bedrock samples.

2. The Record Vol. 6, Doc. 1, is a December, 1992, report by Call and Nicholas, Inc., evaluating stability of mine rock dumps. The scope of work consisted of field reconnaissance, evaluation of site conditions, including topography and surface materials, review of the geotechnical characterization report by Knight Piesold and Company, and stability analysis of selected cross sections. The conclusions largely pertain to stability of rock dumps.

3. The Record Vol. 7, Doc. 1, is a March, 1993, report by Call and Nicholas, Inc., addressing pit slope design and stability. It superseded a December, 1991, preliminary report by the same authors. The scope of work consisted of evaluation of slope stability and involved extensive field work and laboratory analysis including cell mapping of geologic structures, mapping of rock quality in the Cactus breccia, geomechanical logging of diamond drilled core holes, orienting selected core holes to collect geologic structure data, and testing the point load strength of core samples. It also involved laboratory testing of core samples, evaluation of rock strength properties, and stability analysis. The authors also discuss the geometries that should be avoided in pit design to prevent shear failure along foliation structures in the Pinal Schist. They recommend monitoring of foliation characteristics as mining progresses.

4. The Record Vol. 16, Doc. 21, is an October, 1994, letter from Dennis Inman, USFS geologist, to the Tonto National Forest Supervisor, addressing the results of a slope stability analysis for the Carlota Mine. The scope of work consisted only of air photo interpretation and analysis, examination of cross sections of the Eder pits, and stability analysis using a computer program called Xstable.

5. The Record Vol. 23, Doc. 12, is an August, 1995, USGS Open-File Report (95-617) prepared by Baum and Ellis documenting a review of slope stability issues of the project area. The scope of work consisted of reviewing existing data, reports, maps and aerial photographs, and five days of field work consisting of examinations of rock outcroppings, surficial deposits and topography. The study focuses specifically on evaluation of the concerns raised by Inman (see item 4, above).

6. The Record Vol. 34, Doc. 8, is a geologic report, dated December 16, 1996, prepared by Womack and Associates, Inc., addressing slope stability in Powers Gulch. The scope of work consisted of studying surface and subsurface conditions in the area of concern identified by Inman (Record Vol. 16, Doc. 21). It involved a review of existing data, including reports prepared for Carlota, geological maps, published geological studies, air photos, logs of boreholes and test pits, and cross-sections.

In summary, the Record shows that a considerable amount of data collection and analysis has been done to address the issue of slope stability. At least six studies have been completed. All but one (Inman, Record Vol. 16, Doc. 21) involved field reconnaissance, including examination of rock outcrops and roadcuts. Several involved more detailed field work and laboratory testing including: analysis and sampling of test pits and trenches; bulk sampling; test boring; laboratory testing of soil, bedrock, and core samples; cell mapping of geologic structures; geotechnical logging of diamond drilled core holes; and evaluation of rock strength properties.

None of the studies, with the exception of Inman (Record Vol. 16, Doc. 21), identified slope stability concerns of a large magnitude. Several of the studies identified less serious slope stability problems and suggested additional test and mitigation measures to decrease the risk of slope failure. Some of the tests that appellants have suggested have already been completed by Womack and Associates, Inc. (Record Vol. 32, Doc. 8). Other recommendations for testing and mitigation are included in the mitigation measures set forth in the FEIS.

In addressing the slope stability concerns raised by Inman (Record Vol. 16, Doc. 21), the FEIS appropriately relies on the findings from the other studies, particularly on the studies by Baum and Ellis of the USGS (Record at Vol. 23, Doc. 12) and Womack and Associates, Inc. (Record Vol. 32, Doc. 8). Both of these studies were conducted after Inman's analysis, and both

specifically address the concerns raised in his letter. While these studies identify some more minor slope stability concerns, neither accepted Inman's hypotheses of major slope instability and failure.

Although there is obvious disagreement between Inman's findings and those of the other investigators, this kind of difference of opinion is not unusual for a large, complex proposal such as the Carlota Mine. The Responsible Official must review and weigh all of the available information when rendering a decision. This was clearly done and documented in the FEIS. The Responsible Official is required to use information based on sound science in arriving at a decision and he requested additional studies by Baum and Ellis of the USGS (Record Vol. 23, Doc. 12) and Womack and Associates, Inc., (Record Vol. 32, Doc. 8) for the specific purpose of reviewing the concerns raised by Inman. By following through in this manner, the Responsible Official took the necessary steps to get a realistic and accurate assessment of the risks from slope instability.

The body of information contained in these and the other studies cited above was comprehensive enough to allow the Responsible Official to evaluate the issue of slope stability and to provide a basis for an informed decision. The FEIS analyzes the findings of the various studies in appropriate detail, and discloses the impacts on slope stability from the various alternatives based on solid scientific analysis. The analysis is also sufficient to provide the basis for the detailed mitigation measures enumerated throughout the FEIS.

In regard to the suggested tests cited in the appeal, there is no dispute that additional testing is necessary. A considerable amount of testing has already been done, and more is called for in the FEIS and ROD. The question raised by the appeal relates to the **timing** of those tests, and whether they should have been done prior to release of the FEIS and ROD. Some of the other tests suggested in the appeal cannot realistically be done ahead of time, but must wait until mining commences. No matter how detailed an investigation is performed from the surface, it is not possible to get a complete picture of subsurface geology until the rocks are exposed by mining. For this reason, it is essential to continue gathering geologic data and evaluating the issue of slope stability as mining progresses. Mitigation measures requiring ongoing testing during mining are not a substitute for the required evaluation of impacts, but rather a means to monitor slope stability over time under dynamic conditions. Large-scale mining is a dynamic process, and a certain amount of flexibility must be maintained to respond to unforeseen circumstances. The Responsible Official has the authority, under Title 36 of the Code of Federal Regulations, part 228.4(e), Subpart A, to require modifications of the mining plan to deal with unforeseen circumstances. Modifications are subject to NEPA analysis and associated public review.

The critical factor from the standpoint of the FEIS and ROD, is whether or not these tests are necessary to disclose impacts and to provide an adequate level of information for the Responsible Official to make an informed decision. The Record already provides an adequate level of information for NEPA purposes. While the additional tests are important from an engineering and operational standpoint, the results would not change the decision, nor would they reveal any additional impacts that have not already been disclosed in the FEIS or that could not be ameliorated through simple design changes or mitigation. There is no reason why these additional tests should have to be completed prior to release of the FEIS and ROD.

Conclusion: The Forest Supervisor has adequately analyzed and documented potential impacts and risks from slope instability/failure and is affirmed on this issue.

B. HAZARDOUS MATERIALS (Appeal No. 0062)

Contentions: The effects of hazardous materials storage, spill containment, existing hazardous materials from previous mining operations, and management, have not been disclosed. The Spill Containment and Hazardous Materials Management (SCHMM) plan is incomplete. Description of storage methods are deceptive. Existing hazardous materials have not yet been evaluated. Impacts from hazardous waste materials have not been evaluated.

Response: The amount, origin, destination and disposal method for hazardous materials produced or used by the proposed mine have been disclosed (FEIS Section p. 3-327 to 3-334). The probable existence of, and the type and disposal method, for existing hazardous mining waste on the project area have been disclosed. The SCHMM plan, in conjunction with the groundwater and surface water monitoring plan (FEIS Section p. 3-119), contained sufficient detail for acceptance by Arizona Department of Environmental Quality (ADEQ) as meeting the requirements of the State of Arizona Aquifer Protection Permit (Record Vol. 35, Doc. 6A) and the 401 certification and 404 permits (Record Vol. 31, Doc. 9).

The SCHMM plan of February 14, 1996 (Record, Vol. 27, Doc. 5), together with the groundwater and surface water monitoring plan, meets the Forest Service's Best Management Practices contained in the Soil and Water Conservation Practices Handbook (FSH 2509.22).

Conclusion: The effects of hazardous materials have been analyzed and disclosed. The Forest Supervisor's decision is affirmed with regard to this issue.

C. NOISE (Appeal No. 0062)

Contention: Description of impacts, relevant guidelines, mitigation, and monitoring are inadequate. According to the acoustical review of James Barnes, the HUD standard is completely inappropriate. Why weren't more noise samples taken? Monitoring should be done more frequently.

Response: The impacts, relevant guidelines, mitigation and monitoring are disclosed in the FEIS (Section 3, p. 3-288 thru 3-313). James Barnes (the appellant's expert) in his letter of September 6, 1997, to the appellants, concurs with the analysis of sound levels in the FEIS (Appeal 0062, Exhibit 2, page 1). He does go on, however, to suggest that another standard for residential noise should be used. The purpose of the NEPA process is to analyze and disclose the impacts of a decision. The appellant's expert agrees that has been done. The FEIS used an applicable standard for noise and identified applicable monitoring and mitigation measures (FEIS Section 3, p. 3-319).

Baseline noise data, that was acceptable for analysis, was developed from relatively few samples. It is reasonable that monitoring data can also be collected in a short time.

Conclusion: The FEIS, with the appellant's expert's acknowledgement, adequately analyzes and discloses the effects of noise from this project. The Forest Supervisor's decision is affirmed with regard to this issue.

D. RECREATION (Appeal No. 0062)

Contention: Appellant contends that NEPA was violated because the description of the project's impacts on recreation is contradictory and inaccurate and postpones a plan for mitigation.

Discussion: Dispersed recreation opportunities are the only known recreational uses of the project area and nearby areas administered by the Forest Service, including the Superstition Wilderness. The Forest Supervisor has disclosed several anticipated impacts to recreation and discusses mitigation strategies (FEIS, Vol. 2, p. 281 thru 285). First, use of up to 1,428 acres of National Forest system lands for the Carlota mine operations will require withdrawal of those acres from public use for dispersed recreation. Second, access to some nearby areas used for dispersed recreation will either be denied or made more difficult when Carlota mine is in operation. Finally, some portion of the 1,428 acres is expected to be unavailable for dispersed recreation use even after the mining operations have ceased. The mitigation proposed to minimize the impacts upon recreational users of the National Forest includes public use of other open lands near the proposed mine site and alternate access to the Superstition Wilderness via Forest Service Road 287 (north of the mine). If future recreation demand justifies provision of further access, the FEIS does not foreclose the development of alternative routing for Forest Service Road 898 (west of the mine).

Conclusion: Description of the project's impacts on recreation is sufficient to allow analysis of the impacts. The mitigation strategy offered does have the potential to minimize the impacts of the proposed mine. The Forest Supervisor's decision with respect to the recreation issue is affirmed.

E. SOILS AND RECLAMATION

1. Soils and Reclamation (Appeal No. 0062)

Contention: The proposed seed mixes are unsatisfactory and possibly contrary to Executive Order 11987. Untested techniques will be used.

Response: Consideration of Executive Order 11987 is included in the FEIS (FEIS Section 3.4.2.1., p. 3-163) and native species are recommended for reclamation practices. Introduced species will only be used for specific purposes if suitable native species are not available. It is also clearly noted (FEIS Section 3.4.4.2., SR-13, p. 3-172) that the proposed seed mix is subject to substitutions based on evolving needs or new technology. The use of untested techniques will be minimized through the implementation of a revegetation testing program initiated during the construction and operation phase (FEIS Section 3.4.4.2., SR-10, p. 3-171 and 3-163).

Contention: Reliance on a reclamation plan to be developed in the future is not adequate. There is no plan for disclosure to and evaluation by the public.

Response: Although some of the site specific details of the reclamation plan are yet to be decided, the FEIS contains sufficient detail to allow evaluation by the public. A description of the proposed reclamation is contained in the FEIS Section 2.1.9., p. 2-49 thru 2-58. The environmental effects and mitigation measures associated with reclamation are also disclosed in the FEIS Section 3.4, p. 3-153 thru 3-173).

Contention: There are inadequacies in the reclamation plan dealing specifically with the post-mining grading plan, soil unit acreages and erosion protection.

Response: The alleged inadequacies in the reclamation plan are not supported by the Record. A description and map of the post-closure topography is in the FEIS Section 2.1.9., p. 2-55. The soil map unit descriptions and location mapping is also displayed in the FEIS Section 3.4., p. 3-146 thru 3-151. Additional mitigation above that already planned in Carlota's Restoration and Closure Plan is in the FEIS Section 3.4., p. 3-168 thru 3-173 and include extensive measures for erosion protection before, during and after operation.

Contention: There is no explanation why 490 acres will be left unreclaimed.

Response: A clear explanation for the technical infeasibility of reclaiming the 490 acres of steep backfill slopes and pitwalls is in the FEIS Section 3.4., p. 3-162. In addition, the Forest Supervisor amended this through the selection of an alternative that includes additional backfill to the Eder South pit which will result in even less than 490 acres left unreclaimed (ROD Section 2.1, p. 4 and Section 2.2, p. 11).

Contention: The Forest Service has failed to take feasible steps to protect surface resources and has failed to present any plan for reclamation.

Response: There are at least 10 documents in the Record that describe Carlota's plans for reclamation (Record Vol. 1, Doc. 1; Vol. 6, Doc. 4; Vol. 8, Doc. 2 and 16; Vol. 11, Doc. 8; Vol. 14, Doc. 4 and 23; Vol. 17, Doc. 2; Vol. 27, Doc. 5; and Vol. 32, Doc. 33). Much of this information is brought forward to the FEIS Section 2.1.9, p. 2-49 thru 2-58, Section 3.4.2, p. 3-153 thru 3-173 and Section 3.3.4, p. 3-142. Measures to protect surface resources are presented in the Summary of Monitoring and Mitigation Measures (FEIS Section 3.15, p. 3-335 thru 3-341).

Conclusion: The FEIS and supporting Record discuss in detail Carlota's Reclamation and Closure Plan which presents detailed information concerning how, where, and when reclamation will be performed. The reclamation plan was disclosed in sufficient detail to allow for public comment. In addition to that Plan, the Forest is requiring many additional mitigation measures designed to protect National Forest resources. The Forest Supervisor is affirmed on this issue.

2. **Inadequate Reclamation** (Appeal No. 0061)

Contention: Leach pad closure strategy fails to address the problem of heavy metals.

Response: The leach pad reclamation is described in the FEIS (FEIS Section 3.2.3, p. 2-57). Appropriate measures will be taken to prevent infiltration and subsequent leaching. The closure plan includes the incorporation of new technology as it develops and the flexibility to augment the current plan. Performance monitoring is planned to assure that no leakage is occurring (FEIS Section 3.2.3, p. 2-57).

Contention: The reclamation plan includes a destructive exotic grass.

Response: The FEIS describes the proposed seed mix and the flexibility it contains (FEIS Section 3.4.4, p. 3-172). Seed mixes are subject to substitutions and modifications as appropriate

due to evolving project needs and new technology. Non-natives proposed in the mix may be replaced with desirable species that have reasonable chances of establishment.

Conclusion: The two specific deficiencies alleged by the appellant are not supported in the project Record. The Forest Supervisor is affirmed on this issue.

F. **SOCIOECONOMICS** (Appeal No. 0062)

Contention: The Forest Service has inadequately disclosed socioeconomic information and the effects of the project on population and local resources.

Response: All data have been double checked for accuracy and found to be within range. The use of 1995 Census data instead of 1990 data would not have made a significant difference in the population analysis. Although there was an increase in the local population of approximately 1200 people, the increase was found to be from the annexation of land and not from the in-migration of new residents.

As for other resources in the study area, the socioeconomic information and impacts projected for all communities associated with the project are adequate. Key socioeconomic facets of the communities were evaluated in detail. The negative and positive projections are explained in detail and found in Volume II Section 3.7 in the Carlota Mines Project's FEIS. Many of these projections may not be realized due to the fact of the many unknowns concerning construction, construction contacts, etc. still exist.

Contention: The Forest Service has improperly or inadequately included Native American representation in their analysis of socioeconomic impacts.

Response: Information stated in the FEIS was retrieved from Government and Tribal sources and includes adequate representation of Native Americans. Information and data were retrieved from local Native American Tribal Governments as well as the State of Arizona. Native Americans that reside in the study area (FEIS Vol. II, p. 3-241) were included in the analysis. All sources from which data was captured are from respected institutions who collect and maintain records on local Native Americans. The information provided and stated in the FEIS is adequate, accurate and meets the required NEPA standards. Communities within the White Mountain Apache Reservation are located outside of this study area and, therefore, were not specifically addressed in the socioeconomic impact analysis.

Contention: The Forest Service failed to update the 1993 socioeconomic information and has failed to comply with the NEPA requirements for carrying out EO 12898.

Response: There is no significant additional socioeconomic information since the 1993 data (which were used in the FEIS analysis) that would make a difference in the decision or decision making process for the Carlota Mines Project.

When discussing the financial issues of the projects, it is expected that the Carlota Mine Project will produce increased income and activities in the designated community sites. These activities will contribute to increases in tax revenue benefits, the service industry and others. Public school enrollment capacity is available, and other resources are expected to flourish due to increased revenue to the communities. With the increase in direct and indirect revenue to the towns there

is expectation that the towns will become more economically viable and stable. The lack of available housing seems to be of concern in the socioeconomic arena but supply and demand as well as the income and mobility of those working on the project will dictate the results.

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Population and Low-Income Population" has been reviewed. There is a detailed discussion on Environmental Justice presented in the FEIS, Volume II, Section 3.7.1.7 p. 3-251 thru 3-254). The Executive Order 12898 requires under NEPA that potentially affected parties are to be identified and notified of the proposed action under way. This has been done and the Forest Service is in compliance with the EO 12898. Carlota has agreed to provide employment information, recruitment and training opportunities to Native Americans in the project area (See FEIS, Vol. II, SE-1, p. 3-269). Mining is the highest paying industry in the area. We anticipate that Native Americans will be provided an opportunity to work on the mining project just as any other potential employees (See FEIS, Vol. II, Table 3-68 p. 3-245). Since the San Carlos Reservation has existing training with the Arizona Department of Economic Security; employment opportunities do presently exist for local Native Americans.

Contention: Appellants contend that the Forest Service excluded the White Mountain Apaches from the process which considers protection of cultural resources.

Response: The FEIS, Section 2.6.1.4 at p. 3-227, describes consultation with tribal governments and indicates that the White Mountain Apache Tribe was included in consultation and in field visits to the project area. The White Mountain Apache Tribe and other tribes were also provided an opportunity to comment on cultural resource reports and plans. The Record at Vol. 41, Docs. 23 and 24; Vol. 42, Doc. 33; Vol. 43, Doc. 7; Vol. 44 Docs. 17, 34 and 49; and Vol. 45 Docs. 14 and 26; supports the statements in the FEIS regarding inclusion of the White Mountain Apache Tribe in the tribal consultation process for cultural resources. A field trip to a cultural site which included representatives of SWCA, Inc., the Forest Service and the tribe is cited in the Record Vol. 42, Doc. 59. In addition, the White Mountain Apache Tribe participated in the ethnographic study conducted by SWCA Environmental consultants (Record Vol. 47, Doc. 1).

Conclusion: The appellants' assertion that the Forest Service failed to update 1993 socioeconomic data was proven unfounded due to the fact that there was no significant data changes that would alter the results of the analysis.

There was no evidence provided by the appellant to indicate that the information retrieved from the governmental and tribal representatives was improper or inadequate. The Forest Service did comply with all NEPA requirements under the EO 12898 by identifying and notifying all affected parties of the proposed action. Any further research or analysis is beyond the scope of this document.

The information provided by the Tribal and local governmental representatives is sufficient to meet the requirements of NEPA. The FEIS and the Record do not support the appellant's assertion that the White Mountain Apache were excluded from participation in the process which considers the protection of cultural resources. The Responsible Official is affirmed on this issue.

G. TRANSPORTATION (Appeal No. 0062)

Contention: The FEIS fails to adequately address safety concerns on Highway 60 including truck accidents and traffic.

Response: The Forest Supervisor has disclosed the traffic that will be generated as a result of this proposed mine in the FEIS. Traffic, accidents and the probability of hazardous materials spills were analyzed and disclosed in the FEIS Section 3.5, pages 3-321 thru 3-326.

Contentions:

1. "The Resource Access Travel Management Plan (1985) requires (emphasis added) that this road remain open for limited passage of traffic" (Forest Road 898). "This section of road is not identified for closure in the Resource Access Travel Management Plan which preceded Carlota". "The use of Forest Trail 203 is supposedly consistent with the Resource Access Travel Management Plan. How can that be ...?"

2. "Planned mitigation is inadequate"

Response: This NEPA decision modifies the Resource Access Travel Management Plan of 1985 relating to this area. Resource Access Travel Management Plans were intended to be modified through the NEPA process. The effects of closing roads, changing trails to roads, constructing new roads, and changing use of roads are disclosed in the FEIS Section 3.5, pages 3-321 thru 3-326. Mitigation measures for roads are listed in Section 3.4, page 3-150 and in Section 3.13.4, page 3-326 of the FEIS.

Conclusion: The FEIS discloses the effects of traffic and accidents. The Forest Supervisor referred to the Resource Access Travel Management Plan of 1985 and disclosed how that plan will be modified by this decision. The Forest Supervisor's decision is affirmed with regard to these issues.

H. WATER (Appeal No. 0062)

Contention: The FEIS failed to adequately measure present water resources. In particular, appellants cite failure to survey for jurisdictional wetlands in Pinto Creek in the well field area and no evaluation of the Pinto Creek baseflow below Horrel Creek.

Response: The survey for jurisdictional waters and wetlands was only done in the planned disturbance area because of the need to identify the areas that fall under the permitting requirements of Section 404 of the Clean Water Act (dredge and fill). Since no dredging or filling was planned in this downstream area of Pinto Creek, no such regulatory survey was needed. The Record shows that springs, seeps and riparian habitat downstream in Pinto Creek were identified and considered (FEIS Section 3.3.1, p. 3-73). In their water quality certification of the 404 permit, ADEQ looked at indirect effects to water quality downstream of the dredge/fill operations and stated that no negative impacts were expected to Pinto Creek and Roosevelt Lake (Record Vol. 31, Doc. 9). As far as the baseflow assessment concerns, the FEIS Section 3.10.2, p. 3-290 acknowledges that the major source of perennial baseflow appears to be near-surface groundwater produced from alluvial deposits. To prevent this alluvial flow from draining into the pit instead of contributing to the baseflow of Pinto Creek, an alluvial cutoff wall is required by the Corp of Engineers as part of the Wetlands/Waters of the US Compensatory Mitigation Plan (Record Vol. 37, Doc. 1).

Contention: Inadequate testing of the well field resulted in erroneous conclusions on drawdown effects to Pinto Creek.

Response: The Record reflects that the Forest evaluated potential impacts to surface water flows and shallow alluvial groundwater from the well field development using data from several streamflow stations and shallow wells which were monitored before and after pump tests (FEIS Section 3.3.2, p. 3-113 thru 3-116). A hydraulic connection between bedrock and alluvium groundwater and surface flows was identified. The FEIS described the potential impact to the downstream section of Pinto Creek of appellant's concern (FEIS Section 3.10.2, p. 3-290). In addition, the Forest is requiring Carlota to comply with a comprehensive groundwater and surface water monitoring program and a well field mitigation program (FEIS Section 3.3.4, p. 3-134 thru 3-142; ROD Section 2.1, p. 5; FEIS Appendix E).

Contention: An inappropriate model was used to predict drawdown, and monitoring is used as a substitute for lack of analysis.

Response: The model used to determine groundwater level drawdown is thoroughly described in the Water Resources Technical Report (Record Vol. 13, Doc. 1). MODFLOW is a USGS model selected because it is widely used and accommodates the major hydrologic features important in this type of analysis. It was felt to be appropriate for the scale for which it is intended to be used. Disclosure is made of the model's limitations and the lack of site specific information on the size, location, and continuity of bedrock fractures is also admitted. This lack of detailed information would limit the use of an even more sophisticated model such as the one the appellant suggests, and is not necessary for reasonable prediction of effects. The model used was sufficient to determine potential impacts. In fact, some potential negative effects were predicted which provided the basis for the requirement of the well field mitigation program (FEIS Section 3.3.4, p. 3-134 thru 3-142, ROD Section 2.1, p. 5, FEIS Appendix E). The analysis was done and effects were predicted. The monitoring is not being used as a substitute

for appropriate analysis, but rather to determine if environmental effects deviate from those predicted.

Contention: A low quality water supply alternative was required by the Forest Supervisor, but none exists.

Response: The availability of low quality water from BHP's Cottonwood Storage Pond was confirmed by Carlota in a letter responding to a Forest Service information request September 14, 1995 (Record Vol. 23, Doc. 21). Carlota has negotiated an agreement in principle to purchase surplus water from BHP Copper Company's Cottonwood Storage Pond (Record Vol. 32, Doc. 24). Carlota has also secured an option to purchase water from the Gibson Mine (Carlota Interested Party comment letter, 9/30/97).

Contention: Information is not available to determine if water required in the well field mitigation plan will meet water quality standards.

Response: Existing water quality data for potentially affected stream reaches and the well field alluvium are presented in the FEIS (FEIS, Appendix C). The FEIS also describes possible scenarios for blending well field waters before discharge in order to meet temperature or chemical standards. In any event, it is clearly stated that any water discharged to the stream through the well field mitigation program will be required to meet Arizona surface water standards (FEIS Section 3.3.4, p. 3-138 thru 139).

Contention: There are no clear provisions established for erosion and sediment control.

Response: Although there was no evidence offered to support this allegation in the appeal, it will be addressed here. There are at least 10 documents in the Record that describe Carlota's plans for reclamation (Record Vol. 1, Doc. 1; Vol. 6, Doc. 4; Vol. 8, Doc. 2 and 16; Vol. 11, Doc. 8; Vol. 14, Doc. 4 and 23; Vol. 17, Doc. 2; Vol. 27, Doc. 5; Vol. 32, Doc. 33). Much of this information is brought forward to the FEIS Section 2.1.9, p. 2-49 thru 2-58, Section 3.4.2, p. 3-153 thru 3-173 and Section 3.3.4, p. 3-142). Measures to protect surface resources are evidenced in the Summary of Monitoring and Mitigation Measures (FEIS Section 3.15, p. 3-335 thru 3-341). Additional mitigation above that already planned in Carlota's Restoration and Closure Plan is included in the FEIS Section 3.4.4, p. 3-168 thru 3-173 and include extensive measures for erosion protection before, during and after operation.

Contention: There is no plan for guarding against acid mine drainage from the waste rock piles.

Response: The Record provides evidence that several studies were done to predict the hazard for acid generation of both the spent ore and waste rock (Record Vol. 8, Doc. 14 and Vol. 10, Doc. 7). The results of these studies conclude that the rock types within the project area are non-acid-generating (FEIS Section 3.3.2, p. 3-125). Regardless of this prediction, the Forest is requiring Carlota to monitor and test waste rock material during operations and implement a materials handling plan if sampling indicates acid producing potential (ROD Section 2.1, p. 6).

Contention: The pit lake was not adequately evaluated for outflow that would degrade groundwater.

Response: Although no evidence was offered in the appeal to support appellant's claim, a response will be provided. The hydrogeologic conditions of the planned pit area were assessed

by a professional registered geologist and hydrologist. Some of the data used for their analysis included lithologic logs from exploration boreholes, geologic and hydrologic data from 12 groundwater monitoring wells, and results of reconnaissance-level geologic mapping. The hydraulic conductivity of adjacent rock units was considered. Their characterization included a description of the direction of groundwater movement in the pit area (Record Vol. 4, Doc. 1). The elevation of the lake surface is expected to be considerably lower than the surrounding groundwater levels, forcing the groundwater gradient in all directions towards the pit, thus effectively prohibiting groundwater outflow (and groundwater degradation) from the lake (FEIS Section 3.3.2, p. 3-111).

Conclusion: The inadequacies of effects analysis, mitigation and monitoring in connection with groundwater and surface water cited by the appellant are unfounded. The FEIS appropriately analyzed and disclosed possible effects to water resources. Mitigation measures necessary to protect the environment were identified. Finally, monitoring was prescribed to validate predicted environmental effects and provide early and ample warning of exceedance of environmental thresholds. The Forest Supervisor is affirmed on this issue.

Pit Lake Water Quality Assessment (Appeal No. 0061)

Contention: The pit lake will contain degraded water which will contaminate groundwater.

Response: Concerns over water quality in the pit lake led to the use of a model designed to simulate the effect of processes such as precipitation and adsorption on dissolved constituents and predict water quality (FEIS Section 3.3.2, p. 3-112). The results of this modeling (FEIS Appendix C, p. C-17) show a pH within the water quality standard range and levels of metals that are well below surface and aquifer standards. Three nonmetallic constituents may exceed the Federal minimum contaminant level for drinking water, but human consumption of this water is not planned or anticipated. In any event, the potential for contamination of the groundwater is thoroughly explained in the FEIS. The elevation of the lake surface is expected to be considerably lower than the surrounding groundwater levels, forcing the groundwater gradient in all directions towards the pit, thus effectively prohibiting groundwater outflow from the lake (FEIS Section 3.3.2, p. 3-111). Carlota applied for and received a State of Arizona Aquifer Protection Permit. In granting the permit, the State determined that the facility would not cause or contribute to a violation of Aquifer Water Quality Standards or further degrade the aquifer. Eleven point-of-compliance groundwater monitoring wells are specified in the permit as well as a post-closure audit of the lake, including a re-evaluation of the model used to determine water chemistry (Record Vol. 35, Doc. 6A).

Contention: Geology was not considered in determining the groundwater gradients.

Response: The hydrogeologic conditions of the planned pit area were assessed by a professional registered geologist and hydrologist. Some of the data used for their analysis included lithologic logs from exploration boreholes, geologic and hydrologic data from 12 groundwater monitoring wells, and results of reconnaissance-level geologic mapping. The hydraulic conductivity of adjacent rock units was considered. Their characterization included a description of the direction of groundwater movement in the pit area (Record Vol. 4, Doc. 1).

Contention: The model used to predict pit lake water chemistry has never been validated in a similar situation.

Response: The model used to predict pit lake water chemistry is the EPA model MINTEQA2. It uses input values that consider groundwater inflow, precipitation, evaporation, groundwater quality as determined from monitoring wells, precipitation water quality, catchment area, and geochemistry of backfill and pit wall rock (Record Vol. 14, Doc. 5a). These are all reasonable input parameters to predict lake water chemistry. In their response to public comments on Carlota's Aquifer Protection Permit, ADEQ acknowledges acceptance of the MINTEQA2 model and its use to determine pit water chemistry (Record Vol. 32, Doc. 3A) In addition, ADEQ is requiring a post-closure audit of the pit lake, including a re-evaluation of the MINTEQA2 model.

Contention: The pit lake constitutes a new permanent feature which, along with its biological communities and habitat characteristics, is not described in adequate detail.

Response: The FEIS acknowledges and describes the pit lake and effects on biological communities and habitat in several places. The biological and habitat value of the new lake to bird and mobile terrestrial wildlife is discussed, as well as the effects of possible elevated levels of fluoride and sulfate on these species (FEIS Section 3.5.2, p. 3-207). The FEIS also discusses the affect of the lake on aquatic macroinvertebrates, the possibility of unauthorized stocking of non-native fish and the restrictions on their escape into Pinto Creek (FEIS Section 3.5.2, p. 3-211).

Contention: No National Pollutant Discharge Elimination System (NPDES) permit for the lake groundwater discharge point is discussed.

Response: An NPDES permit for the groundwater source was not described since, even if one were to assume there would be a discharge, NPDES permits are for surface water discharges. A groundwater discharge would be covered by a State Aquifer Protection Permit and the Record indicates the State is not requiring any such permit for the Carlota/Cactus lake (Record Vol. 35, Doc. 6a).

Contention: There was no pit lake reclamation plan available for public review and comment.

Response: The FEIS describes the post-closure plans for the pit (FEIS Section 2.1.3, p. 2-18 and Section 2.1.9, P. 2-51) and graphically portrays the final pit configuration. The post-closure topography is also displayed (FEIS Section 2.1.9, p. 2-55)

Conclusion: Appellants concerns over inadequate assessment of the pit lake are not supported by the Record. The assessment was accepted as technically sufficient by the State and was the basis for issuance of an Aquifer Protection Permit. The Forest Supervisor is affirmed on this issue.

I. WILDERNESS, AND WILD AND SCENIC RIVERS (Appeal No. 0062)**Wilderness**Contentions:

1. Forest Order 12-90 specifically prohibits motor vehicles on Haunted Canyon Trail 203. Allowing Carlota to use the trail for vehicle access to the well field is a violation of the Forest Service's own order.

2. There is a conflict with the FEIS statement, "increased use of the Superstition Wilderness will not adversely influence the wilderness experience" and the implications in the Superstition Wilderness Implementation Plan that increased use will harm the Wilderness.

3. Noise impacts are acknowledged but inadequately described and measured.

Response: Forest Supervisor Order 12-90-R, supersedes Order 12-90, which was revoked on August 22, 1994. Order 12-90-R prohibits using any type of motor vehicle on the Haunted Canyon trail except for persons with written authorization from a Forest Officer.

The Superstition Wilderness Implementation Plan describes the current conditions of the Wilderness and identifies management actions. One of the situations the Plan recognizes is the impact to the wilderness caused by intrusions and increased public use. The FEIS anticipates that there will be an increase in use on the less-used east side of the wilderness, (FEIS Section 3.10.2, p. 3-288), but that the increase would not adversely influence the wilderness experience (FEIS Section 3.10.2, p. 3-290). However, if the limits of acceptable change (LAC) guidelines established in the Implementation Plan are exceeded, corrective prescriptions would be developed to reduce or stop the changes (FEIS Appendix G, p. G-112).

Please refer to Item C. "Noise" for a discussion of analysis of noise.

Conclusion: Forest Supervisor Order 12-90-R allows for persons with authorization to use motorized vehicles on Haunted Canyon Trail 203. The Forest Supervisor's decision is affirmed with respect to this issue.

Description of the project's impact on Wilderness is sufficient. If increased use to the east side of the Wilderness causes an impact outside the limits of acceptable change, mitigation measures identified in the Superstition Wilderness Implementation Plan as "Implementation Actions" will be employed to reduce those impacts. The Forest Supervisor's decision is affirmed with respect to the issue of increased use.

Public Law 98-406 states, "The Congress does not intend that designation of wilderness areas in the State of Arizona lead to the creation of protective perimeters or buffer zones around each wilderness area. The fact that nonwilderness activities or uses can be seen or heard from areas within a wilderness shall not, of itself, preclude such activities or uses up to the boundary of the wilderness area." The Forest Supervisor's decision is affirmed with respect to the issue of noise.

Wild and Scenic Rivers

Contention: No evaluation has been done of the impacts the project will have on eligibility for portions of Pinto Creek for designation as a Wild and Scenic River.

Response: The FEIS discloses possible impacts to eligibility caused by either a potential reduction in surface water flow or a change in water quality caused by a catastrophic event. Any potential impact caused by a reduction in surface flow will be mitigated and corrected as identified in the mitigation strategy (FEIS Section 3.3.4, p. 3-134 thru 3-143). Potential impacts caused by a catastrophic event have been disclosed and categorized as not being irreversible or irretrievable and are of short term duration (FEIS Section 3.17, p. 3-346). In addition, if there was a breach of the leach pond, actions have been identified to mitigate the impacts (FEIS Section 3.15, p. 3-336 thru 3-337).

Conclusion: Consideration and description of the project's potential impact on Wild and Scenic river eligibility is sufficient. Monitoring and mitigation measures, integral and required parts of the Forest Supervisor's decision, provide mitigation to offset potential flow reductions in Pinto Creek. The Forest Supervisor's decision is affirmed with respect to the issue of Wild/Scenic River eligibility of Pinto Creek.

ISSUE: Bonding (Appeal No. 0062)

Contention: The FS should have fully discussed all aspects of the bond with regard to resources, impacts and mitigation.

Response: Agency authority for requiring a bond for mining operations which propose significant surface disturbance, is found at 36 CFR §228.13 (**not at** 36 CFR §228.51(a), which regulations apply to the discretionary contract or permit authorization for disposal of salable mineral materials). In section 228.13 (b), regulations state "In determining the amount of the bond, consideration will be given to the estimated cost of stabilizing, rehabilitating, and reclaiming the area of operations (emphasis added)." And, in section 228.13 (c), the regulations state: "In the event that an approved plan of operations is modified in accordance with section 228.4 (d) and (e), the authorized officer will review the initial bond for adequacy and, if necessary, will adjust the bond to conform to the operations plan as modified. (emphasis added)."

Carlota Copper Company submitted their Closure Plan in support of an application for an ADEQ Aquifer Protection Permit (Record Vol. 11, Doc. 8). In Section 5, beginning on p. 11, they discuss closure and post-closure costs, which are prefaced as being estimates at that early stage in the project's plan development. Carlota then submitted their "Responses to Engineering and Hydrologic Comments" (Record Vol. 23, Doc. 16) to the Tonto NF. On p. 27-28, Table 3, titled "Carlota Reclamation Cost Estimates", the company represents more recent and detailed estimates of reclamation costs.

The FEIS points out in several sections that the final bond amount must be "... sufficient enough to cover the full cost of reclamation for all facets and components of the proposed project (FEIS section 2.1.9.2, p. 2-58)"; that "Bonding estimates proposed by Carlota ... reflect general reclamation considerations in response to FS regulations (36 CFR §228.13)"; and that "Estimates were based on costs that Carlota has calculated for both internal (company) and subcontracting. They do not cover all the activities detailed in the (final) Plan of Operation that are necessary to

adequately close and reclaim the site in accordance with state and federal regulations." For these reasons, the Forest has proposed comprehensive mitigation to ensure that the amount of the reclamation bond is adequate. In fact, the FEIS, Section 3.4.4.2, SR-8 (Soils and Reclamation), p. 3-171, explains that "In order to estimate the amount of the reclamation bond necessary to comply with all the reclamation measures on National Forest System land, specific measures need to be defined and associated costs determined in detail." Any existing Carlota bond estimate will be verified or recalculated by the Forest Service prior to approval of a final Plan of Operation and authorization for construction to proceed. Annual reclamation meetings will be held with the company to discuss any changes in reclamation scheduling or methods and to review the bond for adequacy. This will continue throughout the life of the project.

Development of a final, approved Plan of Operation and fully-formulated and adopted mitigation measures, is not required by NEPA. In fact, the plan and mitigation measures should remain somewhat flexible to adapt for future problems should they occur. NEPA requires only that mitigation be discussed in sufficient detail to ensure that the environmental consequences of the project have been evaluated. For this reason, the Responsible Official has chosen not to attempt to calculate a bond amount or verify Carlota's estimates to date. **This can only be done after all mitigation and performance requirements have been incorporated into a final Plan of Operation.**

Conclusion: The FEIS and ROD adequately discussed all aspects of the bond with regard to resources, impacts and mitigation, within the requirements and intent of NEPA and other applicable laws, regulations and policies. The Forest Supervisor is affirmed on this issue.

ISSUE: National Forest Management Act (NFMA) (Appeal No. 0062)

Contention: Appellant asserts that the proposed land use violates the Tonto Forest Plan. Specifically, appellant argues that forest-wide and management area standards and guidelines have been ignored and that Forest Plan direction for Management Area 2F should be amended to provide for mining. Appellant also suggests that the Forest consider another management area to emphasize the environmental values set for Management Area 2F.

Response: Appellant cites Tonto Forest Plan direction for timber sale preparation/administration, rights-of-way grants, and road construction which states, "Avoid channel changes or disturbance of stream channels and minimize impacts to riparian vegetation" (Forest Plan p. 43). Appellant also references Management Area 2F direction which states that the primary management emphasis is on wildlife habitat improvement, water quality maintenance, livestock forage production, and dispersed recreation. Watersheds will be managed so as to improve them to a satisfactory or better condition. Improve and manage the included riparian areas to benefit riparian dependent species (Forest Plan p.85).

Forest-wide management direction in the Tonto Forest Plan includes the statement, "Support environmentally sound energy and minerals development" (Forest Plan p. 22). The Tonto Forest Plan minerals direction on page 22 references the Regional Guide for the Southwestern Region for specific standards and guidelines in addition to those already referenced above. The Regional Guide states that the effect of the major mineral laws applicable to the National Forest System is that the Forest Service must consider that all land is available for minerals search and development, unless it is withdrawn from operation of the mineral laws (Regional Guide p. A-1).

The Regional Guide directs the forests to, "Set operational standards for mineral activity that provide appropriate protection to surface uses and resources without materially interfering with mineral resource activities" (Regional Guide p. A-5). Page 3-24 of the Regional Guide references regulations at 36 CFR §228 which apply to locatable mineral operations conducted under the authority of the General Mining Law, and characterizes the Forest Service role in minerals development as follows:

"These regulations seek to minimize surface resource disturbance without infringing on rights granted by law."

"The plan of operation is required to comply with applicable Federal and State provisions for maintenance of air quality, water quality, and solid waste disposal. Scenic values, fisheries, and wildlife habitat are to be given such protection as is practicable."

"Approval indicates that the operation, conducted according to the plan, will minimize surface resource disturbance."

"A plan that describes an operation conducted in a reasonable and necessary manner is entitled to approval, even though surface resource damage may result. Approval of a plan does not signify consent to operate. Consent is granted by law."

The above citations set the context in which the Tonto Forest Plan standards and guidelines were applied to the Carlota Copper Plan of Operations. Forest Plan direction for wildlife habitat, water quality, recreation, watershed, and riparian areas were applied through mitigation measures to the extent that they are practicable and feasible. 36 CFR §228.5 requires that the responsible official consider the economics of the operation in determining the reasonableness of the requirements for surface protection.

Examples of mitigation measures implementing Tonto Forest Plan direction include the following:

Wildlife habitat - Mitigation measure WR-6 provides for improving, supplementing, or replacing existing springs for wildlife watering, if effected by dewatering activities at the mine (FEIS Section 3.3.4, p. 3-139).

Riparian areas - Mitigation measure WR-3 provides for maintenance of stream flows in Haunted Canyon and Pinto Creek to maintain aquatic and riparian resources (FEIS Section 3.3.4.1, p. 3-137).

Watershed - Mitigation measures SR-2 and SR-3 stipulate the stockpiling and eventual replacement of topsoil and subsequent revegetation to protect the watershed (FEIS Section 3.4.4, p. 3-168).

Recreation - Mitigation measure T-3 involves Carlota's participation including maintenance and reclamation of Forest Trail 203 for trail users (FEIS Section 3.4.4, p. 3-326).

Water quality maintenance - Mitigation measures in the FEIS at Section 3.3.4 for water resources and at Section 3.4.4 for soils and reclamation, employ Best Management

Practices to provide for maintenance of water quality (FEIS Section 3.3.4, p. 3-136 thru 3-142 and Section 3.4.4, p. 3-168 thru 3-173).

The above requirements demonstrate the application of Forest Plan standards and guidelines cited by appellant.

Appellant suggests that the Forest consider another management area to emphasize the environmental values set for Management Area 2F. While this suggestion may or may not have merit, it is outside the scope of the decision. The Forest Supervisor has the discretion to consider changing management emphasis in other management areas, in a future analysis for Forest Plan amendment or plan revision.

Conclusion: The Forest Supervisor appropriately applied Forest Plan standards and guidelines for the protection of surface resources. The Forest Supervisor correctly found the project to be consistent with the Tonto Forest Plan, and documented his finding in the ROD Section 6.0, p. 17-18. The Forest Supervisor is affirmed on this issue.

ISSUE: Alternative Analysis (Appeal Nos. 0062 & 0061)

Contention: The requirement to use low quality water from existing sources in the selected alternative is speculative and cannot be met.

Response: The availability of low quality water from BHP Copper Company's Cottonwood Storage Pond was confirmed by Carlota in a letter responding to a Forest Service information request September 14, 1995 (Record Vol. 23, Doc. 21). Carlota has negotiated an agreement in principle to purchase surplus water from BHP Copper Company's Cottonwood Storage Pond (Record Vol. 32, Doc. 24). Carlota has also secured an option to purchase water from the Gibson Mine (Carlota Interested Party comment letter, September 30, 1997).

Contention: The use of Trail #203 for vehicular access to the well field violates Forest Order 12-90.

Response: Tonto National Forest Order 12-90-R, dated August 22, 1994, includes the following exemption which enables Carlota personnel to access the well field via Trail #203:

PURSUANT TO 36 CFR §261.50(e) the following persons are exempt from this order:
(1) Persons with written authorization by a forest Officer, which specifically authorizes the prohibited act or omission.

Contention: The alternative requiring additional back-filling of the Eder South Pit is better defined as additional mitigation rather than as an alternative.

Response: NEPA requires the Responsible Official to examine reasonable alternatives [40 CFR §1502.14(a)]. Both the proposed action and the additional back-fill alternative are reasonable, as evidenced by the effects disclosure in the FEIS. Including the additional back-fill alternative as additional mitigation for the proposed action would have eliminated an alternative from consideration. Appellants argument is moot since both were considered in the analysis and disclosed in the FEIS.

Contention: The Forest Service has failed to show why the alternative, requiring additional back-filling of the Carlota/Cactus Pit, is not feasible.

Response: The Forest Service considered economic estimates from Independent Mining Consultants, Inc., provided by Carlota, regarding the cost of additional back-filling in terms of dollars and human resources. Costs were estimated at \$50 to \$52 million, requiring 190 people for 3 to 4 years (FEIS Section 3.4.2, p. 3-166). The additional back-fill cost represents an increase of 40% over the total capital cost for the entire project life. Carlota concluded this additional back-filling would be uneconomical (Record Vol. 14, Doc. 22).

Contention: The Forest Service should have considered an alternative which called for complete excavation of the Eder Pit and only allowed excavation of the first phase of the Carlota/Cactus Pit.

Response: An alternative involving excavation of the two Eder Pits and only Phase One of the Carlota/Cactus Pit was considered in the Clean Water Act Section 404(b)(1) Alternative Analysis. This analysis is found in Appendix A of the FEIS. The analysis found that this (Small Project) alternative was not economically feasible (FEIS Appendix A, p. A-16-17).

Contention: No information exists leading Cambior (Carlota's parent company) to the conclusion that the Carlota project is the least damaging alternative, under the Clean Water Act, in light of Cambior's criteria, or of what its search consisted of, in the years leading up to August 1991.

Response: Cambior's motives for acquiring Westmont in 1991 is outside the scope of this analysis. While Cambior owns the stock of Carlota Copper Company, Cambior is not the owner nor operator of the Carlota Copper Project. Carlota Copper Company describes the criteria used to consider alternative properties with copper deposits in the Clean Water Act Section 404(b)(1) Alternatives Analysis (FEIS Appendix A). Based upon preliminary meetings between Carlota and COE and EPA, the Alternatives Analysis focuses on: 1) other oxide projects in Arizona; 2) larger scale projects at the Carlota site; 3) smaller scale projects at the Carlota site; and 4) alternative locations to the proposed project facilities at the Carlota site. There is no basis for COE to consider alternatives available to Cambior rather than the alternatives available to Carlota.

Contention: The Forest Service discarded the alternative to require use of existing, off-site facilities for ore processing, without basis or investigation.

Response: The alternative of off-site ore processing at an existing facility at either Cyprus Copper Company's Miami operation or BHP Copper Company's Pinto Valley Mine, was considered and eliminated from detailed study, as appellant points out. The basis for elimination, with which appellant argues is documented in the FEIS Section 2.2.2, p. 2-75 thru 2-76.

NEPA requires consideration of reasonable alternatives. Those which are remote or speculative are not reasonable and may be eliminated from detailed study. All Indian Pueblo Council v. United States, 975 F.2d 1437, 1444 (10th Cir. 1992). As stated in the FEIS Section 2.2.2, p. 2-76, it is unlikely that other existing facilities would have the capacity to process the additional

ore from the Carlota Project, and that such a proposal would require substantial investment by either Cyprus or BHP. The possibility of a competitor negotiating an arrangement with Carlota, allowing it to profitably produce a competing product, is remote. The long term availability of these off-site facilities is speculative as well and would be outside the control of Carlota.

Contention: The Forest Service failed to consider a land exchange alternative.

Response: The response to comment, cited by appellant, at FEIS p. G-111, L-4, is correct. Carlota has not proposed a land exchange. To expect that it would is remote and speculative, and therefore not a reasonable alternative warranting consideration (see previous response concerning reasonable alternatives).

Contention: The no-action alternative was not considered seriously because of the Forest Service belief that the mining laws compel approval of a project unless it violates state or federal law.

Response: The no-action alternative is analyzed in detail and the effects disclosed throughout the Affected Environment and Environmental Consequences Chapter of the EIS (Vol. II, Section 3.0). The EIS correctly notes that "the Forest Service does not have the authority to disapprove a Plan of Operations for a mining operation provided the plan does not propose actions that would be in violation of applicable federal and state laws and regulations (FEIS Section 2.2.1.6, p. 2-74)." The General Mining Law states that lands belonging to the United States which contain valuable mineral deposits are open to occupancy (30 USC 22). Regulations at 36 CFR §228 provide for environmental protection measures, where feasible, in plans of operation. These regulations do not provide authority for disapproval of plans of operation. "A plan that describes an operation conducted in a reasonable and necessary manner is entitled to approval, even though surface resource damage may result. Approval of a plan does not signify consent to operate. Consent is granted by law." (Regional Guide for the Southwestern Region p. 3-24)

Conclusion: The Forest Supervisor addressed a reasonable range of alternatives, appropriately dismissing those which did not meet the purpose and need for the action. The Forest Supervisor provided adequate rationale for eliminating alternatives for detailed consideration and is affirmed on this issue.

ISSUE: Alternatives (Appeal No. 0061)

Contentions: The Forest Service failed to consider all reasonable alternatives to the proposed project. Specifically:

1. "The Forest Service incorrectly relies on the General Mining Law of 1872 for its position that it lacks authority to approve a no-action alternative."

2. "The Forest Service has violated NEPA, as well as its own regulations, by eliminating reasonable alternatives on the grounds that their adoption would cause the project proponent to earn less return on the project."

3. "With respect to processing alternatives, the agencies have improperly failed to consider tank processing."

4. "With respect to off-site ore processing, the agencies have also unreasonably failed to consider appropriate alternatives." Appellant asserts off-site facilities could be built at the same cost as on-site facilities. Appellant further asserts that the Carlota Mine could lease existing facilities from either the Cyprus Miami or BHP Pinto Valley mines for processing.

5. "The agencies dismissed use of Powers Gulch downstream of the acid heap leach pad as a reservoir because of the very small contributing watershed. However, appellants assert, under the design of the mine project, as modified in the FEIS, it appears that the Powers Gulch diversion channel greatly expands the contributing watershed area."

Response: "[A]n agency must look at every reasonable alternative, within the range dictated by the 'nature and scope of the proposed action' and 'sufficient to permit a reasoned choice.'" Idaho Conservation League v. Mumma, 956 F.2d 1508, 1520 (9th Cir. 1992).

The proposed action was to approve the Carlota Copper Company Plan of Operations, thus providing focus for the analysis of effects of this action and alternatives thereto. The purpose and need statement briefly specifies the underlying purpose and need to which the agency is responding in proposing the alternatives, including the proposed action (40 CFR §1502.13), further defining the scope of the analysis. The purpose and need for action is stated as responding to Carlota's assertion of its mineral rights to the Carlota, Cactus, and Eder orebodies, and ensuring that operations: 1) comply with applicable federal and state laws; 2) where feasible, minimize adverse environmental impacts on National Forest surface resources; and 3) where practicable, provide for reclamation of surface disturbance. Without the requirement for 'reasonable' alternatives, the range of alternatives would be boundless. Reasonable alternatives to the proposed action need to address one or more issues raised in the analysis and address the purpose and need for action.

The no-action alternative is analyzed in detail and the effects are disclosed throughout the Affected Environment and Environmental Consequences Chapter of the FEIS. The FEIS correctly notes that the Forest Service does not have the authority to disapprove a Plan of Operations for a mining operation provided the plan does not propose actions that would be in violation of applicable federal and state laws and regulations" (FEIS Section 2.2.2, p. 2-74). The 1872 Mining Law states that lands belonging to the United States which contain valuable mineral deposits are open to occupancy (30 USC 22). Regulations at 36 CFR §228 provide for environmental protection measures, where feasible, in plans of operation. These regulations do not provide authority for disapproval of plans of operation.

Many alternatives to the proposed action were considered and eliminated from detailed study. Of these, appellant takes exception to eliminating the following from detailed consideration: a reduced production rate alternative; two smaller scale project alternatives; tank processing of the ore; off-site trucking and ore processing; and a downstream reservoir in Powers Gulch.

The stated reasons for elimination are economic infeasibility and/or impracticability (FEIS Section 2.2.2, p. 2-74 & 2-75). Regulation at 36 CFR §228.5(a) requires the Responsible Official to consider the economics of the operation along with other factors in determining the reasonableness of the requirements for surface resource protection. All operations shall be

conducted so as, where feasible, to minimize adverse environmental impacts on National Forest surface resources (36 CFR §228.8).

The **reduced production rate alternative** was eliminated for reasons of economic feasibility and the fact that it extended the duration of environmental impacts over a longer period of time (FEIS Section 2.2.2, p. 2-75).

The **smaller scale project alternatives** were eliminated because they were not considered economically feasible. The capital investment required for facilities and equipment was determined to be similar to the larger project alternatives, with significantly reduced revenues due to the lower copper recovery (FEIS Section 2.2.2, p. 2-75).

The **tank processing alternative** was found to be impracticable and infeasible. Tank processing is usually considered for higher grade ore processing (FEIS Section 2.2.2, p. 2-75).

The **off-site processing alternative** assumed existing facilities would be used at either Cyprus Copper Company's Miami operation or BHP Copper's Pinto Valley Mine. Off-site processing facilities would have to include a leach pad. In addition to the two existing facilities, the FEIS documents consideration of ten off-site leach pad construction alternatives. These alternatives were eliminated for various reasons including slope, soils, and watersheds (FEIS Section 2.2.2, p. 2-76 thru 2-83).

The **Powers Gulch reservoir alternative** was eliminated for reasons which include uncertainty of procuring surface water rights, construction/maintenance/ demolition costs, and an unreliable water supply. Appellant argues that the main Powers Gulch and East Diversion Channel expands the watershed area contributing to runoff in Powers Gulch below the heap acid leach pad. This is not the case. The diversion channels do not bring water in from outside the Powers Gulch subwatershed (FEIS Section 3.3.1, p. 3-64 thru 3-65, Section 2.2.2, p. 2-85).

Several water supply alternatives were considered, including one in which water would be purchased from BHP Copper's Cottonwood storage pond. This alternative was not eliminated from detailed study as appellant implies (FEIS Section 2.2.1, p. 2-70). The effects analysis discloses the effects of the water supply alternatives (FEIS Section 3.3.2, p. 3-128 thru 3-130).

Appellant comments on this subject as to the adequacy of the 1/2 PMF (Probable Maximum Flood) design standard used for the inlet control structure. Although this comment is not related to the alleged inadequate analysis of water supply alternatives, it will be addressed here. The 1/2 PMF design safety factor was assigned by Arizona Department of Water Resources (ADWR) in 1995 (Record Vol. 25, Doc. 6) and emphasized again in 1996 (Record Vol. 35, Doc. 15). The ADWR is the State agency responsible for assuring the safety of dams and water supply facilities, and it is evident by the discussion in the preceding documents that the safe and prudent design of Carlota's facilities was the highest priority. Mitigation was designed by the Forest Service in the very unlikely event that the diversion, operating in conjunction with the inlet control structure, would fail (FEIS Section 3.3.4, p. 3-141).

Conclusion: The Forest Supervisor addressed a reasonable range of alternatives, appropriately dismissing those which did not meet the purpose and need for the action. The Forest Supervisor

provided adequate rationale for eliminating alternatives from detailed consideration and is affirmed on this issue.

ISSUE: Cumulative Impacts (Appeal No. 0062)

Contention: There is no evaluation of expected impacts from any further mineral development by Carlota.

Response: Carlota has not indicated that they have intentions for further mineral development. Absent any indication of further mineral development, any expectation would be speculative. Carlota has further indicated in their Interested Party comments that they have no plans to expand their mining operations in the area outside the current Plan of Operations (Carlota Interested Party letter of September 30, 1997).

Contention: The Forest Service has not considered the cumulative impacts on groundwater levels from the combined pumping by the Pinto Valley Mine and the Carlota Copper Project.

Response: Cumulative impacts from groundwater pumping have been analyzed and documented (FEIS Section 3.3.3, p. 3-131 thru 3-133). Direct impacts from the Carlota well field are also disclosed (FEIS Section 3.3.2, p. 3-113 thru 3-116). Pump tests from three bedrock wells indicate the drawdown pattern is localized. The FEIS discloses that, based on the localized drawdown pattern observed in the bedrock during the three pump tests, it appears unlikely that springs located more than 1 mile from the well field production wells would be affected by long-term pumping. While appellant disagrees with this assumption, he offers no evidence to the contrary.

The FEIS discloses that groundwater levels could be lowered in the BHP bedrock wells if the bedrock aquifers tapped by the Carlota wells are hydrologically interconnected with the bedrock aquifers intercepted by the BHP bedrock wells, and if the respective cones of depression overlap. The FEIS also concedes that, "Given the complex hydrologic conditions, it is not possible to determine if the BHP Copper wells would be affected." (FEIS Section 3.3.2, p. 3-115) The FEIS discloses the fact that this information is incomplete and bases reasonably foreseeable impacts on scientific testing and analysis consistent with NEPA regulation at 40 CFR §1502.22.

Conclusion: The Forest Supervisor adequately analyzed and disclosed potential cumulative impacts and is affirmed on this issue.

ISSUE: Wildlife

A. National Forest Management Act (NFMA) (Appeal No. 0062)

Contention: The biological evaluation fails to meet NFMA and federal court standards for information to ensure the viability of the species.

Response: Appellant alleges that the Forest Service has failed to comply with NFMA and the requirements of 36 CFR §219.19 for managing national forests for viable populations of fish and wildlife, particularly those species associated with riparian areas.

The NFMA is primarily a planning statute, designed to guide development, amendment, and revision of Forest Plans for the multiple-use and sustained yield of the nation's national forests. The NFMA does not specifically address fish and wildlife viability. Specific requirements of forest plans for the maintenance of viable populations of fish and wildlife are outlined in regulation at 36 CFR §219.19. These regulations provide no specific direction for project-level analysis and decisionmaking.

The NFMA established no statutory scheme to provide for diversity. The diversity provision in the Act does not mandate any particular level of diversity of plant and animal communities, but rather requires that this issue be considered in the context of the discretionary multiple-use mix of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness.

The NFMA regulations apply to preparation of forest plans and are beyond the scope of site-specific, project-level decisions. The Forest Plan for the Tonto National Forest determined that fish and wildlife habitat would be managed for the maintenance of viable populations of fish and wildlife in conformance with 36 CFR §219.19.

Conclusion: The Forest Plan complies with the NFMA and 36 CFR §219.19 for fish and wildlife viability. NFMA requires the Forest Service to measure proposed activities against the forest plan forest-wide standards and guidelines. The Forest Supervisor found the decisions to be consistent with the Tonto Forest Plan. The Forest Supervisor is affirmed on this issue.

B. Analysis of connected actions (Appeal No. 0062)

Contention: The Forest Service must analyze and disclose the effects of connected actions in the same document, specifically the effects of acquisition of a permit for the Bellevue Allotment, riparian fencing, and withdrawal of 186 acres from mineral entry.

Response: Regulation at 40 CFR §1502.21 directs agencies to incorporate material into an environmental impact statement by reference when the effect will be to cut down on bulk without impeding agency and public review of the action. Thus, the Biological Monitoring and Mitigation Plan is incorporated and effectively a part of the FEIS (FEIS Section 3.5.4, p. 3-221). The FEIS and Biological Monitoring and Mitigation Plan describe the effects of the mitigation action in terms of riparian vegetation response in quantitative and qualitative fashion. Similarly, the FEIS discloses the potential impacts to grazing permittees in terms of acres affected and AUM's.

The Biological Monitoring and Mitigation Plan describes expected improvements to riparian communities and aquatic habitats from the prescribed Arnett Creek riparian fencing (Record Vol. 32, Doc. 33).

The mitigation measure to withdraw 186 acres from mineral entry would have no effect on the environment, since there are no plans for the area's development. Its purpose is precautionary, to avoid potential impacts to the Arizona hedgehog cactus.

Conclusion: The FEIS and documents incorporated by reference adequately disclose the effects of connected actions (mitigation). The Forest Supervisor is affirmed on this issue.

C. Impacts from polluted ponds (Appeal No.0062)

Contention: Appellants contend that "high quality data" are absent and do not represent a NEPA "hard look".

Response: The FEIS discloses that the likelihood of wildlife mortality from the PLS and raffinate ponds is low (FEIS Section 3.5.2.1, p. 3-207). This conclusion is based upon the fact that the ponds are surrounded by mine facilities and operational activities. Wildlife research, cited in the FEIS, has not found problems related to wildlife consumption from other copper mine process solution ponds in Arizona.

The pit lake, expected to form after closure and reclamation of the project area, although fenced, will be accessible by birds and more mobile terrestrial wildlife. The lake will be formed by groundwater seepage and surface runoff. Modeled projections indicate the lake will not reach toxic levels (FEIS Section 3.5.2, p. 3-207).

Conclusion: The Forest Supervisor has adequately analyzed and disclosed the potential effects to wildlife from polluted ponds. The Forest Supervisor is affirmed on this issue.

D. Air quality impacts on biological resources (Appeal No. 0062)

Contention: The Forest Service has failed to acquire the necessary data concerning air quality impacts on biological resources.

Response: See air quality discussion which follows under Clean Air Act.

Conclusion: The Forest Supervisor has analyzed sufficient data to support a reasoned decision. Where information was incomplete or unavailable, it was made clear that such information was lacking (40 CFR §1502.22). Assumptions and methodology were explained to support that the unavailable information was not essential to a reasoned choice among alternatives (FEIS Appendix D). The Forest Supervisor is affirmed on this issue.

E. Cumulative impacts to wildlife (Appeal No. 0062)

Contention: The Forest Service failed to take a hard look at cumulative impacts on wildlife, specifically, impacts to riparian areas from livestock grazing and the potential for cumulative impacts from the foreseeable mining project at Florence.

Response: Mitigation measures prescribed in the Biological Monitoring and Mitigation Plan offset the direct and indirect effects of the project by reducing grazing impacts on riparian vegetation (Record Vol. 32, Doc. 33). The cumulative nature of these impacts is implicit in the

mitigation strategy. With the impacts on riparian vegetation effectively offset, there are no additional impacts to cumulatively contribute to the environmental baseline.

Cumulative effects analyses should look beyond a proposed action in both space and time until the effects of the action are negligible. The FEIS states that the cumulative effects analysis area for most terrestrial resources consisted of the entire Pinto Creek drainage basin (FEIS Section 3.5.3, p. 3-218). The cumulative effects analysis area for aquatic resources consisted of Pinto Creek within and downstream of the project area until surface flow disappears near Roosevelt Lake, as well as flowing portions of Haunted Canyon downstream of the project.

The reasonably foreseeable development of the BHP Copper project at Florence is based on a pre-feasibility study. Any specific predictions, absent a plan of operations, would be speculative. However, it is reasonable to conclude that an open pit mine located approximately 36 miles away, in another watershed would not contribute cumulatively to impacts on wildlife at the Carlota project site (FEIS Section 1.6.2, p. 1-7).

Conclusion: The Forest Supervisor adequately analyzed cumulative effects on wildlife from this and other past, present, and reasonably foreseeable actions, sufficient to make a reasoned choice among the alternatives. The Forest Supervisor is affirmed on this issue.

F. Impacts to the Arizona cypress community (Appeal No. 0062)

Contention: The Forest Service failed to take a hard look at threats to the Arizona cypress/shrub live oak plant community in Lower Haunted Canyon.

Response: The Arizona cypress/shrub live oak plant community are not federally listed as threatened nor endangered. This plant community is also not on the Arizona list nor the Regional Forester's sensitive species list for the Southwestern Region. This plant community, therefore, will receive the same consideration as any vegetation impacted by the project.

Riparian vegetation in Lower Haunted Canyon is not in the area directly affected by the pits, leach pad or other project related facilities, but could be impacted by the well field operations. The FEIS discusses potential impacts to this vegetation from groundwater drawdown by the project wells (FEIS Section 3.5.2, p. 3-205).

Because of the potential for impacts to this riparian plant community, a detailed plan to mitigate potential flow reductions was agreed to by the Forest Service, Arizona Department of Environmental Quality (ADEQ), Arizona Department of Water Resources (ADWR), Salt River Project (SRP), Corps of Engineers (COE), and Carlota (FEIS Section 3.3.4, WR-3, p. 3137 and Appendix E). The mitigation is designed to maintain aquatic and riparian resources at pre-project levels, therefore there are no expected impacts to this riparian plant community. The plan includes monitoring measures to ensure this expectation is valid (FEIS Section 3.5.4, p. 3-221, Record Vol. 32, Doc. 33).

Conclusion: The Forest Supervisor adequately analyzed and disclosed impacts to Arizona cypress/shrub live oak plant community. The Record and FEIS support the conclusion that there will be no impacts to this plant community. The Forest Supervisor is affirmed on this issue.

G. **Impacts to desert bighorn** (Appeal No. 0062)

Contention: Range "expansion" of bighorn will be limited by the (mine) development and sheep will be "forced from area" by human intrusion and development.

Response: The FEIS (Vol. II, Section 3.5.1, p. 3-184) states that desert bighorn sheep have occasionally been seen in the general area. The Arizona Game and Fish Department (Haughley 1993) does not consider those bighorn sighted to be residents of the area. Because the sheep are non-resident the issue is moot. Bighorn will not be "forced" from an area that they are not already using. It is true that some potential habitat use and expansion could be foregone, but this is largely speculative.

Conclusion: The Forest Supervisor relied on his staff and the appropriate agency with recognized expertise concerning desert bighorn, the Arizona Game and Fish Department. Finding that desert bighorn are not resident in the project area, the Forest Supervisor appropriately found there were no effects to discuss. The Forest Supervisor is affirmed on this issue.

H. **Impacts to riparian resources** (Appeal No. 0062)

Contentions:

1. The Forest Service failed to acknowledge the grave threats to riparian areas across the Southwest and in Arizona, and relied upon untested, ill-considered mitigation measures in its attempt to justify a conclusion that riparian values and riparian species will not be significantly harmed.

2. The Forest Service presented no evidence to support its conclusion that wildlife and vegetation will result in the creation of similarly valuable habitat in a diversion channel as existed in a natural riparian area of Pinto Creek.

3. NEPA requires the disclosure of the likely effectiveness of mitigation measures, which the Forest Service failed to do concerning the Haunted Canyon mitigation proposal (TB-4: FEIS, Vol. II, 3-221).

4. The Forest Service can and must provide a discussion of the general harm to fish populations, and the likely harm to fish populations.

5. The Forest Service Failed to Take a "Hard Look" at Impacts to Riparian Resources.

Response: The appellant takes out of context, information from other actions unrelated to the Carlota Mine proposal, and attempts to minimize efforts of the Forest to mitigate impacts to riparian resources. The appellant presents no information as to why recommended mitigation measures are considered by them to be untested and ill-considered.

The FEIS indicates that there will be no long-term loss of species viability. Species have already adapted to naturally occurring areas along Pinto Creek where riparian habitat is lacking and/or vegetation cover is nearly absent (FEIS Section 3.5.3.5.2, p. 206).

The FEIS addresses the issue of successful mitigation measures and additional monitoring that may be needed to substantiate effects on riparian habitat concerning Haunted Canyon (Record Vol. 33, Doc. 32).

The FEIS states in general terms that fish populations may be reduced. However, the native fish present (longfin dace) has adapted to extremes in availability of water and habitat. These fish mature within a year and are capable of spawning from January through November. Additionally portions of Pinto Creek and Powers Gulch are currently intermittent, which makes them an unstable environment for fish and invertebrates (FEIS Section 3.5.2, p. 211-213).

The FEIS provides detailed information concerning surface water, groundwater, wildlife, and riparian resources. Acres of affected riparian habitat are identified with probable consequences to associated riparian species, and a monitoring protocol is identified to measure population changes, habitat changes, and effectiveness of mitigation measures (FEIS Section 3.3.1.2.3.4, p. 61-143 and Section 3.5.1.2.3.4, p. 178-223). Mitigation measures are identified (Record Vol. 33, Doc. 32) that minimize impacts by: limiting the degree or magnitude of the action and its implementation; rectify the impact by repairing, rehabilitating, or restoring the affected environment; and, reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action, and compensate for the impact by replacing or providing substitute resources or environments.

Conclusion: Appellant's assertions are unsubstantiated by the Record. The Forest thoroughly discussed surface water and groundwater sources and effects on riparian resources. Mitigation measures have been identified, and monitoring actions proposed to measure mitigation effectiveness and need for further action. The Forest Supervisor's decision is affirmed with regard to this issue.

ISSUE: Clean Air Act. (Appeal Nos. 0061 & 0062)

Contentions:

1. The FEIS and ROD failed to properly evaluate and disclose a potential violation of the Pinal County Air Quality Control District air quality "statute, regulation or ordinance" and that the project will not conform to the State Implementation Plan for the Hayden-Miami area. The FEIS and ROD failed to include an increment consumption analysis as required by Pinal County.
2. The Forest Service has not met the stringent requirements for protecting Air Quality Related Values (AQRVs) in a Class I air quality district. The Forest Service has not met the stringent Prevention of Significant Deterioration (PSD requirements) for protecting AQRVs, including visibility, in the Superstition and Sierra Ancha wilderness areas.
3. The FEIS and ROD failed to properly evaluate and disclose the effects of the project on visibility, and has substituted subsequent monitoring for analysis of air resource impacts.

4. The FEIS and ROD failed to properly analyze the cumulative impact of proposed air emissions from neighboring BHP Pinto Valley copper mine.

5. The FEIS and ROD failed to properly evaluate and disclose the details of planned mitigation measures to reduce air resource impacts.

Response: The Forest Supervisor has properly evaluated and disclosed the impact of Carlota Copper Project on air resources as a result of this proposed mine (FEIS Section 3.1, p. 9-38; Section 3.16, p. 343; Appendix B on visibility; Appendix D which includes impact to biota; and the Record, as cited below). Air impacts were also included in the initial scoping process (Record Vol. 7, Doc. 33; Vol. 1, Doc. 35). An unavoidable adverse impact to air resources was disclosed (FEIS Section 3.16.1, p. 343). Furthermore, Arizona Department of Environmental Quality issued air quality permit No. 071437PO-99 for Carlota Copper Project (Record Vol. 35, Doc. 47; Vol. 36, Doc. 13).

On April 16, 1996, the National Park Service requested that the Forest Service deny approval of the "project" as proposed based on air resource impacts to Tonto National Monument (Record Vol. 29, Doc. 36), a request which is currently outside Forest Service authority.

1. Conformity to Arizona's State Implementation Plan is discussed in the FEIS, ROD, and Record Vol. 26, Doc. 24). On p. 20 the ROD acknowledges Pinal County's air quality authority. According to the Record, SIP elements that include Pinal County rule became effective June 10, 1996. The Record also indicates that there is disagreement between the Forest Service and Pinal County over the relevancy of the 24-hr. increment rule for particulate matter (PM-10) for non-PSD sources in non-attainment areas. The County's position is stated in the Record (Record Vol. 27, Doc. 16; Vol. 39, Doc. 41, Vol. 40, Doc. 12). Similarly, correspondence from EPA Region 9 dated 8/26/97 listed conformity with PM-10 SIP as an "outstanding issue" of the EIS (Record Vol. 40, Doc. 6), even though EPA Region 9 has not taken a position on this matter. It is the Forest Service's position that the Pinal County requirements do not apply to a minor source located in a non-attainment area.

2. Lacey erroneously stated that Prevention of Significant Deterioration (PSD) requirements of the federal Clean Air Act apply in this case. EPA has reiterated that federal requirements for PSD and subsequent Class I area protection for AQRV applies only to new major sources or a major modification of an existing source (Record Vol. 7, Doc. 5). Carlota Copper Project is a minor source located in a non-attainment area.

3. Appropriate estimations of visibility impacts were made (Record Vol. 23, Doc. 23; Vol. 26, Doc. 5; Vol. 32, Doc. 1; FEIS Appendix B). However, there was a wide range of potential impacts that included very conservative analyses. The three-tiered monitoring program in the ROD and FEIS Section 3.1.4, p. 35-37 identifies additional mitigation measures to be required if visibility impacts are detected (emphasis added). The conformity determination clarifies that Best Available Control Technologies for open-pit mining are planned (Record Vol. 26, Doc. 24). Therefore, monitoring is not a substitute for emission controls.

4. The appellant states that no explanation was given why emissions from the BHP Pinto Valley copper mine would not significantly contribute to cumulative impacts. The details of this analysis were found in FEIS Section 3.1.3, p. 33-35).

5. There is no data in the Record to support the allegation that mitigative measures were improperly evaluated. Mitigation was discussed in the FEIS Section 3.1.4, p. 35-37 and ROD Section 2.1. No specific alternative measures were suggested by the appellants. The Plan of Operation, however, should specify required mitigation measures that are triggered by the three-tiered monitoring program (FEIS Section 3.1.4, p. 35-37; ROD p. 4-5).

Conclusion: Based on a review of the Record, the Pinal County requirements do not apply to this situation, a minor source located in a non-attainment area. Appellants' other assertions that impacts to air quality are not properly evaluated or disclosed are not supported by the Record. The Forest Supervisor's decision is affirmed with regard to this issue. The National Park Service's letter of concern for air quality impacts to Tonto National Monument (Record Vol. 29, Doc. 36), and EPA's comments regarding conformity and increment consumption (Record Vol. 40, Doc. 6; Vol. 26, Doc. 5), were carefully considered in my decision.

ISSUE: Clean Water Act Permit (Appeal No. 0061)

Contention: The cooperating agencies failed to include information relating to Carlota's obligation to obtain a NPDES permit under the Clean Water Act.

Response: Appellants note correctly that the issuance of any necessary permits relevant to these potential discharges comes under the jurisdiction of another agency, in this case the Environmental Protection Agency (EPA). Both the FEIS (Section 1.4, p. 1-4) and ROD (Table 1, p. 19) identify that NPDES permits may be required, that other authorizing agencies shall issue their approval documents separately and that it will be the responsibility of Carlota to obtain these approvals (ROD Section 1.2, p.4). The Record contains Carlota's permit application to EPA (Record Vol. 32, Doc. 24). The ROD also clearly states that the proposed action would only be authorized when all requirements for the approval of the Plan of Operations, including necessary permits, have been met (ROD p. 4).

Contention: The project will result in a point source discharge of polluted water to Haunted Canyon.

Response: The Record shows that EPA has been reviewing plans for this operation throughout the planning process and has also visited the site. In EPA's comments to the DEIS (Record Vol. 22, Doc. 2) they specifically mention that a storm water discharge permit would be needed. Their comments regarding the requirements for a NPDES stormwater discharge permit (Record Vol. 29, Doc. 34 and Record Vol. 31, Doc. 7) were incorporated into Carlota's permit application. These comments from EPA do not indicate that anything other than a facility storm water discharge permit would be required. Appellant's concerns, that a point source discharge permit is necessary, are not shared by EPA, the Federal agency authorized to make that determination.

Contention: The Forest Service should not rely on Carlota's contentions that all potentially-polluted waters will be mitigated.

Response: The Forest Service is obviously not relying completely on planned mitigation to protect water quality. The FEIS cites comprehensive surface and ground-water monitoring plans to be performed during and after activities (FEIS p. 3-136 thru 3-142, Appendix C, p. C-25). Carlota is also being required to finance the salary of an independent monitoring coordinator, an employee of either the Forest Service, another agency, or a third-party contractor under the guidance of the Forest Service (FEIS Section 3.3.4, p. 3-142).

Conclusion: The ROD, FEIS and Record fully support the recognition that certain permits may be necessary to meet the requirements of the Clean Water Act and that the actual issuance of these permits is under the jurisdiction of another agency. The monitoring required by the Forest Service will assure protection of water resources. The Forest Supervisor is affirmed on this issue.

ISSUE: Mitigation and Monitoring (Appeal No. 0061)

Contention: The Forest Service and the Corps of Engineers have improperly relied on future, unspecified mitigation and/or monitoring, the specifics of which are not discussed and analyzed in the FEIS or ROD. Specifically, appellant claims the following were omitted from the FEIS and ROD:

1. assurance that potential water quality problems have been adequately addressed and information indicating that water quality standards will be met;
2. assurance that negative impacts to Pinto Creek will be prevented or appropriately corrected;
3. information indicating whether air quality standards and requirements will actually be met;
4. a complete and approved reclamation plan; and
5. a complete management plan for wasterock and information indicating whether the project proponent's proposed plans for disposal of tailings and wasterock is feasible.

Appellant also alleges that neither the FEIS nor the ROD identify mitigation measures outside the jurisdiction of the cooperating agencies.

Appellant also contends that the cooperating agencies rely heavily on unspecified or vaguely described mitigation measures to be undertaken by Carlota, in concluding that no significant adverse air quality impacts of the proposed project are expected.

Response: The decision to be made in the Carlota Copper Project centers around approval of a Plan of Operations and development of additional measures that need to be included for environmental protection. The Forest Service has approving authority over the Plan of Operations as it relates to occupancy and effect on surface resources on the National Forest. Other county, state, and federal regulatory agencies have authority over permitting actions which affect their respective areas of responsibility. The Forest Service stipulates mitigation measures in the Plan of Operations to satisfy the requirements of state and federal laws which are the

jurisdiction of other agencies. Table 1-1 in the FEIS (repeated as Table 1 in the ROD) identifies environmental regulatory requirements for the Carlota Copper Project. While the mitigation requirements are presumed to meet other agency requirements, the decision to approve the Plan of Operations is predicated on other agency requirements being met (ROD Section 2.1, p. 4).

Mitigation is prescribed to minimize adverse environmental effects including compliance with standards for water and air quality. Monitoring is prescribed to determine: 1) if the required mitigation was implemented; 2) if the mitigation was effective; and 3) if assumptions concerning environmental response to actions are valid. The Affected Environment and Environmental Consequences Chapter of the FEIS discloses specific mitigation and monitoring measures for each resource area. Monitoring and mitigation measures for water resources are detailed in the FEIS Section 3.3.4. Mitigation and monitoring for air resources are described in the FEIS Section 3.1.4.

As described throughout the FEIS Affected Environment and Environmental Consequences Chapter, and summarized in the FEIS (Section 3.15, p. 3-335) additional mitigation is prescribed in the event that predicted effects are not realized. **This adaptive approach, together with the enforcement authority of the various environmental regulatory agencies, provides assurance that environmental protection standards will be met.**

The Reclamation Plan submitted to the Tonto National Forest is a companion document to, and part of, the Plan of Operations (Record Vol. 14, Doc. 23). In approving the Plan of Operations with modifications as identified in the ROD, the Forest Supervisor has approved the Reclamation Plan. Plans for wasterock disposal are part of the Plan of Operations. Mitigation measures stipulated by the Forest Supervisor complete the plan. Prior to beginning operations, Carlota Copper Company will revise its Plan of Operations to fully comply with the provisions of the agency selected alternative and submit a bond sufficient to guarantee reclamation of all surface disturbance on National Forest System lands (ROD Section 7.0, p. 18).

Conclusion: The Forest Supervisor adequately identified and disclosed monitoring plans and mitigation measures designed to minimize impacts to National Forest resources. The Forest Supervisor is affirmed on the issue of mitigation and monitoring.