SAVE THE SCENIC SANTA RITAS ASSOCIATION

March 24, 2014

VIA EMAIL AND U.S. MAIL
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RE: Public Notice No: 27-14AZ, Comments on Notice of Preliminary Decision to Issue a State Water Quality Certification of a Federal Action (Application No. SPL-2008-00816-MB), ADEQ LTF 55425, Submitted by Save the Scenic Santa Ritas, Friends of Madera Canyon, Coalition for Sonora Desert Protection, Arizona Mining Reform Coalition, Defenders of Wildlife, Mountain Empire Action Alliance, Patagonia Area Resource Alliance (PARA), Sky Island Alliance, Center for Biological Diversity, Sierra Club, Grand Canyon Chapter, Tucson Audubon Society, Earthworks, Nan Stockholm Walden, Dick Walden, Greg and Carol Shinsky and Morris Farr.

Dear Mr. Scalamera:

We appreciate the opportunity to comment on the Arizona Department of Environmental Quality's (ADEQ) draft Clean Water Act ("CWA") Section 401 water quality certification ("Draft WQC") for the Rosemont Copper project, which was posted for comment on February 21, 2014. These comments are submitted by the undersigned, a coalition of groups and individuals interested in and affected by the proposed Rosemont mine project. There are fundamental flaws with the draft WQC, both procedurally and substantively. ADEQ did not properly analyze the project as required under Arizona law, and the project as proposed will violate Arizona's surface water quality standards. Accordingly, ADEQ must rescind the Draft WQC and either deny the WQC for the project as proposed, or in the alternative, require submission of additional information and conduct further analysis of the proposed project.

1. The Draft WQC Fails to Review and Consider the Certification of Rosemont's Proposed Plan of Operations Submitted to the U.S. Forest Service

At the outset, the Draft WQC is inadequate and legally flawed as it purports to review (and then certify) only the discharges associated with the proposed CWA Section 404 permit. This is due to the mistaken view that the Department of the Army CWA Section 404 permit is the only "federal license or permit" that has been proposed regarding the Rosemont Copper Project. Under the CWA, federal caselaw, and

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U.S. Forest Service ("USFS") policy, a proposed mining plan of operations ("PoO") is considered a "federal license or permit" triggering Section 401 certification. *See Hells Canyon Preservation Council v. Haines*, 2006 WL 2252554, at *3-4 (D. Or. 2006) (Section 401 applies to mining PoO submitted to USFS). As stated by the USFS:

> Pursuant to CWA § 401, both the Forest Service and the mining operator have CWA requirements to meet. If the mining activity "may result in any discharge into the navigable waters," (CWA, Title IV, § 401(a) (1), 33 U.S.C. 1341(a), 1972) the mining operator must obtain a 401 certification from the designated CWA federal, state or tribal entity, typically the state. This 401 certification from the designated entity certifies that the operator's mining activities and associated best management practices (BMPs), mitigation and/or reclamation are in compliance with applicable provisions of state, federal and/or tribal water quality requirements of the CWA. The mining operator must give a copy of this 401 certification to the Forest Service prior to the Agency approving the Plan of Operations. Pursuant to CWA, the Forest Service cannot authorize a Plan of Operations until the 401 certification has been obtained or waived by the designated entity. Finally, the Forest Service may not authorize a Plan of Operations if the designated entity denies the certification.

USFS Manual, Section 2817.23a.

There is no dispute that the Rosemont project "may result in any discharge into the navigable waters." *Id.* Thus, all aspects of the project contained in the PoO must be considered in the 401 certification review. Because ADEQ failed to consider the PoO as one of the federal licenses or permits that must be reviewed under Section 401, the Draft WQC cannot be issued as proposed.

2. <u>The Draft WQC Fails to Review All Potential Surface Water Quality Impacts from the Rosemont Project</u>

The Draft WQC improperly limits its review to only those direct impacts from the Rosemont project's discharges directly associated with the 404 permit, which violates both Arizona and federal law. First, ADEQ's limited consideration of the direct effects of these discharges (apparently based on A.R.S. § 49-202) violates Arizona's Public Trust Doctrine. *See Arizona Ctr. For Law In Pub. Interest v. Hassell*, 172 Ariz. 356, 366, 837 P.2d 158, 168 (Ct. App. 1991) "(the state's responsibility to administer its watercourse lands for the public benefit is an inabrogable attribute of statehood itself"); codified in Ariz. Rev. Stat. Ann. § 45-141(A). By arbitrarily relinquishing both ADEQ's authority over and ADEQ's responsibility to examine indirect impacts of discharges into the state's surface waters, the State is failing to fulfill its fiduciary obligations under this doctrine.

Second, this self-imposed restriction violates the CWA. As held by the U.S. Supreme Court, the 401 certification is not limited to only direct impacts from the discharge, but rather, all impacts associated with a project once the threshold prerequisite of the potential for a discharge exists (which is not in dispute here):

> Section 401, however, also contains subsection (d), which expands the State's authority to impose conditions on the certification of a project. Section 401(d) provides that any certification shall set forth "any effluent limitations and other limitations . . . necessary to assure that *any applicant*" will comply with various provisions of the Act and appropriate state law

> requirements. 33 U.S.C. § 1341(d) (emphasis added). The language of this subsection contradicts petitioners' claim that the State may only impose water quality limitations specifically tied to a "discharge." The text refers to the compliance of the applicant, not the discharge. Section 401(d) thus allows the State to impose 'other limitations' on the project in general to assure compliance with various provisions of the Clean Water Act and with 'any other appropriate requirement of State law' . . . Section 401(a)(1) identifies the category of activities subject to certification--namely, those with discharges. And § 401(d) is most reasonably read as authorizing additional conditions and limitations on the activity as a whole once the threshold condition, the existence of a discharge, is satisfied.

Jefferson County PUD No. 1 v. Washington Dept. of Ecology, 511 U.S. 700, 711-12 (1994). As the Court stated: "activities—not merely discharges—must comply with state water quality standards." *Id.*

As noted in EPA's leading guidance on Section 401 certification: "[I]t is important for the §401 certification authority to consider all potential water quality impacts of the project, both direct and indirect, over the life of the project." *See* Clean Water Act Section 401 Water Quality Certification: A Water Quality Protection Tool For States and Tribes (2010) ("EPA 401 Handbook"), at 17, available at http://water.epa.gov/lawsregs/guidance/cwa/upload/cwa-401-handbook-2010-interim.pdf. As EPA summarized:

> Section 401 applies to any federal permit or license for an activity that may discharge into a water of the U.S. The Ninth Circuit Court of Appeals has ruled that the discharge must be from a point source, and agencies in other jurisdictions have generally adopted the requirement. **Once these thresholds are met, the scope of analysis and potential conditions can be quite broad. As the U.S. Supreme Court has held, once § 401 is triggered, the certifying state or tribe may consider and impose conditions on the project activity in general, and not merely on the discharge, if necessary to assure compliance with the CWA and with any other appropriate requirement of state or tribal law.**

EPA 401 Handbook, at 18 (emphasis added), citing *Jefferson County PUD,* 511 U.S. at 711-712; *S. D. Warren Co. v. Maine Board of Environmental Protection et al,* 547 U.S. 370, 126 S.Ct. 1843 (2006).

Here, ADEQ's failure to consider the full adverse effects on water quality from the Rosemont Project requires that the Draft WQC cannot be issued as proposed and must be revised accordingly.

3. <u>The WQC Must Protect All Water Quality Standards, Including All Beneficial Uses</u>

The Draft WQC appears to be concerned with ensuring that only the numeric water quality standards are not violated by the 404 discharge. In addition to improperly limiting its review to only the direct 404 discharges discussed above, this ignores the fact that all aspects of water quality protection, not just numeric standards, must be considered and protected.

The CWA is primarily implemented through the establishment and maintenance of water quality standards, and the CWA directs each state to establish its own water quality standards. 33 U.S.C. §§ 1313(a) and (c)(2)(A). "A water quality standard defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses." 40 CFR § 131.2. The minimal designated use for a water body is the

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"fishable/swimmable" designation which "provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." 33 U.S.C. § 1251(a)(2). As the Supreme Court stated:

> The text [of the CWA] makes it plain that water quality standards contain two components. We think the language of § 303 is most naturally read to require that a project be consistent with *both* components, namely, the designated uses *and* the water quality criteria. **Accordingly, under the literal terms of the statute, a project that does not comply with a designated use of the water does not comply with the applicable water quality standards.**

Jefferson County PUD, 511 U.S. at 714-715 (*italics* emphasis in original, **bold** emphasis added). Thus, the CWA prohibits any activity that will not fully protect all of the designated uses for that waterbody.

Similarly, the Rosemont project also implicates the CWA's "antidegradation" requirements. Antidegradation policies "shall, at a minimum, be consistent with . . . [e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." 40 CFR §131.12(a)(1). Under this regulation, "'no activity is allowable . . . which could partially or completely eliminate any existing use.'" *Jefferson County PUD*, 511 U.S. at 718-19 (*citing* EPA, Questions and Answers on Antidegradation 3 (Aug. 1985)).

At Rosemont, as noted herein, the company has not shown that the project will protect all beneficial uses, comply with all numeric standards, and comply with all CWA antidegradation requirements (as well as state antidegradation requirements, as discussed further below). As such the WQC cannot be issued as proposed.

4. <u>The Draft WQC Impermissibly Defers Submission of the Requisite Surface Water Mitigation Plan Until After the Corps Issues a Section 404 Permit</u>

As ADEQ knows, the Corps may not issue a Clean Water Act Section 404 permit unless and until ADEQ certifies (or waives certification) that the proposed project will not violate Arizona's surface water quality standards. 33 U.S.C. § 1341. Section 401 gives Arizona the ability to play a vital role in preventing pollution of the nation's and the state's waters. *See* 33 U.S.C. § 1251 ("It is the policy of the Congress to recognize, preserve, and protect the primary responsibilities and rights of States to prevent, reduce, and eliminate pollution, to plan the development and use (including restoration, preservation, and enhancement) of land and water resources . . . ."). Here, instead of fulfilling that role, ADEQ has impermissibly proposed to issue a WQC *before* it has even seen information (in the form of a mitigation plan) necessary to determine that the project will not violate the state's surface water standards. Moreover, ADEQ has deprived the public of its ability to participate in the Section 401 WQC process. Both of these issues are discussed further below.

Instead of giving Rosemont a "pass" and granting 401 certification *before* a mitigation plan is submitted, the Undersigned urges ADEQ to rescind its Draft WQC, require Rosemont to submit a fully workable mitigation plan, and only then evaluate the WQC application and mitigation plan for compliance with Arizona's surface water quality standards. Only if Rosemont's mitigation plan properly mitigates for state water impacts (which the Undersigned believes is impossible) should ADEQ consider granting certification.

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a. The Draft WQC proposes to certify the project on the condition that Rosemont submit a surface water mitigation plan *after* it obtains a Section 404 permit. Once the 404 permit is granted, however, there is no guarantee that Rosemont will be able to put forward a mitigation plan that actually mitigates for the state surface waters it will adversely affect. Indeed, the Undersigned does not believe that any mitigation will be adequate to compensate for the adverse surface water impacts that will be caused by this project.[1] Without adequate mitigation, the project as proposed is sure to violate state surface water quality standards. *See* EPA Letter to U.S. Army Corps' Col. Toy (Feb. 3, 2012) (describing how the project will adversely impact surface water quality, including reduction of sediment yield downstream causing geomorphic changes that increase channel scour and aggradation, bank erosion, and loss of riparian vegetation, as well as increased total suspended solids and turbidity).

But under the timeframe set forth in the Draft WQC, ADEQ will already have issued a certification that the project does *not* violate water quality standards by the time inadequacy of Rosemont's proposed mitigation becomes clear. This *post*-permit condition thus renders Arizona's 401 WQC a nullity: if ADEQ issues this Draft WQC, it will allow Rosemont to obtain a 404 permit before the state really knows how the project will impact the state's surface water and whether it is even possible for Rosemont to mitigate for those impacts. In sum, the Undersigned believes ADEQ should not certify that the project meets state surface water quality standards until Rosemont submits a mitigation plan and ADEQ can adequately determine whether the project will violate state surface water quality standards.

b. Deferring Rosemont's submittal of a mitigation plan until after it obtains a 404 permit deprives the public of the ability to review and comment on that mitigation plan. The Draft WQC requires a mitigation plan be submitted only to "to ADEQ for review and approval" after the 404 permit is issued. As a result, there may be no public comment opportunity on that mitigation plan, as there would be if ADEQ required the mitigation plan submittal *before* making a 401 decision. The Undersigned requests that ADEQ rescind the Draft WQC and require the submission of a mitigation plan now to assure the public a fair opportunity to review and comment on the plan.

5. <u>The Draft WQC Relies in Part on a Deficient Final Environmental Impact Statement</u>

The Draft WQC relies in part on the U.S. Forest Service's Final Environmental Impact Statement for information on the proposed project. *See* Draft WQC at Section 3.0(3)-(4) ("Information Reviewed"); Section 5.2(1) ("Specific Conditions") (discussing mitigation plan that will be required based on predictions in the FEIS). But the FEIS is substantially inadequate and violates the National Environmental Policy Act. *See attached Coalition Objections to FEIS and Draft Record of Decision* (Feb. 14, 2014) (detailing significant inadequacies in the FEIS and adopted and incorporated herein). Thus, for the purposes of these comments, due to ADEQ's reliance on the FEIS, any comment noting a deficiency in the FEIS applies equally to the Draft WQC. The following is only a high-level summary of the FEIS' deficiencies relating to surface water quality (additional details are provided herein):

[1] EPA has thus far found Rosemont's proposed compensatory mitigation plan for direct and secondary impacts to waters of the United States inadequate. *See* Letter from EPA to U.S. Army Corps' Col. Collotton (Nov. 7, 2013).

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- The Forest Service failed to fully review and require protective measures/mitigation to prevent the formation of a contaminated pit lake as a result of the mine project, which would in turn adversely affect surface water quality;

- The Forest Service neglected to assess cumulative impacts from all past, present, and reasonably foreseeable projects in the region on surface water quality;

- Even while conceding that the project likely will degrade water quality, the Forest Service did not evaluate whether the project will violate Arizona's antidegradation rules based on the erroneous position that it does not have the responsibility or jurisdiction to examine whether the project will degrade water quality standards;

- The Forest Service did not adequately address whether the mine can obtain a NPDES/AZPDES permit for its stormwater discharges, nor did the Forest Service fully review the effect of the projected stormwater discharges on water quality.

6. The Draft WQC Relies in Part on a Faulty 404(b)(1) Alternatives Analysis

For a proposed discharge to a perennial water with existing water quality that is better than applicable water quality standards (i.e., a Tier 2 water), Arizona rules require an alternatives analysis in order to determine whether there exists a reasonable, cost-effective, less-degrading or non-degrading discharge alternative. A.A.C. R18-11-107.01(B). But where a project proponent has also applied for a Section 404 permit to discharge into a Tier 2 water, ADEQ guidance permits reliance on the 404(b)(1) alternatives analysis submitted by the project proponent as a substitute for the antidegradation alternatives analysis. *See* Arizona Draft Antidegradation Implementation Procedures at 3-17 (2008).

For any Tier 2 waters that exist at the proposed mine project, the Undersigned does not dispute that ADEQ is permitted to rely on a 404(b)(1) analysis as a general matter. However, Rosemont's 404(b)(1) analysis fails to properly examine either off-site or on-site alternatives to the project that would be less environmentally damaging. As a result, the Undersigned suggests that ADEQ rescind its Draft WQC and instead defer issuing any water quality decision unless and until Rosemont develops an adequate 404(b)(1) analysis.

7. The Draft WQC Violates Arizona's Tier 3 Antidegradation Rules and Guidance

In proposing to certify the Rosemont project, ADEQ failed to follow Arizona's own Tier 3 antidegradation rules and guidance. These rules and guidance require ADEQ to conduct an antidegradation review of a Section 404 permit if the discharge may degrade existing water quality in an Outstanding Arizona Water ("OAW"), and they also absolutely prohibit permanent degradation in OAWs. The Undersigned requests that ADEQ rescind this Draft WQC in order to examine the project for potential impacts on OAW. Moreover, once ADEQ anlayzes the effects of the mine on OAWs, the Undersigned believes ADEQ will have to deny certification because the project as proposed will, in fact, degrade Davidson Canyon and Cienega Creek (both designated OAWs).

First, nothing in the Draft WQC suggests that ADEQ undertook its responsibility to conduct an antidegradation review of this project's effects on water quality in Davidson Canyon and Cienega Creek. *See* R18-11-107.01(D) ("The Director shall conduct the antidegradation review of an individual § 404

permit if the discharge may degrade existing water quality in an OAW . . . ."). And while Rosemont does not propose to discharge directly into these OAWs, that does not preclude ADEQ from examining the impact of Rosemont's proposed discharge to downstream waters, including these OAWs. *See generally*, Arizona Draft Antidegradation Implementation Procedures at 3-18 (2008) (guidance noting that in the context of individual certifications of nationwide and regional permits, "ADEQ will evaluate any potential impacts to downstream waters and incorporate certification requirements to ensure compliance with all aspects of the antidegradation rule."). In any event, ADEQ's failure to conduct an antidegradation analysis of this project is especially egregious in light of the serious concerns EPA has raised that the project would be "insufficient to avoid significant degradation" of these two OAWs. *See* EPA Letter to U.S. Army Corps' Col. Collotton (Nov. 7, 2013). Because there ADEQ did not properly analyze (or rather, analyze in any manner) the project's potential degradation of these OAWs, ADEQ should rescind the draft certification and conduct such an analysis.

Second, a proper antidegradation determination will illustrate that ADEQ should not certify this project. According to EPA, Rosemont's own modeling shows negative impacts from the mine on the surface waters downstream of the mine to the confluence of Davidson Canyon and Cienega Creek. *Id.* at 3; *see also* FEIS at 547 ("Changes in the hydrology severe enough to cause dewatering of Cienega Creek are one possible outcome of the mine, and the likelihood of mine effects becoming severe enough to dewater Cienega Creek also increases with climate change and increased groundwater demand within the basin."). These impacts would violate Arizona's prohibition on degradation of OAWs, and therefore cannot be certified under Section 401. R18-11-107(D) ("Degradation of an OAW under subsection (C) is prohibited.").[2]

Antidegradation policies "shall, at a minimum, be consistent with . . . [e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." 40 CFR §131.12(a)(1). Under this regulation, "'no activity is allowable . . . which could partially or completely eliminate any existing use.'" *PUD No. 1*, 511 U.S. at 718-19 (*citing* EPA, Questions and Answers on Antidegradation 3 (Aug. 1985)). (*citing* EPA, Questions and Answers on Antidegradation 3 (Aug. 1985)). In addition, because Davidson Canyon and Cienega Creek are designated OAWs, the prohibitions against any degradation or impairment apply—something which the project cannot meet. *See* 40 CFR §131.12(a)(3) ("Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.")

As just one example, the FEIS admits that the project could eliminate existing water quality uses and thus violate water quality standards protecting such uses, in Cienega Creek:

> Cienega Creek extends from its headwaters near Sonoita approximately 36 miles downstream, flowing through both the Las Cienegas National Conservation Area and the Cienega Creek Natural Preserve. Throughout much of this length, Cienega Creek exhibits perennial or

[2] EPA believes that the mine is also likely to have secondary impacts to surface water volumes even further downstream from the confluence of these two OAWs, including in Cienega Creek downstream to Pantano Dam. EPA Nov. 2013 Letter at 3. But Rosemont has not even fully examined these secondary surface water impacts. ADEQ should similarly be concerned at this lack of examination, and should require Rosemont to conduct such a full examination of impacts to surface waters downstream from the confluence of Davidson Canyon and Cienega Creek before it considers whether to certify the project.

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> intermittent stream flow, and an extensive gallery of cottonwood and willow is supported along the Creek. In addition, the flood plain of Cienega Creek contains the remnants of once-extensive cienegas, or areas of shallow groundwater and wetland complexes.
>
> Cienega Creek is noted for both scenic beauty and ecological significance. It forms an important connection for wildlife movement between sky islands in southern Arizona. It is one of the few remaining examples of a desert riparian community, exhibiting a high level of plant diversity in a relatively small geographic area. Pima County notes that the habitat along Cienega Creek supports more than 280 native species of mammals, birds, reptiles, amphibians, fish, and insects that either reside in or frequent the preserve and provides habitat for neotropical migratory birds, which seasonally use the area for nesting. The presence of perennial stream flow supports native frog and fish populations, including threatened and endangered species.
>
> The ecological, recreation, and cultural importance of Cienega Creek is tied irrevocably to its hydrology. Cienega Creek is valuable because it is a perennial riparian corridor. Predictions of impact to Cienega Creek are less certain than those for Empire Gulch and encompass a wide range of possibilities, from no impact at all, **to extensive dewatering and drying.** The timing is also uncertain, with possible changes occurring many decades or hundreds of years in the future. **Changes in the hydrology severe enough to cause dewatering of Cienega Creek are one possible outcome of the mine, and the likelihood of mine effects becoming severe enough to dewater Cienega Creek also increases with climate change and increased groundwater demand within the basin. If these severe effects were to occur, much of the value of Cienega Creek for recreation, wildlife habitat, scenic beauty, and cultural importance would be lost.**

FEIS at 547 (emphasis added). The agency further admits to the Project's potential, indeed certainty, of long-term loss of water quality and related uses:

> Upper Cienega Creek currently meets the regulatory definition of a wadeable, perennial stream. As such, **regulatory requirements specific to biological integrity (taxa richness, species composition, tolerance, and functional organization comparable to that of a stream with reference conditions in Arizona) and bottom deposits would need to be met**. The potential for reductions in stream flow would potentially drive water quality changes as well, as discussed earlier in this section. Results of the models are mixed. By 50 years after closure, only one modeling scenario out of five suggests that there would be an increase in the risk of low-flow conditions occurring. By 150 years after closure, four out of five modeling scenarios suggest that there would be an increase in the risk of low-flow conditions occurring. **By 1,000 years after closure, all modeling scenarios agree that there would some level of increase in the risk of low-flow conditions.**
>
> **These low-flow conditions would increase water temperature, increase nutrient loads, and decrease the assimilative capacity of the stream. Changes in these characteristics would have an effect on the aquatic biota and the characteristics of biological integrity listed above**.

FEIS at 554-55 (emphasis added).

In addition to the potential violation of water quality standards and uses shown in the record, the elimination of perennial flow of the Creek which "supports native frog and fish populations, including threatened and endangered species," violates the agency's duty to ensure that all beneficial uses of water are protected.

The beneficial use/designated use protection is not limited to streams which support fish; a water body composed of solely plants and invertebrates is also protected under the antidegradation policy. *Bragg v. Robertson*, 72 F. Supp.2d 642, 662 n.38 (S.D. W. Va. 1999) (citing EPA, Water Quality Standards Handbook § 4.4) *reversed on other grounds* 248 F.3d 275 (4th Cir. 2001). By contributing to a loss of beneficial uses in aquatic life and its supporting habitat, and/or by directly violating stream standards, the project violates the stream standards and the antidegradation policy. As such, the operations cannot be certified.

8. Nowhere does the Draft WQC Address or Require Mitigation to Address the Effects of the Projected Mine Pit Lake on State Surface Water Quality Standards and Uses

Rosemont's own project documents and the Forest Service's FEIS describe a mine pit lake that will form after active groundwater pumping at the mine ceases, and the FEIS concedes that the mine pit lake water quality could exceed surface water quality standards for cadmium, lead, copper, mercury, selenium, and zinc. *See* FEIS at 389-90. ADEQ does not appear to have considered whether such a pit lake is even permissible pursuant state surface water quality standards, nor does it appear to have examined the negative effects of such a pit lake on state surface water quality. *See* EPA Nov. 2013 Letter at 3 ("the impacts [of the mine] to surface water are likely to be significant, especially given the cumulative effects of predicted reductions in groundwater levels from the proposed mine pit.").

The pit lake is a "water of the state": "'Waters of the state' means all waters within the jurisdiction of this state including all perennial or intermittent streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, wells, aquifers, springs, irrigation systems, drainage systems and other bodies or accumulations of surface, underground, natural, artificial, public or private water situated wholly or partly in or bordering on the state." A.R.S. § 49-201(41).

The FEIS admits that the mine pit lake that will form after active groundwater pumping ceases is predicted to be lethal to wildlife.

> The results of geochemical modeling for the mine pit lake . . . indicate that various contaminant levels that would result from these mining processes may exceed surface water quality standards for wildlife (see the "Groundwater Quality and Geochemistry" resource section of this chapter). For all action alternatives, the mine pit lake water quality could exceed standards for cadmium, lead, copper, mercury, selenium, and zinc, three of which are known to bioaccumulate (i.e., cadmium, mercury, and selenium). Estimates indicate that surface water quality standards for wildlife for ammonia (chronic exposure) also may be exceeded in the mine pit lake as a result of buildup of nitrogen residue from the use of ammonium nitrate explosives (see the "Groundwater Quality and Geochemistry" resource section of chapter 3).

FEIS at 664. As acknowledged by the FEIS:

> Wildlife groups that are most likely to be directly impacted by toxins potentially present in the mine pit lake include invertebrates (i.e., insects, etc.) and birds. Wildlife most likely to be indirectly impacted includes any animals that prey on insects or birds that have come in contact with the water in the mine pit lake. Acute exposure by avian species is the most likely scenario to occur, given the depth and isolation of the pit lake and general inaccessibility by wildlife. Chronic exposure is unlikely to occur directly, but chronic exposure could occur indirectly through predation on insects.
>
> Geochemical modeling indicates that some surface water quality standards for acute exposure to warmwater aquatic species and wildlife could be exceeded:
> • Copper exceeds the acute surface water standard for two scenarios. Copper has not been observed in background ambient groundwater concentrations at these levels.
> • Zinc exceeds the acute surface water standard under all four scenarios. The concentrations modeled for the pit lake (0.745 to 0.959 mg/L) appear to be largely the result of the concentration of zinc naturally occurring in groundwater samples collected from near-pit wells (0.694 mg/L). The background concentration also exceeds the acute surface water standard for zinc. Geochemical modeling also indicates that some surface water quality standards for chronic exposure to warmwater aquatic species and wildlife could be exceeded:
> • Cadmium exceeds the chronic surface water standard under all four scenarios. Cadmium has not been observed in background ambient groundwater concentrations at these levels and therefore is likely elevated due to contact with and reaction to the exposed rock.
> • Copper exceeds the chronic surface water standard under all four scenarios. Copper has not been observed in background ambient groundwater concentrations at these levels and therefore is likely elevated due to contact with and reaction to the exposed rock.
> • Lead exceeds the chronic surface water standard for three scenarios. Lead has not been observed in background ambient groundwater concentrations at these levels and therefore is likely elevated due to contact with and reaction to the exposed rock.
> • Mercury exceeds the chronic surface water standard for at least two scenarios. Mercury has not been observed in background ambient groundwater concentrations at these levels and therefore is likely elevated due to contact with and reaction to the exposed rock.
> • Selenium exceeds the chronic surface water standard under all four scenarios. The concentrations modeled for the pit lake (0.013 to 0.016 mg/L) appear to be partially the result of the concentration of selenium occurring in groundwater samples collected from near-pit wells (0.00212 mg/L), although the modeled concentrations are substantially higher. The background concentration also exceeds the chronic surface water standard for selenium.
> • Zinc exceeds the chronic surface water standard under all four scenarios. As noted above, this appears to be largely the result of the concentration of zinc occurring naturally in groundwater samples collected from near-pit wells, which also exceeds the chronic surface water standard for zinc.

FEIS at 389-90. This contamination will be toxic and lethal to wildlife:

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> Cadmium is highly toxic to wildlife, is carcinogenic and teratogenic, and can have sublethal and lethal effects at low environmental concentrations (U.S. Environmental Protection Agency 2011b). It affects respiratory functions, enzyme levels, muscle contractions, growth reduction, and reproduction, and it is known to bioaccumulate in the food chain. Lead is carcinogenic and adversely affects reproduction, liver and thyroid function, and disease resistance. The main potential ecological impacts result from direct exposure of algae, invertebrates, and freshwater fish and amphibians. It can be bioconcentrated from water but does not bioaccumulate. Copper is highly toxic in aquatic environments and affects fish, invertebrates, and amphibians. A portion of mercury released into the environment is transformed by abiotic and biotic chemical reactions to organic derivatives, such as methylmercury, which bioaccumulates in individual organisms, biomagnifies in aquatic food chains, and is the most toxic form of mercury to which wildlife are exposed (U.S. Environmental Protection Agency 1997).

FEIS at 664-65. "Wildlife groups that are most likely to be directly impacted by toxins potentially present in the mine pit lake include invertebrates (i.e., insects, etc.), birds, and bats. Wildlife most likely to be indirectly impacted includes any animals that prey on insects, birds, or bats that have come in contact with the water in the mine pit lake." FEIS at 665.[3]

Despite this, no mitigation is proposed or required to prevent these direct and indirect effects from the pit lake to wildlife, especially birds, bats, insects, and the related food chain. The FEIS states that mitigation will be required to prevent wildlife access to other contaminated waters at the site (e.g., process water ponds, etc.). "This would avoid or reduce impacts during active mining **but does not apply to the pit lake that could develop during the postclosure period**." FEIS at 665 (emphasis added). Thus, the proposed mitigation will not apply when the pit lake will continuously and actually violate surface water quality standards. There is no legal justification for failing to protect surface water quality standards during post-closure.

As a result, ADEQ should rescind the Draft WQC and not issue a certification decision until it examines the effects of this pit lake on state surface water quality and obtains a mitigation plan for the pit lake. Because mitigation of the pit lake's deleterious effects is virtually impossible, the Undersigned is sure that once ADEQ examines the pit lake issue, it will have no choice but to deny certification.

9. <u>Additional Failures to Comply with All Applicable Water Quality Requirements</u>

In addition to the inadequacies of the Draft WQC discussed above, there are additional water quality concerns that have not been adequately addressed. For example, the Draft WQC does not discuss Rosemont's release of sediment and other pollutants discharged from the road culverts and other water management structures. As the Ninth Circuit has stated:

> [illegible]

[3] "Toxic" is defined as a pollutant or combination of pollutants, including inhalation, ingestion, or assimilation into any organism, either directly or through food chains, may cause death, disease, cancer, mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations in the organisms or offspring. A.R.S. § 49-201(44).

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> Further, the term man-made "conveyance," the essential trigger for finding a "point source" under the CWA, is broadly defined. [W]hen stormwater runoff is collected in a system of ditches, culverts, and channels and is then discharged into a stream or river, there is a "discernable, confined and discrete conveyance" of pollutants, and there is therefore a discharge from a point source. In other words, runoff is not inherently a nonpoint or point source of pollution. Rather, it is a nonpoint or point source under § 502(14) depending on whether it is allowed to run off naturally (and is thus a nonpoint source) or is collected, channeled, and discharged through a system of ditches, culverts, channels, and similar conveyances (and is thus a point source discharge).

Northwest Environmental Defense Center v. Brown, 640 F.3d 1063, 1070-71 (9th Cir. 2011) (culverts directing stormwater flows are point sources subject to NPDES permitting) *overturned on other grounds Decker v. Northwest Envtl. Defense Center,* 133 S.Ct. 1326 (2013). The Ninth Circuit recently reiterated, in light of the Supreme Court's and its previous decision in those cases, that:

> The Court left intact our holding that "when stormwater runoff is collected in a system of ditches, culverts, and channels and is then discharged into a stream or river, there is a 'discernable, confined and discrete conveyance' of pollutants, and there is therefore a discharge from a point source" within the meaning of the Clean Water Act's basic definition of a point source in 33 U.S.C. § 1362(14).

Northwest Envtl. Defense Center v. Decker, 728 F.3d 1085-86 (9th Cir. 2013).

The point is that stormwater runoff will impact surface water quality, but the draft WQC makes no effort to ameliorate these effects. In addition, Rosemont proposes to divert jurisdictional waters around the mine site, without protecting the aquatic life and habitat in the stream reach to be moved, and without requiring NPDES coverage for the outfall from the constructed channel. As the Ninth Circuit has held, discharges from such mine diversion channels must be covered by an NPDES permit and be considered when determining whether a project meets all water quality requirements. *Friends of Pinto Creek v. EPA*, 504 F.3d 1007, 1015-16 (9th Cir. 2007). Although the FEIS mentions this diversion as a means to mitigate other water quality impacts (e.g., keeping flows away from mine facilities), there is no analysis, or permit coverage, for this new water conveyance structure and discharge.

Further, the discharges from the soil cover and waste rock are predicted to violate water quality standards and requirements. FEIS at 472-73, 548-553. In addition to its failure to protect all existing stream uses and quality, the agency admits that direct discharges from mine facilities have the potential to violate water quality standards.

> The screening analysis for runoff from waste rock indicates that **two constituents may be elevated in mine runoff at levels that suggest they could present antidegradation problems: total and dissolved molybdenum, and total and dissolved sulfate.** The screening analysis for runoff from soil cover suggests that molybdenum and sulfate would not be elevated but that **dissolved arsenic, dissolved iron, and dissolved sodium could present antidegradation problems. In addition, dissolved and total mercury is substantially higher.** Most waste rock samples contained mercury concentrations below detection limits (74 out of 78 samples collected), but these detection limits are higher than surface water standards and therefore are not able to be incorporated into this part of the

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> analysis. Many or even all of these unusable samples could have very low mercury concentrations. The usable samples include one sample with a very high concentration of mercury (0.03 mg/L). Because of the small number of usable samples, this single sample has a large influence on the predictions. However, it appears to be a legitimate sample, and it still **indicates a potential for degradation from stormwater interacting with soil cover.** The actual runoff water quality would be predicted to be a mix of the waste rock and soil cover estimates.

FEIS at 549 (emphasis added). *See also* Tables 111 and 112, FEIS at 548, 550-552.

> Predicted runoff water quality from waste rock and soil cover meets surface water quality standards in Barrel Canyon, *or standards are already exceeded.* Full analysis of antidegradation standards and compliance with surface water standards in the Outstanding Arizona Water reaches of Davidson Canyon and Cienega Creek is under the jurisdiction of ADEQ and has not yet been conducted. However, screening analysis developed by the Coronado suggests that molybdenum and sulfate may be elevated in mine stormwater runoff but are likely to be reduced in part by several mitigations, including waste rock segregation requirements (discussed in detail below, see table 112).

FEIS Table 111 (emphasis added). *See also* FEIS at 472-473 (noting predicted exceedences of water quality standards).

In addition, ADEQ cannot rely on the fact that "standards are already exceeded." The Ninth Circuit has ruled that discharges into impaired streams (i.e., where "standards are already exceeded") cannot be allowed without a plan to remediate the exceedances and return the stream to standards. *Friends of Pinto Creek v. EPA*, 504 F.3d 1007 (9th Cir. 2007) (because such new discharges may "cause or contribute" to a violation of standards which are already exceeded, they are prohibited). As such, in addition to the other violations of water quality protection requirements noted herein, the Draft WQC must be rescinded and cannot be approved as proposed.

The project will impact aquatic and wetland resources within Pima County's Cienega Creek Natural Preserve and the Bureau of Land Management's (BLM) Las Cienegas National Conservation Area (NCA). The National Landscape Conservation System was established to protect some of the most remarkable public lands in the American West. At its nearest point, the mine site lies only roughly three miles from the NCA. The Las Cienegas NCA was established by Congress and the President, in large part, to conserve, protect and enhance the unique and nationally important aquatic, wildlife, vegetation and riparian resources such as those in the Cienega Creek watershed. Six types of rare ecosystems are protected within the NCA, including aquatic ecosystems such as cienegas (marshlands), cottonwood- willow riparian wetlands, and mesquite bosques.

Impacts from the proposed project include direct fill and secondary impacts which will result in the loss, conversion and functional degradation of aquatic and terrestrial habitats over several thousand acres. The consequence of groundwater drawdown from the proposed mine pit is the indirect loss or conversion of hundreds of acres of riparian vegetation, including wetlands, and the drying of streams currently characterized by permanent flow. These large-scale shifts in the amount and species composition of riparian areas and the loss of stream surface flows is an example of an ecological regime

shift; a large threshold change in the ecological state or condition of the Cienega Creek watershed to drier conditions.

The project site supports at least 101.6 acres of waters, including wetlands associated with springs and seeps. The project will adversely affect three types of Special Aquatic Sites (wetlands, sanctuaries and refuges, and riffle and pool complexes, see 40 CFR § 230.40-45) as well as Tier 3 "unique waters"; portions of Davidson Canyon Wash and Cienega Creek are designated by the State of Arizona as OAWs (section 303 of the CWA and 40 CFR 131.12). EPA has identified these waters as "Aquatic Resources of National Importance" pursuant to the CWA § 404(q) Memorandum of Agreement.

Filling streams, constructing the massive mine pit (2,900 feet deep), and land clearing disturbances will dramatically alter in perpetuity the topography and surface and subsurface hydrology within the Cienega Creek watershed. Placement of permanent fill and other mine-related features within this undisturbed landscape will fragment high-functioning blocks of aquatic and terrestrial wildlife habitat used as foraging and movement corridors, rendering surrounding habitats less suitable for fish and wildlife. For example, the U.S. Fish and Wildlife Service's biological opinion concludes that, because of the indirect effects of groundwater drawdown, the proposed project is likely to adversely affect designated critical habitat for the federally-listed endangered Gila chub and threatened Chiricahua leopard frog, and likely to adversely affect the federally-listed endangered Gila topminnow.

The proposed project will directly fill 39.97 acres of waters, including a largely undisturbed network of 18 linear miles of streams comprised of up to 154 individual drainages. In addition, five springs and their associated wetlands will be filled. EPA's Guidelines (40 CFR 230.11(h)) and the 2008 Mitigation Rule (40 CFR § 230.93) clearly state the need to compensate for losses of waters due to secondary impacts. The requirement that secondary impacts be fully compensated is consistent with standard practice for projects of this magnitude and essential given that the range, extent and severity of secondary adverse impacts upon aquatic resources are as significant as the direct impacts.

As described in this letter, secondary impacts have yet to be analyzed upstream of the mine and downstream of the mine beyond the confluence of Davidson Canyon and Cienega Creek. Moreover, the secondary impacts that are currently assessed by the Forest Service rely upon models that, while valid, lack the sensitivity to detect adverse impacts to much of the affected arid aquatic environment. These assessments will be necessary under the CWA to make defensible decisions regarding the regulatory restrictions on discharges and the possibility of mitigation.

Moreover, the project site supports 101.6 acres of waters of which 39.97 acres will be directly impacted. The remaining 62 acres of waters on the project site will likely be indirectly impacted. Some of these secondary impacts are accounted for with regard to reduced surface stormwater flows in Barrel and Davidson Canyons within the project area downstream of the mine site. However, there will also be secondary impacts to drainages upstream of the mine. These impacts include severing surface hydrology and connectivity, decreasing quality of wildlife habitat, and fragmentation of animal movement corridors. Secondary impacts to waters that lie upstream from the mine site need to be more completely quantified and ultimately mitigated.

Estimated indirect impacts to jurisdictional waters in Barrel and Davidson canyons downstream from the proposed mine due to modeled reductions in surface water volume resulting from the Rosemont

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Project include 28.4 acres during mine operation. The estimate shows impacts at the confluence of Cienega Creek and Davidson Canyon, but ceases its analysis at that confluence. Yet data showing an impact at this confluence is a signal that impacts are likely to extend some point beyond this confluence. Secondary impacts to waters downstream from the mine site include the reach of Cienega Creek from its confluence with Davidson Canyon downstream to Pantano Dam. Reductions in surface water flow volume have the potential to adversely affect other surface waters, including wetlands, in Cienega Creek downstream from the confluence of Davidson Canyon. These surface water impacts are likely to be significant, especially given the cumulative effects of predicted reductions in groundwater levels from the proposed mine pit.

Secondary effects on the aquatic environment include dramatic and persistent changes to surface hydrologic and hydraulic regimes driven by groundwater hydrology. For example, following mine closure the pit lake will continue to permanently divert, capture and evaporate 35-127 acre-feet of mountain-front groundwater recharge in perpetuity. This natural groundwater would otherwise replenish sensitive downstream receiving waters. *See* Comment Letter from Pima County to U.S. Forest Service on PAFEIS, dated August 14, 2013), available at http://www.rosemonteis.us/files/cooperator-review/agency-comments/pima-county-comments-to-administrative-draft-feis.pdf. During active mining, the pit will cause significant losses to recharge between 18,000-26,000 acre-feet, or about 900-1300 acre-feet annually.

Portions of sensitive and regionally significant downstream receiving waters, including Outstanding Arizona Waters, rely in part or whole on groundwater contributions to baseflow. Secondary impacts from project-related groundwater drawdown will reduce streamflows, increase water temperatures, and disrupt breeding, spawning, rearing and migratory movements, or other critical life history requirements of fish and wildlife resources.

At a minimum, eleven springs are highly likely to be indirectly impacted due to groundwater drawdown. An additional fifty-nine springs may be indirectly impacted due to drawdown. An additional 13 riparian areas associated with springs would be directly or indirectly disturbed with high certainty and an additional 36 riparian areas associated with springs may be indirectly disturbed. Although not formally delineated, subsets of these riparian areas contain jurisdictional wetlands and other waters of the U.S. As noted in the EPA's Nov. 7, 2013 letter to the Corps of Engineers: "A June 2013 field inspection by EPA, BLM and Pima County staff estimates the presence of tens to hundreds of acres of jurisdictional waters/wetlands in the assessment area likely to be impacted by groundwater drawdown. To date, the geographic extent of potentially jurisdictional waters along Empire Gulch, Gardner Canyon, Cienega Creek, and the other noted waters, has not been formally delineated and therefore secondary impacts to jurisdictional waters have not been quantified." EPA Letter at 4, n. 6.[4]

Modification to the water balance along portions of Davidson Canyon, Empire Gulch, Gardner Canyon and Cienega Creek will adversely impact special aquatic sites. The 2,900-foot deep mine pit will permanently convert the hydrologic regime of the site from a water source area to a terminal sink,

[4] Although the Draft WQC notes that this letter was considered by ADEQ, it incorrectly identified it as a November 7, 2012 letter (instead of the correct 2013 date). *See* Draft WQC "Information Reviewed" item # 21.

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significantly lowering the surrounding regional aquifer. The pit will permanently reverse the natural direction of groundwater flow toward and into the mine pit, and away from the sensitive aquatic habitats in Las Cienegas NCA and Cienega Creek Natural Preserve. This will add to a baseline trend of decreasing groundwater, causing a permanent reduction of water in streams and wetlands along Empire Gulch, Mattie Canyon, Gardner Canyon and Cienega Creek with potential adverse impacts to over 30 seasonal and perennial wetlands, and threatened and endangered aquatic habitat dependent plants, fish and wildlife.

Groundwater drawdown will result in stress and degradation of riparian habitat, including wetlands. The FEIS admits that indirect effects from the proposed mine project will change the composition of 1,071 acres of riparian vegetation along Empire Gulch *(i.e.,* 407 acres of hydroriparian) and Barrel and Davidson canyons. Several additional springs, seeps, streams, emergent marshes, and riparian areas within the project assessment area likely contain jurisdictional waters, including wetlands, which will be indirectly impacted by the proposed project, primarily from groundwater drawdown.[5]

All three groundwater models utilized by the Forest Service show an increasing, long-term trend of significant declines in groundwater levels due to the mine pit. Although there are limitations in groundwater model accuracy, the drawdown at Upper Empire Gulch Spring is within the accuracy of the models to predict *(i.e.,* 5- foot drawdown contour) and therefore, impacts to streamflow and wetlands from drawdown within Empire Gulch are reasonably certain and will be significant.

No compensatory mitigation plan compliant with the regulations has been prepared to date. A complete mitigation plan that satisfies each element of the 2008 Mitigation Rule will be necessary to comply with the CWA (including Section 404). Based on Rosemont's Conceptual Habitat Mitigation and Monitoring Plan Summary, dated on or about September 25, 2013, (Summary), proposed 404 mitigation consists of:

[5] As noted in EPA's 2013 Notice of Intent, pre-2 Gulch and Cienega Creek groundwater models predict that the stream flow drawdown along Upper Creek. Comparing these projected model drawdowns with minimum 2010 period of record for Upper Cienega Creek indicates that the cause the stream to go dry during critical low flow month concludes that a small change in stream flow during these drought periods. In addition, the FEIS states that Upper Cienega C groundwater] flow from Empire Gulch and the potential exists stream flow to result in a reduction in Cienega flow as well. Sr groundwater drawdown could affect the perennial stream flow in Empire G Creek and hydrologic changes predicted for Empire Gulch from effect on springs and flow, potentially shifting some or all of perennial to intermittent. County, as well as the BLM which expressed similar concerns regarding the secondary effects to Em surface waters from groundwater drawdown (Comments submitted to County and BLM on the PAFEIS, dated August 14, 2013). I intermittent surface flows are likely to occur in Apache Box and Mulberry Canyon which all flow within the Barrel Canyon submitted to the Forest Service by Pima County on the letter at 4, n. 8.

1) enhancement of waters and non-aquatic upland habitat at Cienega Creek below Pantano Dam, and, if necessary 2) conservation and establishment of waters at Sonoita Creek Ranch (SCR) and 3) conservation of a 160 acre parcel along a portion of Mulberry Canyon. These components are sequential; the SCR and Mulberry Canyon activities are presented as a contingency if an ILF project with sufficient credits is not available for Rosemont's purchase at Pantano Dam. To date, there is not any supporting documentation or assessment demonstrating the mitigation proposed to offset impacts to waters is compensatory. *See Draft WQC Section 5.0; see also* Nov. 7, 2013 EPA letter and the issues raised therein for further evidence that the project, even with Rosemont's proposed mitigation, can comply with the CWA.

There are significant flaws in Rosemont's plans for offsetting the project's environmental harm. First, the proposals lack an adequate functional assessment characterizing the services performed by streams/springs and wetlands directly and indirectly impacted by the project, or of those resources at the proposed mitigation lands. Second, the compensatory mitigation proposals do not account for the interrelationship of the headwater streams and the surrounding terrestrial ecology and will not replace the high quality resources in the Cienega Creek watershed. Enhancement of existing waters and upland habitat (Pantano Dam) in the lower watershed would not offset the mine's impacts to high quality headwater streams. Third, despite some assurances inherent in ILF (In Lieu Fee) proposals, there is great ecological uncertainty in the Pantano Dam proposal. Based on the information to date, the proposed mitigation is grossly inadequate to compensate for mine impacts.

The FEIS notes that, with the exception of several springs in Davidson Canyon, isotopic data have not been made available to help determine the sources of water to springs in the analysis. Isotopic data for all potentially affected springs in Davidson Canyon would be invaluable and should be required.

For individual springs and seeps for which there is insufficient data to determine the source of water and probable impact, the FEIS correctly assumes that there will be an impact. The same approach should be applied when discussing the scope of impacts related to groundwater drawdown, given that the results from the groundwater modeling contain uncertainty.

As noted below, several springs, seeps, streams, and riparian areas within the assessment area likely contain jurisdictional waters of the United States, including wetlands that will be indirectly impacted by the proposed project, primarily from groundwater drawdown. Although the FEIS estimates 407 acres of mapped hydroriparian habitat in the assessment area, a subset of these are jurisdictional waters of the United States that have not been delineated. For example, BLM staff estimate that over thirty perennial and seasonal wetlands of various acreages are associated with Cienega Creek within the Las Cienegas National Conservation Area (J. Simms, personal communication with Dr. Robert Leidy, EPA, June 2013), some or all of which may be waters of the U.S. *See* EPA August 1, 2013 Comments to USFS on Preliminary Administrative Draft FEIS, at 2, available at http://www.rosemonteis.us/files/cooperator-review/agency-comments/epa-comments-to-administrative-draft-feis.pdf.

Without a jurisdictional determination covering the assessment area, the public, as well as the ADEQ, are unable to determine the full scope of indirect impacts to areas regulated under the Clean Water Act. ADEQ needs to confirm whether potentially extensive areas of waters of the United States, including wetlands, occur in the analysis area, and that the reach and extent of these waters has not yet been

determined. Upon confirmation, ADEQ needs to quantify potential indirect impacts from the proposed actions.

Thus, as requested, ADEQ must rescind the draft WQC and conduct the further analytical work discussed in this letter.

The FEIS concludes that no seeps, springs, hydroriparian or mesoriparian habitat, areas with perennial stream flow, or critical areas that would be affected by groundwater drawdown were identified within or beyond the western model boundary. But the FEIS failed to clarify whether the required detailed surveys of springs and seeps, and other critical areas (similar to surveys conducted on the eastern slopes of the Santa Rita Mountains within the model boundaries) were conducted within and immediately adjacent to the western model boundary, particularly within the Santa Rita and Empire mountains.

Additional information regarding the potential adverse environmental consequence of seemingly small changes in groundwater levels must be added and made available for public review before any proposed WQC can be issued. The FEIS repeatedly characterizes changes in ground water levels of < 1 foot as "small." The use of the descriptors "small" or "very small" are not meaningful absent some relative measure of ecological significance or risk. Seemingly "small" changes in groundwater levels will have profound adverse effects on surface and shallow subsurface (*i.e.*, groundwater and hyporheic) flows in the Rosemont area, which is part of the Arid Southwest. In part, this is because the wetted surface area of many aquatic habitats in the arid Southwest, including the Cienega Creek watershed, is characterized by shallow surface water depths (*e.g.*, << than a few inches), especially during the drier portions of the year (April-early July), and is, therefore, extremely susceptible to drying from small changes in groundwater levels. Significant changes to stream base flow are possible because, typically, inflow to streams originates from the topmost portions of the subsidizing aquifer; small declines in the water table can significantly reduce groundwater contributions that sustain stream flow.

The FEIS acknowledges that predicted increases in temperatures and reduced precipitation resulting from climate change will continue to reduce the quantity of stormwater and groundwater available for use by riparian vegetation; result in shifts from perennial to intermittent flow along upper Cienega Creek and Empire Gulch; and increase the vulnerability of springs and riparian vegetation. The FEIS does not, however, adequately characterize potential cumulative effects from project-related groundwater drawdown and increasing demand for groundwater as a result of residential and commercial growth within the context of drought and projected climate change. The failure in the FEIS implicates a parallel failure of analysis in the draft WQC. Currently, only 13 percent of the length of Cienega Creek within the preserve exhibits a wetted channel during the driest portion of the year (*i.e.*, June) on the heels of the ongoing drought. The FEIS should reflect the latest science on climate change by explicitly acknowledging the moderate-to high levels of confidence of the latest climate change science model predictions for the American Southwest. If, as the FEIS admits, prolonged droughts similar to the ongoing Southwestern drought brought on by climate change could result in similar shifts from perennial to intermittent flow along upper Cienega Creek and Empire Gulch, then the potential additive/cumulative adverse effects from the project and other water demands on streams, wetlands, and riparian areas in the context of climate change should be clearly discussed by ADEQ. By relying on an inadequate FEIS, ADEQ cripples the credibility of the analysis supporting the draft WQC.

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The groundwater analysis area extends east of Cienega Creek, yet appears that seeps, springs, streams, wetlands and riparian areas that may lie east of Cienega Creek were not inventoried or assessed for potential effects of groundwater drawdown. Over thirty perennial and seasonal wetlands of various acreages are associated with Cienega Creek within the Las Cienegas National Conservation Area (BLM staff estimate). According to BLM, the majority of these wetlands are adjacent to Cienega Creek between Cinco Canyon and Oak Tree Canyon, and include the Cienequita, Spring Water, and Cinco Ponds wetlands. Other wetlands are found upstream of the Mattie Gulch and Cienega Creek confluence (*i.e.*, Cold Spring wetland). Many of these wetlands and aquatic features would likely qualify as jurisdictional waters of the United States. If there are potential project effects on Cienega Creek from groundwater drawdown, it follows that there would also be potential effects from groundwater drawdown on these waters, as they are immediately adjacent and hydrologically connected to Cienega Creek. ADEQ should describe these aquatic features adjacent to Cienega Creek, identify their likely CWA jurisdictional status, and indicate what the potential impacts to these features may be.

The FEIS does not discuss the extensive riverine and palustrine wetland systems within and adjacent to Empire Gulch, Gardner Canyon and Cienega Creek that will or may be indirectly impacted by the proposed action. Many of these wetlands are likely to be jurisdictional waters of the United States, but the reach and extent of federally regulated wetlands have not been delineated; therefore, the extent of indirect impacts to these waters has yet to be determined. These waters should be delineated by ADEQ. As noted above, ADEQ's reliance on the FEIS in this respect undermines the utility of the draft WQC analysis and conclusion.

The discussion of hydroriparian vegetation types does not acknowledge that portions of this vegetation type include jurisdictional wetlands regulated under the federal CWA. The reach and extent of these federally regulated wetlands have not been delineated; therefore, the extent of indirect impacts to these waters has yet to be determined in violation of ADEQ's review responsibilities.

The indirect/secondary effects of reduced aquifer recharge and bank storage from the proposed action on downstream waters in Davidson Canyon and Cienega Creek are potentially significant, as aquifer recharge is important in maintaining surface flows and shallow subsurface water levels for aquatic organisms and riparian vegetation and wetlands. Estimates of pre- and post-project aquifer recharge have been conducted for several development scenarios in the adjoining San Pedro River watershed (for example see (1): Levick L., et al. 2006. Simulated changes in runoff and sediment in developing areas near Benson, Arizona. U.S. EPA Office of Research and Development, Las Vegas, NV, and USDA Agricultural Research Service, Tucson, AZ, EPA/600/R-06/158 and ARS/1873. (2): Goodrich D.C. et al. 2004. Comparison of methods to estimate ephemeral channel recharge, Walnut Gulch, San Pedro River Basin, Arizona. Pp. 77-99 In Recharge and Vadose Zone Processes: Alluvial Basins of the Southwestern United States, ed. By F.M. Phillips, J.F. Hogan, and B. Scanlon, Water Science and Application 9, Washington D.C.). These sources are noted in EPA's August, 2013 comments to the USFS on the Preliminary Administrative Draft Final EIS.

The FEIS—and therefore the analysis supporting the draft WQC—does not adequately support the statement that mitigation measures compensate for impacts to waters of the U.S. Implementation of the mitigation measures described in the FEIS and discussed herein would not fully compensate for the project's impacts to waters of the United States (waters) (40 CFR 230 Subpart J). *See* EPA August 2013 comments to the USFS (detailing the inadequacies of Rosemont's proposed mitigation measures). The

substantial loss and degradation of water quality and other aquatic ecosystem functions are likely if the proposed mine is constructed. Of particular concern is that the geographic extent of indirect effects to waters from groundwater drawdown related to the mine dewatering is not fully known, in part because waters have not been fully delineated within the assessment area. In the absence of a full delineation of waters, it is not possible to provide adequate compensatory mitigation for indirect effects.

Reductions in stream flows, alterations in sediment transport, groundwater drawdown and increases in the concentrations of pollutants have the potential to degrade water quality (*e.g.,* warm water aquatic wildlife) and the aquatic ecosystem. The proposed project does not comply with the requirement that project operations meet all water quality protection mandates. Indirect effects may also result in significant degradation to outstanding natural resource waters in violation of applicable water quality standards.

Any degradation of Davidson Canyon and Cienega Creek water quality would be significant because they are designated as high quality waters that constitute Outstanding National Resource Waters due to their exceptional recreational and ecological significance to the State of Arizona. The State of Arizona classifies Davidson Canyon and Cienega Creek as OAWs, also referred to as Tier 3 waters under federal anti-degradation policy. Arizona's antidegradation rules provide that the "[d]egradation of an OAW ... is prohibited." A.A.C. R18-11-107. This provision is consistent with federal antidegradation requirements, which provide that water quality shall be maintained and protected in Tier 3 waters, and that the water quality in Tier 3 waters may not be lowered to accommodate economic or social development in the area where the waters are located. 40 CFR § 131.12(a).

As discussed herein, the proposed project's potential to result in reduction in stream flows to Davidson Canyon Wash and Cienega Creek, its alteration of sediment transport, groundwater drawdown, and contribution of metals such as selenium represents a failure to maintain and protect existing water quality in those OAWs. This would be inconsistent with applicable antidegradation policy. The CWA restricts discharges that would violate applicable State water quality standards (which include antidegradation policies). Such significant degradation of the aquatic ecosystem in Outstanding Natural Resource Waters is also not consistent with the 404(b)(1) Guidelines at 40 CFR §§ 230.10(c), 230.11(h).

The FEIS notes that mitigation measures, both onsite and offsite, can help offset effects in the project area. Yet the proposed mitigation would not effectively offset all impacts, and significant impacts to habitat and some species would remain. As noted herein, the development of two ILF programs and land conservation are not adequately compensatory. Further, this form of mitigation is related to impact avoidance and minimization, not compensation. Section 404 of the CWA requires "mitigation" to consist of all three, with compensation required for impacts that are not avoidable (e.g., through design features). The proposed mitigation is insufficient to meet the restrictions on discharge required by the Guidelines at 40 CFR §§ 230.10(d), 230.12(a)(3)(iv).

Independent of the requirements to avoid, minimize and, finally, compensate for impacts, the 404(b)(1) Guidelines prohibit discharges which will cause or contribute to significant degradation of waters of the United States. In consideration of the mitigation measures described in the FEIS, the direct and indirect/secondary impacts from discharges of dredged or fill material from the proposed project will not be adequately offset. As a result, these impacts are likely to cause or contribute to significant degradation of waters.

The FEIS (albeit lacking in many requirements as noted herein) shows that the proposed project will result in significant degradation because it will have significant direct and indirect/secondary effects on the structure and function of the aquatic ecosystem such as: significant adverse effects to regional water circulation and fluctuation; and significant adverse effects to aquatic organisms due to reduced flows, increased water temperatures, suspended sediments and potential increases in selenium contamination. The proposed project will also result in significant degradation to waters, including the OAWs of Davidson Canyon and Cienega Creek. These impacts are substantial and unacceptable impacts to aquatic resources of national importance.

* * * * * * *

Again, we thank ADEQ for the opportunity to comment on this important matter. As noted above, the Undersigned believes ADEQ's draft certification has serious problems requiring rescission of the draft and reconsideration of several vital issues directly tied to the quality of Arizona's surface water. We encourage ADEQ to carefully consider these comments before finalizing any decision on the mine project.

Sincerely,

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SAVE THE SCENIC SANTA RITAS; ARIZONA MINING REFORM COALITION; CENTER FOR BIOLOGICAL DIVERSITY; COALITION FOR SONORAN DESERT PROTECTION; DEFENDERS OF WILDLIFE; THE MOUNTAIN EMPIRE ACTION ALLIANCE; SKY ISLAND ALLIANCE; THE SIERRA CLUB; SARAH BARCHAS; ALISON BUNTING; WADE BUNTING, PH.D; LYNN CAREY, J.D.; TODD D. CAMENISCH, PH. D.; MORRIS FARR; JOEL L. FISHER, PH.D.; FERGUS GRAHAM; STANLEY R. HART, PH.D.; JOHN M. KOZMA; LESLIE F. KRAMER; QUENTIN LEWTON; NANCY L. MCCOY; ANNIE MCGREEVY; MARSHALL MAGRUDER; JO ANNE MEYER; JIMMY E. PEPPER; SHERRY M. PEPPER; THOMAS F. PURDON, M.D. FACOG; SUSAN SCOTT; DAVID STEELE; ARNOLD URKEN; NAN STOCKHOLM WALDEN; RICHARD S. WALDEN; JOAN WILLIAMS; MARK WILLIAMS

February 14, 2014

To: Regional Forester
Southwestern Region
333 Broadway SE
Albuquerque, NM 87102

RE: OBJECTION to the
Rosemont Copper Project
Final Environmental Impact Statement (FEIS) and Proposed Record of Decision (Draft ROD)
Responsible Official: James Upchurch, Forest Supervisor
Coronado National Forest, Nogales Ranger District

I. INTRODUCTION

Pursuant to 36 CFR Part 218, the above-listed parties (Objectors or Coalition) file this Objection to the FEIS and Draft ROD (including the proposed amendment to the Coronado National Forest Plan) issued by James Upchurch for the Rosemont Copper Project (Project or Mine). All of the Objectors filed comments on the Draft EIS on or about January 27, 2012 and have fully participated in the Forest Service's (USFS) review of the Project. Pursuant to 36 CFR 218.8, the parties state that the following content of this Objection demonstrates the connections between the January 27, 2012 comments (or "previous comments") for all issues raised herein, unless the issue or statement in the Draft ROD or FEIS arose or was made after the opportunity for comment on the DEIS closed, as detailed herein. Pursuant to the Administrative Procedure Act, 5 U.S.C. §553-706, and USFS requirements, the Regional Forester's Office must provide a detailed response to each of the issues/objections raised in this Objection.

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II. THE PROPOSED PROJECT WOULD VIOLATE NUMEROUS FEDERAL AND STATE LAWS AND CANNOT BE APPROVED AS PROPOSED IN THE DRAFT RECORD OF DECISION.

The agency admits that the Project "must comply with applicable Federal and state environmental protection laws." Draft ROD at 10. As detailed herein, however, and as noted in the January 27, 2012 comments, the Project would violate numerous federal and state mining, public lands, environmental, wildlife, historic/cultural preservation and related laws, regulations, and policies. As such, the USFS cannot approve the proposed Plan of Operations(PoO), as amended by any of the action alternatives, including the "Barrel Alternative" proposed to be approved in the Draft ROD. These laws (with their implementing regulations and policies) include, but are not limited to: the National Environmental Policy Act (NEPA), the National Forest Management Act (NFMA), Forest Service Organic Act of 1897 (Organic Act), the 1872 Mining Law, the Surface Resources Act of 1955, the Mining and Minerals Policy Act of 1970, the Endangered Species Act (ESA), the Clean Water Act (CWA), the Clean Air Act (CAA), the Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), the National Historic Preservation Act (NHPA), the Federal Land Policy and Management Act (FLPMA), the Las Cienegas National Conservation Area Act (LCNCAA), Public Water Reserve #107, Arizona State wildlife, air, water, and related statutes, and Presidential Executive Orders related to wildlife, wetlands, and other resources potentially affected by the Project.

The remedy for these violations is for the USFS to not issue any Final ROD that would authorize approval of any PoO for any action alternative reviewed in the FEIS (i.e., the USFS must deny/reject any such PoO), including the proposed operation as modified by the Barrel Alternative, that does not fully comply with each and every law, regulation, policy, and Executive Order noted herein. The Regional Forester must remand the FEIS and Draft ROD back to the Coronado National Forest with instructions to correct all errors noted herein before the USFS can consider approving any operations at the site.

III. THE CORONADO NATIONAL FOREST MUST PREPARE A REVISED OR SUPPLEMENTAL DRAFT ENVIRONMENTAL IMPACT STATEMENT.

For the reasons articulated herein, and in the January 27, 2012 comments, the FEIS is substantially inadequate and violates NEPA. The FEIS and Draft ROD fail to take the requisite "hard look" at the Rosemont Project. The FEIS is fundamentally flawed because of inaccurate and incomplete information that runs throughout the FEIS and presents an imbalanced analysis of the effects of the proposed Rosemont mine. Critical and explanatory data, methodologies, and analysis are simply not provided; this failure goes to the heart of NEPA's requirements regarding full and transparent disclosure of issues so that the public can credibly comment on the proposal. Furthermore, the FEIS contains considerable quantification of benefits but little to no quantification of adverse effects. Such unbalanced commentary is no help to a public trying to provide useful public comment, and it is not helpful to the CNF in trying to make a credible analysis of the project. Furthermore, as explained in greater detail below, the putative temporal and spatial "bounds of analysis" used in preparation of this FEIS are simply too constricting and inadequate for the public to understand fully the immediate and cumulative impacts. As such, the remedy for these

inadequacies is for the USFS to prepare and publish a revised DEIS for public and agency comment. At a minimum, a revised/supplemental DEIS must be published for public comment to meet NEPA's legal requirements.

Among other inadequacies noted herein, the FEIS fails to properly review all direct, indirect, and cumulative impacts (as well as connected actions), fails to properly review all reasonable alternatives, fails to conduct the required baseline analysis (and defers consideration of critical information until after the NEPA process is concluded), fails to conduct the proper mitigation analysis (including the effectiveness of all mitigation measures), presents significant new issues for which the public did not have the proper opportunity to comment upon before the close of the comment period on the DEIS, fails to adequately respond to public and other agency comments (including the January 27, 2012 comments of the Objectors), and presents a misleading and disorganized FEIS against the requirements of NEPA

IV. SPECIFIC OBJECTION ISSUES

The US Forest Service Cannot Approve A Mining Project That Will Create An Unmitigated, Contaminated, And Toxic Pit Lake.

As noted in the January 27, 2012 comments, the predicted contamination of the mine pit lake that will form after the groundwater pumps are turned off at the conclusion of mineral extraction is, and remains, an unmitigated and illegal aspect of the Rosemont Project. The FEIS admits that the mine pit lake that will form after active groundwater pumping ceases is predicted to be lethal to wildlife.

> The results of geochemical modeling for the mine pit lake … indicate that various contaminant levels that would result from these mining processes may exceed surface water quality standards for wildlife (see the "Groundwater Quality and Geochemistry" resource section of this chapter). For all action alternatives, the mine pit lake water quality could exceed standards for cadmium, lead, copper, mercury, selenium, and zinc, three of which are known to bioaccumulate (i.e., cadmium, mercury, and selenium). Estimates indicate that surface water quality standards for wildlife for ammonia (chronic exposure) also may be exceeded in the mine pit lake as a result of buildup of nitrogen residue from the use of ammonium nitrate explosives (see the "Groundwater Quality and Geochemistry" resource section of chapter 3).

FEIS at 664. As acknowledged by the FEIS:

> Wildlife groups that are most likely to be directly impacted by toxins potentially present in the mine pit lake include invertebrates (i.e., insects, etc.) and birds. Wildlife most likely to be indirectly impacted includes any animals that prey on insects or birds that have come in contact with the water in the mine pit lake. Acute exposure by avian species is the most likely scenario to occur, given the depth and isolation of the pit lake and general inaccessibility by wildlife. Chronic exposure is unlikely to occur directly, but chronic exposure could occur indirectly through predation on insects.

> Geochemical modeling indicates that some surface water quality standards for acute exposure to warmwater aquatic species and wildlife could be exceeded:
> • Copper exceeds the acute surface water standard for two scenarios. Copper has not been observed in background ambient groundwater concentrations at these levels.
> • Zinc exceeds the acute surface water standard under all four scenarios. The concentrations modeled for the pit lake (0.745 to 0.959 mg/L) appear to be largely the result of the concentration of zinc naturally occurring in groundwater samples collected from near-pit wells (0.694 mg/L). The background concentration also exceeds the acute surface water standard for zinc. Geochemical modeling also indicates that some surface water quality standards for chronic exposure to warmwater aquatic species and wildlife could be exceeded:
> • Cadmium exceeds the chronic surface water standard under all four scenarios. Cadmium has not been observed in background ambient groundwater concentrations at these levels and therefore is likely elevated due to contact with and reaction to the exposed rock.
> • Copper exceeds the chronic surface water standard under all four scenarios. Copper has not been observed in background ambient groundwater concentrations at these levels and therefore is likely elevated due to contact with and reaction to the exposed rock.
> • Lead exceeds the chronic surface water standard for three scenarios. Lead has not been observed in background ambient groundwater concentrations at these levels and therefore is likely elevated due to contact with and reaction to the exposed rock.
> • Mercury exceeds the chronic surface water standard for at least two scenarios. Mercury has not been observed in background ambient groundwater concentrations at these levels and therefore is likely elevated due to contact with and reaction to the exposed rock.
> • Selenium exceeds the chronic surface water standard under all four scenarios. The concentrations modeled for the pit lake (0.013 to 0.016 mg/L) appear to be partially the result of the concentration of selenium occurring in groundwater samples collected from near-pit wells (0.00212 mg/L), although the modeled concentrations are substantially higher. The background concentration also exceeds the chronic surface water standard for selenium.
> • Zinc exceeds the chronic surface water standard under all four scenarios. As noted above, this appears to be largely the result of the concentration of zinc occurring naturally in groundwater samples collected from near-pit wells, which also exceeds the chronic surface water standard for zinc.

FEIS at 389-90. This contamination will be toxic and lethal to wildlife:

> Cadmium is highly toxic to wildlife, is carcinogenic and teratogenic, and can have sublethal and lethal effects at low environmental concentrations (U.S. Environmental Protection Agency 2011b)[attached to this Objection]. It affects respiratory functions, enzyme levels, muscle contractions, growth reduction, and reproduction, and it is known to bioaccumulate in the food chain. Lead is carcinogenic and adversely affects reproduction, liver and thyroid function, and disease resistance. The main potential ecological impacts result from direct exposure of algae, invertebrates, and freshwater fish and amphibians. It can be bioconcentrated from water but does not bioaccumulate.

> Copper is highly toxic in aquatic environments and affects fish, invertebrates, and amphibians. A portion of mercury released into the environment is transformed by abiotic and biotic chemical reactions to organic derivatives, such as methylmercury, which bioaccumulates in individual organisms, biomagnifies in aquatic food chains, and is the most toxic form of mercury to which wildlife are exposed (U.S. Environmental Protection Agency 1997).

FEIS at 664-65. "Wildlife groups that are most likely to be directly impacted by toxins potentially present in the mine pit lake include invertebrates (i.e., insects, etc.), birds, and bats. Wildlife most likely to be indirectly impacted includes any animals that prey on insects, birds, or bats that have come in contact with the water in the mine pit lake." FEIS at 665.[1]

Despite this, no mitigation is proposed or required to prevent these direct and indirect effects from the pit lake to wildlife, especially birds, bats, insects, and the related food chain. The FEIS states that mitigation will be required to prevent wildlife access to other contaminated waters at the site (e.g., process water ponds, etc.). "This would avoid or reduce impacts during active mining **but does not apply to the pit lake that could develop during the postclosure period**." FEIS at 665 (emphasis added).

As noted in the January 27, 2012 comments, the agency's failure to protect wildife and comply with water quality standards in the pit lake violates numerous federal and state laws, regulations, and policies. The failure to have any mitigation plan for the contaminated pit lake itself violates NEPA (see herein for NEPA mitigation analysis and failures). However, even more problematic is the USFS' failure to comply with substantive laws that mandate the protection of wildlife, especially migratory and protected birds, from such lethal effects.

At the outset, the pit lake contamination violates the USFS's duties under the Organic Act and implementing regulations "to maintain and protect fisheries and wildlife which may be affected by the operations." 36 C.F.R. 228.8(e). These impacts also violate the USFS's duties to "minimize adverse environmental impacts on National Forest surface resources," including water resources, fish and wildlife, and habitat, under 36 C.F.R. 228.8. While this duty applies to all aspects of the USFS's review of the project (and as discussed herein, the USFS has failed to meet this protective duty to other resources as well, such as water andair quality, scenic resources, cultural resources, wildlife, etc.), the violation of this duty resulting from the pit lakeis especially problematic.[2]

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[1] Arizona defines "Toxic" as "a pollutant or combination of pollutants, that … upon exposure, ingestion, inhalation, or assimilation into an organism, either directly from the environment or indirectly by ingestion through food chains, may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformations in the organism or its offspring." Az. Admin. Code R18-11-101 (44).

[2] The pit lake is a "water of the state": "'Waters of the state' means all waters within the jurisdiction of this state including all perennial or intermittent streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, wells, aquifers, springs, irrigation systems, drainage systems and other bodies or accumulations of surface, underground, natural, artificial, public or private water situated wholly or partly in or bordering on the state." ARS 49-201(41).

Under the Organic Act, and the 36 CFR Part 228 regulations, the agency cannot approve a PoO unless it can be demonstrated that all feasible measures have been taken to "minimize adverse impacts" on National Forest resources. "The operator also has a separate regulatory obligation to 'take all practicable measures to maintain and protect fisheries and wildlife habitat which may be affected by the operations.' 36 C.F.R.§ 228.8(e)." Rock Creek Alliance v. Forest Service, 703 F.Supp.2d 1152, 1164 (D. Montana 2010) (Forest Service PoO approval violated Organic Act and 228 regulations by failing to protect water quality and fisheries). "Under the Organic Act the Forest Service must minimize adverse environmental impacts where feasible and must require [the project applicant] to take all practicable measures to maintain and protect fisheries and wildlife habitat." Id. at 1170. That has not occurred here.[3]

The creation of the toxic pit lake will also violate other federal and state laws, regulations, Executive Orders, and policies. For example, the agency cannot take any action, such as approval of the mining PoO, that would violate the Migratory Bird Treaty Act (MBTA), 16 U.S.C. §§ 703-712, the Bald and Golden Eagle Protection Act (BGEPA), 16 U.S.C. §§ 668-668d, or Executive Order 13186 (January 11, 2001) (requiring protection of migratory birds).

Under the NFMA and its implementing regulations, the USFS is required to protect the diversity of wildlife species, and manage and protect indicator and sensitive or special status species. The FEIS admits that many of these bird and mammal/bat species frequent the area. FEIS at 623-631; 646-648. The site is also within the Santa Rita Mountains Important Bird Area. FEIS at 698. Similar to the violations of the Organic Act/Part 228 and the MBTA and BGEPA, the failure to mitigate against the creation of the contaminated pit lake and its associated severe impacts to these species violates the NFMA and its implementing regulations. Violations of the Endangered Species Act will similarly result (see additional ESA discussion herein).

Enacted to fulfill the United States' treaty obligations to protect migratory birds, the Migratory Bird Treaty Act ("MBTA") provides that "[u]nless and except as permitted by regulations made as hereinafter provided in this subchapter, it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill . . . any migratory bird." 16 U.S.C. § 703(a). *See* Missouri v. Holland, 252 U.S. 416, 434-35 (1920) (describing the "national interest of very nearly the first magnitude" in protecting migratory birds "that yesterday had not arrived, tomorrow may be in another State and in a week a thousand miles away"). FWS's list of species protected by the MBTA includes many birds that use the area where the Rosemont Project would be constructed and operated. *See* 50 C.F.R. § 10.13 (list of migratory birds).[4]

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[3] The fact that most, but not all, of the lands containing the proposed open pit are private lands owned/controlled by Augusta/Rosemont does not remove the USFS's authority to prevent the significant adverse impacts noted herein. The USFS has the authority, indeed the obligation, to prevent these impacts, both on federal public land within the pit boundary as well as on all lands and waters affected by the USFS's approval of any PoO.

[4] The FEIS also failed to review the adverse impacts to the specific migratory bird species listed by the FWS regulations. Although the FEIS mentions migratory birds in general, it largely focused only (albeit in a cursory manner) on those species protected by other laws such as the NFMA and ESA. This is a failure under NEPA to review the direct, indirect, and cumulative impacts to these designated species.

The MBTA strictly prohibits killing migratory birds without authorization from the Interior Department. Enacted to fulfill the United States' treaty obligations, the MBTA provides that "[u]nless and except as permitted by regulations made as hereinafter provided in this subchapter, it shall be unlawful *at any time, by any means or in any manner,* to pursue, hunt, take, capture, kill, attempt to take, capture, or kill . . . any migratory bird." 16 U.S.C. § 703(a) (emphasis added). The Secretary of Interior is authorized to permit the killing of birds otherwise protected by the MBTA when doing so would be compatible with migratory bird conventions. *Id.* § 704(a). *See also* Executive Order 13186.

Where federal agencies themselves undertake a project which will inevitably result in migratory bird mortalities – regardless of whether the mortalities are intentional – without first obtaining authorization from the Interior Department to kill migratory birds, the agency's actions are unlawful. *See* Humane Soc'y of the U.S. v. Glickman, 217 F.3d 882, 884-88 (D.C. Cir. 2000) (holding that federal agencies must obtain authorization from the Department of the Interior before they kill birds protected by the MBTA, or permit state agencies to do so); *see also* City of Sausalito v. O'Neill, 386 F.3d 1186, 1204 (9th Cir. 2004) (holding that "anyone who is 'adversely affected or aggrieved' by an agency action alleged to have violated the MBTA has standing to seek judicial review of that action"); United States v. Moon Lake Elec. Ass'n, 45 F. Supp. 2d 1070 (D. Colo. 1999) (holding that the MBTA prohibits the unintentional killing of protected birds by power lines). In particular, courts have held that activities undertaken without an MBTA permit by federal agencies (including military agencies) that are predicted to result in incidental take of migratory birds constitute violations of the MBTA. *See* Ctr. for Biological Diversity v. Pirie, 191 F. Supp. 2d 161, 174-75 (D.D.C. 2002), *vac'd as moot sub nom.*, Ctr. for Biological Diversity v. England, No. 02-5163, 2003 WL 179848 (D.C. Cir. Jan. 23, 2003) (holding that Navy training exercises, which were not "directed at wildlife" but did have the predictable and "direct consequence of killing and harming migratory birds," violated the MBTA's take prohibition, and explaining that "the MBTA prohibits both intentional and unintentional killing").

In particular, the creation of contaminated water bodies or the release of contamination into the environment that may kill or take migratory birds violates the MBTA. *See* United States v. FMC Corporation, 572 F.2d 902, 908 (2nd Cir. 1978)(release of "contaminated water into the pond" violated the MBTA); United States v. Corbin Farm Serv., 444 F. Supp. 510, 532-36 (E.D. Cal. 1978) (MBTA prohibits the unintentional killing of protected birds by pesticide poisoning).

The federal government specifically recognizes that the killing or taking of migratory birds due to contacting contaminated mine ponds violates the MBTA – including a noted case involving an Arizona copper mine. *See* U.S. Dept. of Justice News Release August 9, 2004 (attached): "PHELPS DODGE MORENCI, INC. PLEADS GUILTY TO VIOLATING THE MIGRATORY BIRD TREATY ACT." As stated by the DOJ:

> "[O]ver sixty birds were found dead on the Morenci Mine Site between October 2000 and March 2001. Since then, additional dead birds were found on the Site. The information charges Phelps Dodge Morenci, Inc., with the deaths of forty-three birds identified as being migratory species protected under the Act. Some of the impounded waters on the site, near which the dead birds were found, contained acidic waters resulting from the mining process. Laboratory studies

> have demonstrated that ingestion of sulfuric acid and copper solutions is lethal to migratory birds."

DOJ News Release at 1. *See also* United States v. Duke Energy Renewables, Information/Complaint (U.S. District Court, Wyoming)(Nov. 7, 2013)(criminal charges for violation of MBTA for death of migratory birds from wind farm)(attached); United States v. Duke Energy Renewables, Plea Agreement in same case, Nov. 2013 (attached); U.S. Dept. of Justice News Release, "Utility Company Sentenced in Wyoming for Killing Protected Birds at Wind Projects, Nov. 22, 2013." (attached).

Open contaminated waters at mine sites in the arid West are especially problematic as they attract migratory birds, resulting in lethal effects. *See* Pit Lakes, Contaminant Issues, Region 6 Environmental Contaminants, U.S. Fish and Wildlife Service, http://www.fws.gov/mountain-prairie/contaminants/contaminants8.html[1/24/2014 10:02:40 AM] (attached). Exposure/contact with the type of contaminants in the pit lake is lethal for migratory birds. *See* Hooper, et al., AVIAN CONSUMPTION AND USE OF CONTAMINATED WATER SOURCES: TOXICOLOGICAL ASSESSMENTS OF EXPOSURE, EFFECTS AND SUSCEPTIBILITY. Final Report - Part I Report No. RWO55-T04-47-A (2007)(prepared for US Fish and Wildlife Service)(attached).

A similar violation exists with respect to the BGEPA. BGEPA prohibits "take" of any bald or golden eagle "at any time or in any manner" "without being permitted to do so" by the Service. 16 U.S.C. § 668(a) (imposing criminal penalties for unlawful take done "knowingly, or with wanton disregard"), *id.* § 668(b) (imposing civil penalties for unlawful take on a strict liability basis). BGEPA defines the term "take" broadly to include "wound, kill . . . molest or disturb." *Id.* § 668c. "Take" under BGEPA includes direct incidental take, such as what will occur from the mine pit lake, as well as indirect incidental take, such as habitat modification and human disturbance that adversely impact eagles. BGEPA allows the Service to issue permits authorizing the take or disturbance of golden eagles provided that such take "is compatible with the preservation of the bald eagle or the golden eagle." 16 U.S.C. § 668a. In 2009, the Service promulgated regulations for issuing incidental take permits for both individual instances of take as well as "programmatic take" for take that is recurring. 50 C.F.R. § 22.26. The Service may issue an eagle take permit so long as the take is: (1) "compatible with the preservation" of eagles; (2) necessary to protect an interest in a particular locality; (3) associated with but not the purpose of the activity; and (4) for individual instances of take, the take cannot practicably be avoided; or for programmatic take, take is unavoidable even though advanced conservation practices are being implemented. *Id.* §22.26(f). For purposes of these regulations, "compatible with the preservation" of eagles means "consistent with the goal of stable or increasing breeding populations." Service, Final Rule: Eagle Permits; Take Necessary To Protect Interests in Particular Localities, 74 Fed. Reg. 46,837 (Sept. 11, 2009) (codified at 50 C.F.R. pt. 22). No such required permit has been issued to Rosemont in this case.

In addition, the contaminated pit lake will violate Arizona state law mandating protection of birds and wildlife. As stated by the Arizona Game & Fish Department:

> ARS 17-236 prohibits the take or injury of any bird … except as may occur in normal horticultural and agricultural practices and except as authorized by [Game and Fish] Commission order. **No exceptions are made for mining. The project must be planned so as to eliminate violation of 17-236 and compliance with**

> **the Migratory Bird treaty Act** in coordination with the Department and USFWS.

June 30, 2011 AZ Dept. of Game and Fish comments on Preliminary Draft EIS (emphasis added), at 17-18 (of attached PDF). Under Arizona law, similar to the MBTA and BGEPA, it is illegal to kill/take migratory birds via contact with the contaminated pit lake. Neither Rosemont nor the USFS has taken any action "so as to eliminate violation of 17-236." The USFS failed to meet these concerns, forcing the Game and Fish Department to reiterate these serious concerns in its comments on the Preliminary Administrative Draft FEIS:

> The text describes how the **water quality in the mine pit lake could exceed standards for cadmium, lead, copper, mercury, selenium, ammonia and zinc at levels toxic to invertebrates and birds**. The FEIS section on Groundwater Quality notes that the pit lake may also be acidic.
>
> **The FEIS does not describe any mitigation measures for the mine pit lake. CEQ requires a discussion of mitigation measures, even if the mitigation is beyond the authority of the federal agency to implement.** An analog site is the Berkeley Pit, an acidic and metalliferous pit lake that formed at former open pit copper mine in Butte, Montana.
>
> RECOMMENDATION: The FEIS should further note that birds may perish in the mine pit lake due to exposure to these constituents in violation of the Migratory Bird Treaty Act.
>
> The FEIS should discuss the potential treatment options of the Rosemont Mine pit lake following closure of mine to reduce or eliminate adverse impacts to wildlife.

August 15, 2013 Comments from Az. Dept. of Fish and Game, at 6-7 (on USFS website at: http://www.rosemonteis.us/files/cooperator-review/agency-comments/agfd-comments-to-administrative-draft-feis.pdf.)(emphasis added).

The FEIS admits that, for migratory birds: "For all action alternatives, take (manifested as wound or kill, especially for eggs and nestlings) is expected to occur." FEIS at 697. "Activities resulting from all of the action alternatives that could result in unintentional take include the following (SWCA Environmental Consultants 2013i): … Pit lake and process ponds." FEIS at 697. "Unintentional take of migratory birds is expected to occur." FEIS at 698.

Despite these admissions, according to the USFS, the killing/taking of migratory birds by the mine pit lake does not violate the MBTA since the killing/taking "would be unintentional, as the purpose of the action is extraction of minerals, rather than the taking of birds." FEIS at 697.

That is not a correct interpretation of the law. As noted herein, the agency's approval of a project which it knows will kill/take migratory birds is a violation of the MBTA. For example, in the civil and criminal cases noted above, the federal government has successfully charged operators of mining and energy projects with violations of the MBTA for such so-called "unintentional" killing/taking. The "purpose" of these projects was certainly not to kill birds, yet the injury to the birds resulting from the project operations was found to be a violation of the MBTA.

Indeed, the FEIS admits that any nest of a migratory bird must be protected from Mine operations – otherwise a violation of the MBTA would occur.

> Because the Migratory Bird Treaty Act of 1918, as amended, provides Federal protection to all migratory birds, including nests and eggs, if an active nest is observed during any activities related to the project, **measures should be taken to protect the nest from destruction and to avoid a violation of the Migratory Bird Treaty Act.** Under the Migratory Bird Treaty Act, it is unlawful to take, kill, or possess migratory birds.

FEIS at 697-98. Despite this, no mitigation or protective measures were reviewed or considered to prevent the creation of the contaminated pit lake and bird killing/taking.[5] The duty to protect the nest of a migratory bird, which the agency acknowledges must be done "to avoid a violation of the Migratory Bird Treaty Act," is not materially different from the duty under the MBTA to take "measures" to protect birds from the toxic pit lake.

The fact that, at least according to the FEIS, the pit lake will be a "hydrologic sink" and will not discharge to groundwater (a conclusion challenged elsewhere in this Objection), is not an excuse to violate the MBTA. The USFS further states that since the pit lake is not predicted to discharge to surface or ground waters, water quality standards do not apply. FEIS at 389. Whether the creation of a contaminated pit lake will violate drinking water standards, while a critical violation of other laws such as the Organic Act and the CWA (see herein), is not determinative of whether the Project violates the MBTA. The issue is whether the toxic pit lake will kill/take any migratory bird. As noted herein, the FEIS admits that this will be the case.

The failure to review or require any plan to mitigate against the contamination in the pit lake also fails to consider the reasonable potential that the waters could be used for human consumption or other uses (such as irrigation) in the future. The fact that the pit lake would not be accessible for humans and livestock during the life of the mine or even shortly thereafter does not mean that such will always be the case in the future. The purported low potential for water in the pit lake to migrate to the groundwater does not equate to a similar purported low potential for future water users to use the water in the pit lake. The USFS did not analyze the scenario that water in the pit could be used in the future in the same time frames that it analyzed pit lake levels.

The fact that the waters of the pit lake may not be used currently or in the near future does not mean that this will always be the case. This is especially true in this arid agricultural area of Arizona, (with additional residential needs also forecasted) as there is a definite potential for

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[5] The only real mention of any so-called mitigation for the pit lake contamination is for Rosemont to conduct a "periodic update and rerunning of pit lake geochemistry model throughout life of mine." FEIS at 714. Although this modeling would supposedly "inform potential mitigation measures upon closure that may need to be taken with respect to wildlife exposure," such vague and unsubstantiated measures not only fail to prevent the predicted impacts (especially when the agency says it has no duty to protect migratory birds from "unintentional" killing/taking), they violate NEPA's mandate that such measures be reviewed subject to public review in the Draft and Final EISs.

future need of the water in the pit lake, a potential which the FEIS failed to recognize or analyze.

Although the FEIS analyzed the groundwater depletion and its effects, and the creation of the pit lake, for hundreds of years in the future (*see e.g.,* Table 74, FEIS at 387), it failed to consider the potential future uses of the contaminated water that will form in the pit lake for any similar or significant length of time. The prediction that the pit lake will be a hydrologic sink does not eliminate this potential, nor the need for the agency to review this under NEPA (and ensure that the lake comply with all water quality standards in the future, which the USFS did not do in violation of the agency's substantive water quality protection requirements noted herein).

As such, because the USFS cannot approve a mining PoO that threatens a violation of any federal or state law, the agency cannot issue a ROD that would approve any of the action alternatives. The Draft ROD must be remanded back to the Coronado National Forest with instructions to either approve the No-Action Alternative (i.e., PoO denial), or have the company resubmit a PoO that complies with all federal laws as noted herein (including the MBTA and BGEPA). A revised DEIS must also be prepared.

The USFS Fails To Fully Review, Reclaim, And Require Protective Measures/Mitigation To Prevent The Contaminated Pit Lake.

As noted in our previous comments, in addition to the agency's substantive failure to prevent serious harm, injury, death, and other impacts to birds (and other wildlife) prohibited by the MBTA, BGEPA, the Organic Act, ESA, NFMA, and Part 228 regulations, the failure to fully review (or review at all) the need to mitigate and prevent these impacts violates the procedural requirements of NEPA. This is especially true due to NEPA's mitigation requirements (discussed herein), as well as the agency's duty to impose mitigation measures under these substantive laws.

It is accepted practice for federal and state land management agencies to impose mitigation and other measures to prevent the formation of a contaminated pit lake, or if the lake is predicted to form, to require mitigation to prevent any contamination. The U.S. BLM, for example, requires the completion of a detailed Ecological Risk Analysis (ERA) for all pit lakes.

> Ecological Risk Assessment (ERA) is a process that analyzes the likelihood that adverse ecological effects may occur as a result of exposure to one or more stressors. Since 1996, the Bureau of Land Management (BLM) has been utilizing ERAs in Nevada to evaluate pit lake effects. In recent year's new ecological screening information, criteria and tools have been provided by the U.S. Fish and Wildlife Service (USFWS), U.S. Environmental Protection Agency (EPA), U.S. Department of Energy (DOE), national laboratories, state universities, and state agencies.
>
> An ERA is a useful tool to aid in analyzing the current and future environmental impacts of mining pit lakes on wildlife and the ecosystem. **When the BLM is preparing a National Environmental Policy Act (NEPA) analysis and it is**

predicted there is potential water quality problem with the future pit lake, an ERA should also be prepared.

BLM Nevada State Director, Instruction Memorandum No. NV-2010-030, Subject: Ecological Risk Assessment Guidelines for Open Pit Mine Lakes in Nevada, at 1 (attached). No such analysis was undertaken by the USFS at Rosemont.

Because the USFS mistakenly believed that it was under no obligation to prevent the formation of the contaminated pit lake, it never reviewed or required any mitigation. This again violates the USFS's substantive and procedural duties. Such mitigation/prevention is not only practicable, reasonable and feasible, it is being done at other open pit mines.[6] Copper mines in New Mexico are required to pump the ground water away/out of the pit in perpetuity to prevent the formation of a pit lake. *See* CHINO CLOSURE/CLOSEOUT PLAN UPDATE, CHINO MINES COMPANY HURLEY, NEW MEXICO (2007)(attached). That mine is required to pump and treat in perpetuity to prevent adverse water quality problems that would result if the pit lake formed. "The performance objectives for the pit floor areas are to maintain the hydraulic sink for capture and removal of impacted water. Impacted water will be captured in pit floor sumps then pumped to the water treatment facility." Id. at 85. The company is required to: "provid[e] and/or maintain hydraulic systems on the pit floor to capture and transfer impacted water to the site-wide water treatment facility; and provid[e] interceptor wells to control groundwater." Id. at 98.

Thus, it is not only practicable, reasonable, and feasible, but an accepted regulatory practice, to prevent the formation of a contaminated pit lake through perpetual pumping and treating of the water. In considering such an alternative and mitigation measure as required under NEPA and other applicable requirements noted herein, it should be noted that such pumped water must meet all standards and must be distributed so as to eliminate or greatly reduce any adverse impacts on the resources dependent on groundwater in the area (e.g., such as surface waters, springs/seeps, etc.).

If a contaminated pit lake forms, the USFS also has a duty to require a financial assurance/bond from Rosemont to prevent the contamination. This will usually take the form of a long-term trust fund or contingency fund to finance the water treatment facilities (either in-pit) or of pumped water. The USFS's bond policy expressly contemplates such long-term/perpetual treatment financial instruments. *See* TRAINING GUIDE FOR RECLAMATION BOND ESTIMATION AND ADMINISTRATION For Mineral Plans of Operation authorized and administered under 36 CFR 228A USDA – Forest Service April 2004 (attached). "Water treatment may be for a specific period of time or perpetual treatment may be necessary. … Active water treatment systems require the operation of a water treatment plant. Bonds should address engineering design, operating maintenance, and replacement costs, including labor, power, equipment and supplies." Id. at 17.

> In recent years, trust funds have been investigated as a means to fund such long-term future costs. Such trusts allow the operator to make an initial deposit or deposits which are then invested by the trustee in conservative instruments such

[6] The failure of the DEIS/FEIS to consider the reasonable alternative of pit lake prevention/remediation is itself a violation of NEPA's mandate that the agency fully consider all reasonable alternatives, as noted herein.

> as federal government securities. The amount of the initial payment to be placed in the trust can be estimated using a present net value analysis using assumptions about interest and inflation.

Id. at 24. *See also* Record of Decision, Rock Creek Project, USFS, Kootenai National Forest, June 2003 (requiring long-term bond for water treatment from mine operations)(attached). The Chino copper mine in New Mexico was also required to establish a long-term/perpetual bond for pumping and treating to avoid the creation of a contaminated pit lake (*see* Chino Closure/Closeout Plan, at 112-14, discussing bond amounts).

The U.S. EPA has recognized the need for long-term water treatment reclamation bonding for mine pit lakes in the West. *See, Management and Treatment of Water from Hard Rock Mines*, US EPA (2006)(attached). The EPA report details both the need for treatment of mine pit lakes, as well as a number of ways to minimize and/or prevent the contamination in the lakes. Id. at pp. 28-36. None of these were considered, let alone required, by the USFS at Rosemont. These practices are specially designed in many instances to remediate the same chemical pollutants that are predicted to violate water quality standards in the Rosemont pit lake. Id.

The failure of the USFS to prevent, or at a minimum remediate and treat, and require a bond/financial assurance to cover, this contamination violates the agency requirements noted herein. As such, the Draft ROD must be remanded back to the Coronado National Forest with instructions to either approve the No-Action Alternative (i.e., PoO denial), or have the company resubmit a PoO that complies with all federal laws as noted herein.

The failure to have any plan to reclaim/remediate the contaminated pit lake is also another aspect of the incomplete and unreasonable nature of the Rosemont PoO proposed to be approved (as amended by the Barrel Alternative). *See* discussion on these requirements herein. Under the Part 228 regulations, the agency can only approve a mine that can be reclaimed. In detailing the reclamation requirements, the regulation states that the:

> [O]perator shall, where practicable, reclaim the surface disturbed in operations by **taking such measures as will prevent or control onsite and off-site damage to the environment and forest surface resources** including:
> (1) Control of erosion and landslides;
> (2) Control of water runoff;
> **(3) Isolation, removal or control of toxic materials**;
> (4) Reshaping and revegetation of disturbed areas, where reasonably practicable; and
> **(5) Rehabilitation of fisheries and wildlife habitat.**

36 CFR 228.8(g)(emphasis added). By creating a toxic and contaminated pit lake, the agency has violated these requirements.

Neither Rosemont nor the USFS has made any showing that "preventing or controlling" the pit lake contamination is not "practicable."[7] Nor have they produced any plan to "isolate, remove or control" the "toxic materials" that will be contained in the pit lake. Indeed, the agency bases

[7] "Practicable" is defined "that which may be done, practiced, or accomplished; that which is performable, feasible, possible." Black's Law Dictionary, Fifth Ed.

the FEIS and Draft ROD on the position that neither the company nor the USFS has any duty or responsibility to prevent the pit lake contamination – which as shown herein violates numerous legal requirements.

As noted in the USFS's *Anatomy of a Mine* regulatory guidance report, reclamation is a critical and required component of a logical, complete and reasonable mining plan:

> Satisfactory reclamation should emphasize three major objectives:
> 1. The productivity of the reclaimed land should at least equal that of the premine surface. This does not necessarily mean that the site must be restored to an approximation of its original condition, or that surface uses after mining will be the same as those existing prior to mining. For example, an area used for marginal grazing prior to mining may be changed to a useful and attractive recreational complex, or perhaps in another case to a housing area.
> 2. **Satisfactory reclamation should leave the mined area in a condition that will not contribute to environmental degradation either in the form of air- or water-borne materials, or from chemical pollution.**
> 3. The reclaimed area should be esthetically acceptable and it should be safe for the uses intended.

"*Anatomy of a Mine, From Prospect to Production,*" USDA Forest Service, General Technical Report INT-GTR-35, Revised February 1995, at 68-69 (emphasis added)(attached).

The Mining and Minerals Policy Act also mandates successful and final reclamation of mine operations approved by the USFS, requiring "**the reclamation of mined land, so as to lessen any adverse impact of mineral extraction and processing upon the physical environment that may result from mining or mineral activities**." 30 U.S.C. 21a. No such plan to "lessen any adverse impact" from the creation of the contaminated pit lake has been proposed or required in this case.

The FEIS acknowledges that reclamation includes the requirement that Rosemont "**return the site to a stable and acceptable condition**." FEIS at 97. Yet nowhere does the agency have any plan to prevent what clearly is *not* an "acceptable condition" – the creation of a contaminated and toxic pit lake.

The creation of a perpetual source of contaminated water, especially one which is a direct threat to wildlife, violates the federal laws and regulations noted herein. As such, the USFS cannot issue a ROD choosing any action alternative and must reject any PoO that does not prevent or fully remediate the mine pit lake contamination.

The Failure to Produce and Review any Plan to Smelt/Process the Ore Renders the Plan of Operations Unreasonable and Incomplete, which Cannot be Approved by the USFS.

Under the USFS's mining regulations, 36 CFR Part 228, implementing the Organic Act and other laws, the USFS cannot approve an unreasonable PoO, or a PoO that does not satisfy all submittal requirements (including the requirement that the Project complies with all federal and state laws, regulations, and policies). The Project as proposed in the Draft ROD fails to

meet these requirements.

The Draft ROD proposes to authorize a major mining operation without knowing where, or how, the ore will be smelted/processed, or where/how the concentrate/cathodes will be transported. "**It is not known where or how this material will be transported**, although analysis addresses transport by truck to several potential destinations. Likewise, **the location of smelting is unknown** other than the fact that Rosemont has indicated it will not be in the United States." FEIS at G-27 (emphasis added). "Rosemont Copper has not specified where smelting would occur, other than to state that it would not be in the United States due to capacity limitations." FEIS at 33.

Thus, the Forest Service is proposing to approve a Mine that has no current plan to mill or process the ore. It is the agency's duty to make sure that the PoO is complete, reasonable, and can be accomplished, which includes the mandate to require and analyze a plan to mill/process the ore. Deferring the requirement to the company to submit a complete mine plan, and deferring any analysis of the connected actions and/or cumulative impacts from the smelter/mill, not only violates NEPA, it contradicts the USFS' own regulations and policies. *See* "*Anatomy of a Mine, From Prospect to Production,*" USDA Forest Service, General Technical Report INT-GTR-35, Revised February 1995, at 64-65 (detailing how smelting/processing of ore is an integral part of a complete mining plan)(attached). It is accepted USFS policy and practice to deny mining PoOs that do not contain an adequate plan to process the ore. *See* USFS Rouge River-Siskiyou National Forest correspondence and related court documents related to the RNR mining plan of operations (2012 and 2013)(finding that the lack of a plan to process the ore results in an "incomplete" and "unreasonable" mining plan that cannot be reviewed and approved under the part 228 regulations)(attached).

As noted in the January 27, 2012 comments, it is well established that the Forest Service must reject an unreasonable PoO, especially one without a definite plan to transport and smelt/process the ore. "[T]he Forest Service clearly has the power to reject an unreasonable plan, and to impose conditions on the mining activity." Baker v. United States Department of Agriculture, 928 F. Supp. 1513, 1518 (D. Idaho 1996). "The Forest Service may reject an unreasonable Mine Plan of Operation." FEIS at G-39. The "reasonableness" of the PoO and the duty of the agency to protect surface resources are expressly linked together. According to the agency's mining regulations, upon receipt of a plan of operations: "[t]he authorized officer shall … analyze the proposal, considering the economics of the operation along with the other factors in determining the reasonableness of the requirements for surface resource protection." 36 CFR § 228.5. It is impossible for the agency to adequately process the PoO, and to adequately involve the public in that review, when the absolutely critical milling plan is missing.

The fact that a potential mill would be located somewhere off-site (including maybe across the border somewhere in Mexico) does not eliminate the applicant's duty to submit a complete mine plan, nor the agency's duty to ensure that it, and the public, have a complete plan to review in the FEIS, DEIS (and scoping beforehand).

Here, there is no evidence that this Mine can be reasonably operated, as there is no plan to mill and process the ore. Without such a plan, the ore is essentially of no value. The Forest Service would be violating its duties under the Organic Act and Part 228 regulations if it approved a plan without sufficient evidence that it was economic and therefore reasonable. At a minimum,

the agency should not approve the PoO until it is satisfied that the Project is economically and environmentally reasonable – which requires that the PoO contain a plan to process the ore.

The current PoO (and FEIS and Draft ROD) are not "reasonable" because they are clearly incomplete. The applicant has not submitted a detailed mining plan of operation as required by 36 CFR § 228.4(c)(3) & (d), § 228.8, and § 228.12 and as defined by § 228.3(a). Among these requirements is the mandate that the PoO must include:

> Information sufficient to describe or identify the type of operations proposed and how they would be conducted, the period during which the proposed activity will take place, and the measures to be taken to meet the requirements for environmental protection in § 228.8.

36 CFR § 228.4(c)(3). "The plan of operations shall cover the requirements set forth in paragraph (c) of this section, as foreseen for the entire operation for the full estimated period of activity." 228.4(d).

"Operations" is defined to include "**[a]ll functions, work, and activities in connection with** prospecting, exploration, development, mining or **processing of mineral resources**." 228.3 (a). A mining plan of "operations" is thus incomplete and unreasonable when it does not contain all necessary "operations" as defined by the agency itself.

The agency has the authority, and indeed the obligation, to delay or deny consideration of the PoO until it has received all relevant information about necessary aspects of the mine plan, including the milling/processing/smelting.

> The [agency] may require information beyond that submitted with an initial MPO [Mining Plan of Operations]. **"[I]nsofar as [the agency] has determined that it lacks adequate information on *any* relevant aspect of a plan of operations, [the agency] not only has the authority to require the filing of supplemental information, *it has the obligation to do so.*"** Great Basin Mine Watch, 146 I.B.L.A. 248, 256 (1998).

Center for Biological Diversity v. U.S. Dept. of Interior, 623 F.3d 633, 644 (9th Cir. 2010) (emphasis added).

Unsupported assertions from the company that it will mill the ore somewhere at some future time are clearly inadequate under NEPA, the Organic Act, and Part 228 regulations. "Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA. 40 C.F.R. § 1500.1(b). General statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." Western Watersheds Project v. Kraayenbrink,632 F.3d 472, 491 (9th Cir. 2011).

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The USFS Fails To Review The Off-Site Impacts From The Processing/Smelting And Transportation Of Ore Concentrate.

The failure of the PoO to describe, let alone detail, the processing of the ore renders the PoO incomplete and any FEIS based on such incomplete information inadequate under NEPA and other laws noted herein, such as the NHPA. The Forest Service should inform Rosemont that the agency cannot process the PoO until the required information is submitted. As noted in the January 27, 2012 comments, the failure to properly analyze all of the impacts from the transportation and processing of the ore violates NEPA. Cumulative impacts must be reviewed "regardless of what agency (Federal or non-Federal) or person undertakes such other actions." 40 CFR § 1508.7.

The Ninth Circuit has recently and specifically rejected the argument that an EIS for a mining operation did not have to fully review the impacts from off-site ore processing and transportation. In South Fork Band Council of W. Shoshone of Nev. v. U.S. Dep't of the Interior, 588 F.3d 718, 725 (9th Cir. 2009), the Ninth Circuit found unlawful BLM's FEIS and ROD reviewing and approving a mining PoO because it failed to evaluate the environmental impacts of transporting and processing the ore at a facility 70 miles away. The court noted that "[t]he air quality impacts associated with transport and off-site processing of the five million tons of refractory ore are prime examples of indirect effects that NEPA requires be considered." Id.

In another recent decision considering a challenge to federal approval of mineral leasing and mining, the court required an agency to look at the impacts from the proposed mill that would process ore from mines/leases, despite the fact that the proposed mill would be on private lands and despite the fact that the mill was not directly associated with the mines/leases being proposed and was not included in the lease/mining proposals. The court held:

> [The agency's] other two arguments—that the effects of the mill need not be evaluated because (1) it is being built by a company on private land, and (2) approval of the mill is controlled by other governmental entities—lack merit. Regardless of whether an EA or EIS is being prepared, the agency conducting the analysis must consider the "cumulative impacts" of the proposed action. …
>
> Nothing in this regulation suggests that ''cumulative impacts'' are limited to those occurring on [public] land, or that [the agency] need not consider the impacts from related activities that another federal agency is in charge of approving or disapproving.

Colorado Environmental Coalition v. Office of Legacy Management, 819 F.Supp.2d 1193, 1212 (D. Colo. 2011). *See also* Sierra Club v. U.S. Dept. of Energy, 255 F.Supp.2d 1177, 1185 (D.Colo. 2002) (agency must review impacts from "reasonably foreseeable" mine on private land when preparing NEPA document for federal land easement related to the future mine. "The fact that a private company will undertake the mining is irrelevant under NEPA regulations. *See* 40 C.F.R. § 1508.7 ('regardless of what agency or person undertakes such other actions')").

Due to causal connection between the Project (and the USFS's approval) and the smelting/processing of the ore, the revised Draft EIS must fully review these activities as

connected actions under NEPA (as well as review the direct, indirect, and cumulative impacts). Impacts must be analyzed when there is "'a reasonably close causal relationship' between the environmental effect and the alleged cause." Department of Transportation v. Public Citizen, 541 U.S. 752, 767 (2004). In Border Power Plan Working Group v. Department of Energy, 260 F.Supp.2d 997 (S.D. Calif. 2003) the court found that the agency was required to consider the trans-boundary impacts of certain power turbines in Mexico in their EIS on a U.S. transmission line because the projects were "two links in the same chain." Border Power Plant Working Group v. Dep't of Energy, 260 F. Supp. 2d 997, 1016 (S.D. Cal. 2003) ("effects must be causally linked to the proposed federal action in order for NEPA to require consideration of those effects in an EA or EIS.").

Agencies must analyze all indirect and cumulative adverse environmental effects that are "reasonably foreseeable" if it is sufficiently likely to occur. These impacts include the off-site adverse effects from the smelting/processing and transportation. "The Forest Service says that cumulative impacts from non-Federal actions need not be analyzed because the Federal government cannot control them. That interpretation is inconsistent with 40 C.F.R. § 1508.7, which specifically requires such analysis." Center for Biological Diversity v. National Highway Traffic Safety Administration, 508 F.3d 508, 517 (9th Cir. 2007)(agency must review of impact of greenhouse gases when setting vehicle fuel economy standards), *quoting* Res. Ltd., Inc. v. Robertson, 35 F.3d 1300, 1306 (9th Cir.1994). "[S]tatements that the indirect and cumulative effects will be minimal or that such effects are inevitable are insufficient under NEPA." Ctr. for Biological Diversity v. U.S. Dept. of Interior, 623 F.3d 633, 640 (9th Cir. 2010). In one leading case, the agency was required to review the impacts from the burning of coal when reviewing the proposed railway access and transportation of the coal. Mid States Coalition for Progress v. Surface Transportation Board, 345 F.3d 520, 548-550 (8th Cir. 2003). This was required even though the power plants using the coal were hundreds of miles away.

Courts have firmly rejected the argument that federal agencies need not review the environmental impacts occurring in a foreign country resulting from the approval of projects in the United States.

> [The agency] asserts that it has no duty to take a "hard look" at the consequences of biota transfer in Canada because NEPA does "not require assessment of environmental impacts within the territory of a foreign country" and "therefore this type of evaluation is considered outside the scope of the EIS." 2009 AR 2008-172 at 20. However, **the Council on Environmental Quality "has determined that agencies must include analysis of reasonably foreseeable transboundary effects of proposed actions in their analysis of proposed actions in the United States."** Council on Environmental Quality Guidance on NEPA Analyses for Transboundary Impacts (July 1, 1997), available at http:// ceq. hss. doe. gov/ nepa/ regs/transguide. html (last visited March 5, 2010 at 11:00 a.m.); *see also* Swinomish Tribal Cmty. v. FERC, 627 F.2d 499, 510-12 (D.C.Cir.1980) (concluding that the agency took a "hard look" at the Canadian impacts of dam construction in Washington State); Wilderness Soc'y v. Morton, 463 F.2d 1261, 1261-63 (D.C.Cir.1972) (granting intervenor status to Canadian environmental groups seeking to challenge the trans-Alaska pipeline under NEPA). **NEPA requires agencies to consider reasonably foreseeable transboundary effects resulting from a major federal action taken within the United States**.

> Accordingly, when analyzing the consequences of biota transfer in the Hudson Bay Basin, Reclamation must include in its analysis the impact in Canada.

Government of the Province of Manitoba v. Salazar, 691 F.Supp.2d 37, 51 (D.D.C., 2010) (emphasis added).

Thus, the FEIS's failure to review the off-site impacts of smelting/processing, and transportation of the ore concentrate/cathodes (in Mexico or wherever Rosemont eventually proposes such operations when it resubmits a legal, reasonable, and complete PoO), violates NEPA. See herein for further objections regarding the NEPA and other violations in the FEIS's transportation analysis (including the fact that the FEIS including new transportation routes for the first time in the FEIS without any opportunity for public comment).

The USFS Fails To Require FLPMA Right-Of-Ways And/Or Special Use Permits For Roads, Pipeline(s), Transmission Line(s), And Other Conveyances.

As noted in the January 27, 2012 comments, the USFS proposes to approve, and the DEIS reviewed, all of the roads, pipelines, and transmission lines pursuant to alleged "rights" fully governed and authorized by the 1872 Mining Law and the 36 CFR Part 228 regulations. The Draft ROD and FEIS perpetuate this position. This is despite the fact that there is no evidence that any of these ancillary facilities are proposed on valid mining claims and thus are governed by the Mining Law. The FEIS and Draft RODfail to apply the proper regulatory structure for the water pipeline(s), transmission line(s) and other conveyance routes, facilities, and activities.

The FEIS/Draft RODillegally fail to require Rosemont to obtain the requisite Rights-of-Way (ROW) and/or other Special Use Permits for these facilities. FEIS Table 3, at 56 (listing federal agency permits with no mention of FLPMA ROWs or Special Use Permits). Contrary to the FEIS/Draft ROD, water pipelines, transmission lines, roads, and other conveyances cannot be authorized by the 36 CFR Part 228 plan of operations approval process. Instead, the Forest Servicemust require the company to submit right-of-way or other special use permit authorizations and require that all mandates of FLPMA Title V and its implementing regulations are adhered to (e.g., no permit can be issued unless it can be shown that the issuance of the permits is in the best interests of the public, payment of fair market value, etc.). *See* 36 CFR Part 251 (USFS special use permit regulations).

This is required because the approval of transmission lines, pipelines, etc., is not a right covered by the 1872 Mining Law (i.e., water and waste transportation is not part of the implied right of access to mining claims) – even if the company could show that its claims were valid, which it has not done. Further, even if the USFS could ignore its duties under its multiple use and other mandates and assume that the company had a right under the Mining Law (which as noted herein is wrong), such rights do not attach to the right-of-ways and other FLPMA approvals needed for the pipelines, transmission lines, etc. Because the USFS failed to review these proposed facilities under the correct permitting regime, its review and approval of the Project cannot stand.

The Interior Department has ruled that pipelines and roads, including those across public land related to a mining operation, are not covered by statutory rights under the Mining Law. "[A]

right-of-way must be obtained prior to transportation of water across Federal lands for mining." Far West Exploration, Inc., 100 IBLA 306, 308 n. 4 (1988) *citing* Desert Survivors, 96 IBLA 193 (1987). *See also* Alanco Environmental Resources Corp., 145 IBLA 289, 297 (1998) ("construction of a road, was subject not only to authorization under 43 C.F.R. Subpart 3809, but also to issuance of a right-of-way under 43 C.F.R. Part 2800."); Wayne D. Klump, 130 IBLA 98, 100 (1995) ("Regardless of his right of access across the public lands to his mining claims and of his prior water rights, use of the public lands must be in compliance with the requirements of the relevant statutes and regulations [FLPMA Title V and ROW regulations]."). Although these cases dealt with BLM lands, they apply equally to Forest Service lands. As noted in Alanco, ROWs for access roads are subject to FLPMA's Title V requirements.

The Interior Board of Land Appeals has expressly rejected the argument that rights under the mining laws apply to pipelines and roads associated with water delivery:

> Clearly, FLPMA repealed or amended previous acts and Title V now requires that BLM approve a right-of-way application prior to the transportation of water across public land for mining purposes. See 43 U.S.C. § 1761 (1982). As was the case prior to passage of Title V of FLPMA, however, approval of such an application remains a discretionary matter and the Secretary has broad discretion regarding the amount of information he may require from an applicant for a right-of-way grant prior to accepting the application for consideration. Bumble Bee Seafoods, Inc., 65 IBLA 391 (1982). A decision approving a right-of-way application must be made upon a reasoned analysis of the factors involved in the right-of-way, with due regard for the public interest. *See* East Canyon Irrigation Co., 47 IBLA 155 (1980).
>
> **BLM apparently contends that a mining claimant does not need a right-of-way to convey water from land outside the claim for use on the claim. It asserts that such use is encompassed in the implied rights of access which a mining claimant possesses under the mining laws. Such an assertion cannot be credited.**
>
> The implied right of access to mining claims never embraced the right to convey water from outside the claim for use on the claim. This latter right emanated from an express statutory grant in the 1866 mining act. *See* 30 U.S.C. § 51 (1970) and 43 U.S.C. § 661 (1970). In enacting FLPMA, Congress repealed the 1866 grant of a right-of-way for the construction of ditches and canals (see § 706(a) of FLPMA, 90 Stat. 2793) and provided, in section 501(a)(1), 43 U.S.C. § 1761(a)(1), for the grant of a right-of- way for the conveyance of water under new procedures. In effect, Congress substituted one statutory procedure for another. **There is simply no authority for the assertion that mining claimants need not obtain a right-of-way under Title V for conveyance of water from lands outside the claim onto the claim.**

Desert Survivors, 96 IBLA 193, 196 (1987)(emphasis added). *See also* Far West Exploration, 100 IBLA 306, 309, n. 4 (1988)("a right-of-way must be obtained prior to transportation of water across Federal lands for mining."). The same analysis applies to water and power either delivered to, or conveyed from, the mining site. The leading treatise

on federal natural resources law confirms this rule: "Rights-of-way must be explicitly applied for and granted; **approvals of mining plans or other operational plans do not implicitly confer a right-of-way**." Coggins and Glicksman, PUBLIC NATURAL RESOURCES LAW, §15.21 (emphasis added).[8]

The fact that the USFS mining regulations consider roads and pipelines associated with the project part of the mineral "operations," 36 CFR §228.3, does not override these holdings or somehow create statutory rights where none exist. The court in Mineral Policy Center v. Norton, 292 F.Supp.2d, 30 (D.D.C. 2003) specifically **rejected** the federal government's argument that all mining-related operations were exempt from FLPMA's ROW requirements. 292 F.Supp.2d at 49-51 ("[I]f there is no valid claim and the claimant is doing more than engaging in initial exploration activities on lands open to location, the claimants' activity is not explicitly protected by the Mining Law."). Id. at 50.

Overall, the FEIS and agency review of these facilities fails to apply the proper discretionary and public interest review applicable to Title V and its USFS implementing regulations. This failure further undermines the agencies' NEPA alternatives and mitigation analysis, as well as the fundamental errors in assuming that Rosemont has a statutory right to receive approval of these delivery, conveyance, transmission, and access routes/facilities.

Operations not conducted on "valid and perfected claims" must comply with all of FLPMA's requirements, including Title V's SUP/ROW requirements. Mineral Policy Center v. Norton, 292 F.Supp.2d 30, 49-51 ("[I]f there is no valid claim and the claimant is doing more than engaging in initial exploration activities on lands open to location, the claimants' activity is not explicitly protected by the Mining Law."). Id. at 50.

Under FLPMA Title V, Section 504, the USFS may grant a SUP/ROW if it "(4) will do no unnecessary damage to the environment." 43 U.S.C. § 1764(a). Rights of way "shall be granted, issued or renewed … consistent with … any other applicable laws." Id. § 1764(c). A right-of-way that "may have significant impact on the environment" requires submission of a plan of construction, operation, and rehabilitation of the right-of-way. Id. § 1764(d).

A Title V SUP/ROW "shall contain terms and conditions which will … (ii) minimize damage to scenic and esthetic values and fish and wildlife habitat and otherwise protect the environment." Id. § 1765(a). In addition, the SUP/ROW can only be issued if activities resulting from the SUP/ROW:

> (i) protect Federal property and economic interests; (ii) manage efficiently the lands which are subject to the right -of-way or adjacent thereto and protect the other lawful user s of the lands adjacent to or traversed by such right -of-way; (iii) protect lives and property; (iv) protect the interests of individuals living in the general area traversed by the right-of-way who rely on the fish, wildlife, and other biotic resources of the area for subsistence purposes; (v) require location of the right -of-way along a route that will cause least damage to the environment, taking into consideration feasibility and other relevant factors; and

[8] The fact that much of the ore body to be developed by the Rosemont Project is on private land further supports the need to review/regulate access to the ore body and proposed facilities via a FLPMA Title V ROW or SUP.

(vi) otherwise protect the public interest in the lands traversed by the right -of-way or adjacent thereto.

FLPMA, § 1765(b).[9]

At least three important substantive requirements flow from the FLPMA's SUP/ROW provisions. First, the USFS has a mandatory duty under Section 505(a) to impose conditions that "**will** minimize damage to scenic and esthetic values and fish and wildlife habitat and otherwise **protect the environment**." Id. §1765(a) (emphasis added). The terms of this section do not limit "damage" specifically to the land within the ROW corridor. Rather, the repeated use of the expansive term "the environment" indicates that the overall effects of the SUP/ROW on cultural, environmental, scenic and aesthetic values must be evaluated and these resources protected. In addition, the obligation to impose terms and conditions that "protect Federal property and economic interests" in Section 505(b) supports an expansive reading that the USFS must impose conditions that protect not only the land crossed by the right-of-way, but **all** federal land affected by the approval of the SUP/ROW.[10]

Second, the discretionary requirements in Section 505(b) require a USFS determination as to what conditions are "necessary" to protect federal property and economic interests, as well as "otherwise **protect[ing] the public interest in the lands traversed by the right-of-way or adjacent thereto**." (emphasis added). This means that the agency can only approve the SUP/ROW if it "protects the public interest in lands" not only upon which the

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[9] Further, under federal law, including ANILCA, Rosemont is not entitled to any access to the private lands containing the ore body and other facilities, due to the fact that they are not completely surrounded by federal land. See Draft ROD, at 3, Figure ROD-1 (property locations and general facilities map). Access is required only to "private property *completely surrounded* by federally owned National Forest System lands." Adams v. U.S., 255 F.3d 787, 790 (9th Cir. 2001)(emphasis added). *See* Bunyard v. U.S. Forest Serv., 301 F. Supp. 2d 1052, 1058 (D. Ariz. 2004); ANILCA, Pub. L. No. 96-487, 94 Stat 2371 (1980); *and* S. Rep. No. 96-413 (1980), *as reprinted in* 1980 U.S.C.C.A.N. 5070. Further, "Where there is existing access or a right of access to a property over non-National Forest land or over public roads that is adequate or that can be made adequate, there is no obligation to grant additional access through National Forest System lands." 36 CFR § 251.110(g). "[T]he authorizing officer, prior to issuing any access authorization, must also ensure that: (1) The landowner has demonstrated a lack of any existing rights or routes of access available by deed or under State or common law." 36 CFR § 251.114(f)(1). *See also* 36 CFR 251.114(f)(4) (further discussing prohibition against granting access when other access rights exist or could be obtained). Under agency requirements, "[t]he Forest Service will generally not approve an access authorization over federal lands if the needs of the applicant can be met using nonfederal lands." Daniel A. Jensen, How Do I Get There? Access to and Across Mining Claims and Mineral Leases, 45 Rocky Mtn. Min. Law Inst. 20, §20.02(2)(c)(ii) (1999).

[10] Overall, the Forest Service has broad authority to restrict and deny access routes to mining claims to protect non-mineral values and uses of the public lands. In a recent major decision, the Ninth Circuit held that: "[T]he Secretary of Agriculture has long had the authority to restrict motorized access to specified areas of national forests, including to mining claims. *See* Clouser [v. Espy], 42 F.3d 1522, 1530 (9th Cir. 1994)." Public Lands for the People v. U.S. Dept. of Agriculture, 697, F.3d 1192, 1198 (9th Cir. 2012).

pipeline/roads/transmission lines would traverse, but also lands and resources adjacent to and associated with the SUP/ROW. Thus, in this case, the USFS can only approve the SUP/ROWs if the Mine itself "protects the public interest." As shown herein, that clearly is not the case.

Third, the requirement that the right-of-way grant "do no unnecessary damage to the environment" and be "consistent with … any other applicable laws," *id.* §§ 1764(a)-(c), means that a grant of a SUP/ROW leading to the Mine must satisfy all applicable laws, regulations and policies. Here, because the Mine would violate many of these requirements, the agency cannot issue the SUP/ROW. It should be noted that, even if the USFS can legally assert that it must approve the Mine's PoO due to Rosemont's mining claims covering the proposed open pit, waste and processing dump, etc. (which as shown herein is not legally correct), this subservience to the Mining Law is inapplicable to the SUP/ROWs.

The federal courts have recently and repeatedly held that the Forest Service not only has the authority to consider the adverse impacts on lands and waters outside the immediate ROW corridor, it has an obligation to protect these resources under FLPMA. In County of Okanogan v. National Marine Fisheries Service, 347 F.3d 1081 (9th Cir. 2003), the court affirmed the Forest Service's imposition of mandatory minimum stream flows as a condition of granting a ROW for a water pipeline across USFS land. This was true even when the condition/requirement restricted or denied vested property rights (in that case, water rights). Id. at 1085-86.

The Forest Service cannot issue a SUP/ROW that fails to "protect the environment" as required by FLPMA, including the environmental resource values outside the immediate ROW corridor. "FLPMA itself does not authorize the Supervisor's consideration of the interests of private facility owners as weighed against environmental interests such as protection of fish and wildlife habitat. FLPMA *requires* all land-use authorizations to contain terms and conditions which will protect resources and the environment." Colorado Trout Unlimited v. U.S. Dept. of Agriculture, 320 F.Supp.2d 1090, 1108 (D. Colo. 2004)(emphasis in original) appeal dismissed as moot, 441 F.3d 1214 (10th Cir. 2006).

Thus, in this case, FLPMA requires that the Forest Service deny the proposed SUPs/ROWs (once they are properly applied-for) because, as a result of the granting of the permits, the Mine will be allowed to proceed – with devastating damage to the environment to which neither the agency nor Rosemont have prevented or mitigated against (as shown herein).

The Forest Service regulations implementing FLPMA Title V further require the agency to deny the any SUP/ROWs in this case. In 1998, the Forest Service revised its special use authorization rules and set up a two-stage screening process to review land use authorization applications. 36 C.F.R. § 251.54(a). "The purpose of the screening is to eliminate those proposed uses which are obviously unsuitable on National Forest System (NFS) lands." 63 Fed. Reg. 65,954 (Nov. 30, 1998). In the first step of the screening process, the Forest Service ensures that a proposed use meets certain minimum criteria. For those that pass this hurdle, the agency then conducts a full-scale review. 36 C.F.R. § 251.54(e)(5).

The first hurdle, what the agency loosely refers to as the "suitability" test, is a critical one for proposed mining-related uses. Under the suitability test, the agency cannot authorize any use that represents a permanent or exclusi ve use of federal lands. In the preamble to the revised regulations, the Forest Service stated: "Longstanding Congressional and Executive Branch

policy dictates that authorizations to use NFS lands cannot grant a permit holder an exclusive or perpetual right of occupancy in lands owned by the public." 63 Fed. Reg. 65,955 (Nov. 30, 1998); 36 C.F.R. § 251.54(e)(1)(iv).

These rules further require that a proposed use will fail the first hurdle if it "involve[s] disposal of solid waste or disposal of radioactive or other hazardous substances." 36 C.F.R. § 251.54(e)(1)(ix). For the Rosemont mine, this prohibition is particularly applicable, as it is undisputed that "hazardous substances" will be created (e.g., pit lake, tailings, waste rock) - both long and short term - on public lands, and transported over public lands via the access route.

Similar to FLPMA's provisions noted above, for even those operations that pass the "suitability test," the regulations prohibit the agency from approving any SUP/ROW that is not "in the public interest." **"An authorized officer shall reject any proposal ... if ... (ii) the proposed use would not be in the public interest."** 36 C.F.R. § 251.54(e)(5)(ii).

The Interior Department, interpreting FLPMA V and its similar right-of-way regulations, has held that: "A right-of-way application may be denied, however, if the authorized officer determines that the grant of the proposed right-of-way would be inconsistent with the purpose for which the public lands are managed or if the grant of the proposed right-of-way would not be in the public interest or would be inconsistent with applicable laws." Clifford Bryden, 139 IBLA 387, 389-90 (1997) 1997 WL 558400 at *3 (affirming denial of right-of-way for water pipeline, where diversion from spring would be inconsistent with BLM wetland protection standards).

Similar to the County of Okanogan and Colorado Trout Unlimited federal court decisions noted above, the Interior Department has held that the fact that a ROW applicant has a property right that may be adversely affected by the denial of the ROW does not override the agency's duties to protect the "public interest." In Kenneth Knight, 129 IBLA 182, 185 (1994), the BLM's denial of the ROW was affirmed due not only to the direct impact of the water pipeline, but on the adverse effects of the removal of the water in the first place:

> [T]he granting of the right-of-way and concomitant reduction of that resource, would, in all likelihood, adversely affect public land values, including grazing, wildlife, and riparian vegetation and wildlife habitat. The record is clear that, while construction of the improvements associated with the proposed right-of-way would have minimal immediate physical impact on the public lands, the effect of removal of water from those lands would be environmental degradation. Prevention of that degradation, by itself, justified BLM's rejection of the application.

1994 WL 481924 at *3. That was also the case in Clifford Bryden, as the adverse impacts from the removal of the water was considered just as important as the adverse impacts from the pipeline that would deliver the water. 139 IBLA at 388-89. *See also* C.B. Slabaugh, 116 IBLA 63 (1990) 1990 WL 308006 (affirming denial of right-of-way for water pipeline, where BLM sought to prevent applicant from establishing a water right in a wilderness study area).

In King's Meadow Ranches, 126 IBLA 339 (1993), 1993 WL 417949, the IBLA affirmed the denial of right-of-way for water pipeline, where the pipeline would degrade riparian vegetation

and reduce bald eagle habitat. The Department specifically noted that under FLPMA Title V: "[A]s BLM has held, **it is not private interests but the public interest that must be served by the issuance of a right-of-way**." 126 IBLA at 342, 1993 WL 417949 at *3 (emphasis added).

Here, it is undisputed that the grant of a SUP/ROW is needed for the Rosemont Project to proceed and that the Project will result in significant and irreparable harm to (indeed the elimination of) nationally-recognized public land environmental, wildlife, cultural, and recreational values, uses, and resources. As such, the USFS must deny not only the PoO, but cannot issue any SUP/ROWs that would be proposed in the future (without a complete redesign of all major facilities, and even that will still likely result in unacceptable and unpermittable impacts). It must be stressed that, as noted above under FLPMA, the "public interest" test applies not only to the lands traversed by the SUP/ROW, but also nearby federal lands that may be affected if the proposed SUP/ROW is granted.

In response to the January 27, 2012 comments on these issues, the USFS simply stated that:

> Forest Service Manual 2730 provides direction regarding road right of way. It states the following regarding FLMPA rights of way: "Grant all road rights-of-way under Title V of the Federal Land Policy and Management Act with the exception of: 5. **Roads constructed on valid mining claims** or mineral lease areas when the construction is authorized by an approved operating plan (36 CFR part 228 and FSM 2810)."

FEIS at G-19 (emphasis added). There are a number of errors with this position.

At the outset, this response (repeated elsewhere in the FEIS) fails to respond at all to the comments about pipelines and transmission lines. The response only mentions roads (and quotes the FSM regarding roads). This violates NEPA's mandate that the agency fully respond to all legitimate issues raised by the public.

> Final environmental impact statements shall respond to comments as required in Part 1503 of this chapter. The agency shall discuss at appropriate points in the final statement any responsible opposing view which was not adequately discussed in the draft statement and shall indicate the agency's response to the issues raised.

40 CFR 1502.9(b). "An agency preparing a final environmental impact statement shall assess and consider comments both individually and collectively, and shall respond ... in the final statement." 40 C.F.R. § 1503.4(a). Because of this omission, and due to the illegality of the agency's position, the agency cannot now create an argument that pipelines and transmission lines do not require ROWs and/or Special Use Permits for these facilities and uses of public land.

Regarding the roads, the agency admits that a FLPMA Title V authorization is required for roads "*except*" for "**Roads constructed on valid mining claims.**" Thus, even if the agency's legal position that authorization of roads, pipelines, and transmission lines is considered a right under the Mining Law and approved via the Part 228 regulations was correct – which as shown herein it is not – the agency admits that this is true only for such

facilities/uses "on valid mining claims." FEIS at G-19.

As shown in the FEIS and herein, there is no evidence whatsoever that the lands to be crossed by the roads (let alone the pipelines and transmission lines) are covered by "valid mining claims." Under the Mining Law, in order to be valid, mining claims must contain the "discovery of a valuable mineral deposit." 30 U.S.C. § 22. Under the "marketability" test, it must be shown that the mineral can be "extracted, removed and marketed at a profit." United States v. Coleman, 390 U.S. 599, 600 (1968). According to the "prudent-person" test, "the discovered deposits must be of such a character that a person of ordinary prudence would be justified in the further expenditure of his labors and means, with a reasonable prospect of success, in developing a valuable mine." Id. at 602. The Supreme Court has held that profitability is "an important consideration in applying the prudent-man test and the marketability test," and noted that " . . . the prudent-man test and the marketability test are not distinct standards, but are complementary in that the latter is a refinement of the former." Id. at 602-603.

"In order to successfully defend rights to occupy and use a claim for prospecting and mining, a claimant must meet the requirements as specified or implied by the mining laws, in addition to the rules and regulations of the USFS. These require a claimant to: … 2. Discover a valuable mineral deposit. … (and) 7. Be prepared to show evidence of mineral discovery." FSM 2813.2. "A claim unsupported by a discovery of a valuable mineral deposit is invalid from the time of location, and the only rights the claimant has are those belonging to anyone to enter and prospect on National Forest lands." FSM §2811.5.

In addition to the lack of any evidence that the claims to be crossed by the roads are valid under the Mining Law, the evidence in the record shows the opposite. *See, e.g.*, FEIS Figure 29 (FEIS at 157), showing routes of the "Utility Maintenance Road" and "Primary Access Road" on lands far from the mineralized zone. *See also* Figure 30 (FEIS at 159). Each of these Figures, as well as the accompanying FEIS text, at 154-64, show that these roads (along with the pipelines and transmission lines) are clearly on lands that do not contain the requisite valuable mineral deposit. Indeed, based on these figures, it appears that these lands contain common varieties of rock that are not even considered locateable minerals under federal mining law.

Accordingly, the agency's decision to approve these facilities solely through the Part 228 PoO process, violates federal law and is arbitrary and capricious as noted herein. As such, the USFS cannot issue the ROD as proposed, and must instead review and regulate the proposed activities under the legally-correct permitting regime.

The FEIS And Draft ROD Are Based On Incorrect And Unsupportable Assumptions And Positions Regarding Rosemont's Alleged "Entitlement" To Have The Project Approved Under The Mining Law.

The FEIS states that: "Rosemont Copper is **entitled** to conduct operations that are reasonably incidental to exploration and development of mineral deposits on its mining claims pursuant to applicable U.S. laws and regulations and is asserting its **right** under the General mining Law to mine and remove the mineral deposit subject to regulatory laws." Draft ROD at 2; FEIS at ix (emphasis added). *See also*, Draft ROD at 2 (basing proposed decision on Rosemont's "right

under the General mining Law to mine and remove the mineral deposit subject to regulatory laws."). The FEIS was similarly based on the USFS' belief that, due to the filing of these claims, the USFS "cannot categorically prohibit mining or deny reasonable and legal mineral operations under the law." FEIS at 10. "The Forest Supervisor's decision space is constrained by Forest Service regulations that govern locatable mineral operations on NFS lands (36 CFR 228 Subpart A)." Id. "Under current mining laws, Forest Service legal authority regarding mining proposals is limited. As clearly stated in the DEIS and FEIS, although the Forest Service may reasonably regulate mining activities to protect surface resources, there are statutory and constitutional limits to its discretion." FEIS at G-5.

The Draft ROD is based on the agency's view that Rosemont has "the right … to develop the mineral resources it owns and to use the surface of its unpatented mining claims for mining and processing operations and reasonably incidental uses (see 30 United States Code (U.S.C.) 612). Pursuant to Federal law, the Forest Service may reasonably regulate the use of the surface estate to that minimize impacts to Forest Service surface resources, but cannot endanger or materially interfere with mining and processing operations and reasonably incidental uses (see 30 U.S.C. §612 and 36 CFR §228.1)." Draft ROD at 11. Thus, according to the agency, Rosemont has a statutory right to conduct its waste rock and tailings dumping, pit excavation, pit lake formation/contamination, processing, and other operations based solely on the fact that the company has blanketed the Project's lands with mining claims.

As noted in our January 27, 2012 comments, this fundamentally misinterprets federal law and results in an arbitrary and capricious decision. *See, e.g*, USFS's FEIS response to our comments, #548.

Here, Rosemont has filed lode mining claims on all of the federal lands in the project area, including those where no mining is proposed (i.e., dumping, processing, and other ancillary uses). Most, but not all, of the proposed mine pit is private land owned by Rosemont. "[T]he core of the project area consists of 132 patented lode claims [i.e. private land] totaling 1,968 acres." FEIS at 165. However, almost all of the lands proposed for waste and tailings dumping, processing, etc. are on "a contiguous group of 850 unpatented lode mining claims [on public land] totaling approximately 12,000 acres." FEIS at 165.

According to the USFS, the filing of these lode claims precludes the agencies from choosing the no-action alternative, as well as significantly restricting its approval and review authority over the project – even when most of the ore body is on private land. The USFS's position is wrong. Such rights, or "entitlement" as stated by the USFS, can only accrue to the company if these claims are valid under the 1872 Mining Law. Here, there is no evidence in the record that these claims are valid. Indeed, the agencies have not even inquired into whether these claims are valid and stated their intention not to conduct such an inquiry. *See* Feb. 11, 2007 letter from Forest Supervisor Jeanine Derby to C.H. Huckelberry (Pima County).

Further, the agency is wrong to attach "rights' under the 1872 Mining Law to private property (i.e., the center of the mine pit containing the ore body). Contrary to the agency's position, Rosemont has no right to develop the private ore body under the 1872 Mining Law. In this case, only lands containing "valuable mineral deposits in lands belonging to the United States," are subject to the 1872 Mining Law. 30 U.S.C. § 22.

A mineral patent "is the instrument of conveyance by which it passes its title to portions of the

public domain and is the origin of private ownership of the land." American Law of Mining, § 30.06 (2006). Through the patenting mechanism, the once public land becomes private land, and the relationship between the patent-holder and the Forest Service is changed by this legal transformation. The Ninth Circuit has repeatedly emphasized the difference between private fee land obtained via the patent versus unpatented claims on federal land. *See* Clouser v. Espy, 42 F.3d 1522, 1525, n. 2 (9th Cir. 1994); Northern Alaska Envtl. Ctr. v. Lujan, 872 F.2d 901, 904 n. 2 (9th Cir. 1989).

Contrary to the FEIS and Draft ROD, the company does not have a statutory right to dump waste and other environmentally-damaging actions on public land to support the extraction of minerals taken from Rosemont's private property. For example, the Interior Board of Land Appeals (the administrative appellate body within the Interior Department that has jurisdiction over federal mining claim issues) ("IBLA") upheld the decision of the Forest Service to require special use permits under 36 CFR Part 251 for access to patented mineral holdings surrounded by Forest Service land. Virgil Horn, 117 IBLA 10 (1990). The IBLA rejected the landowner's assertions that he was eligible for access via an implied right under the 1872 Mining Law, noting that "**[t]he land is private land, no longer subject to the mining laws**." Id. at ¶ 1 (emphasis added). Consequently, because the land had become private upon patenting, the benefits once potentially available under the Mining Law ceased to operate. Id. In short, because of the patenting, "[n]o easement rights attach against the United States Government for land uses outside the boundaries of [the] patented land." Id.

In Horn, the USFS argued that, even after the agency had approved a plan of operations (under the 228 regulations) for activities on the unpatented claim, the later issuance of a patent meant that the plan approval was no longer effective and that the operator had to obtain a special use permit to access his now private lands. In adopting the USFS's position, the Interior Department held that "Appellants seek the benefits of the general mining laws; however, they no longer possess a mining claim located on federal land." 117 IBLA at 3.

> [T]he Forest Service District Ranger, Big Bear Ranger District, informed Virgil Horn that as of the date of patent he became owner of private land surrounded by National Forest land; that **a mining plan of operations which had authorized certain uses was no longer effective since the land was now private land; and that all uses outside the patented land were subject to Forest Service regulations governing special uses (36 CFR Part 251** , Subpart B) .... The District Ranger provided Horn with two application forms for Special Use Authorization, one for access to the land and the other for water transmission and diversion.

117 IBLA at 2 (emphasis added). Horn has been cited by leading commentators as authority for the basic rule that the Mining Law, and the 228 regulations, do not apply to private land. *See* Jensen, "How Do I Get There? Access To and Across Mining Claims and Mineral Leases," 45 Proceedings of the Rocky Mountain Mineral Law Institute, 45 RMMLF-INST 20 (1999).

The IBLA had previously held the same thing in Bob Strickler, 106 IBLA 1 (1988), 1988 WL 238566, at * 4 ("Contrary to appellants' position, the fact that they derive title to the land which they now occupy from a patent issued under the mining laws in 1925, does not invest them with a 'legal right-of-way' to their property across federal lands."). The leading natural resources and public land law treatise, by Professors Coggins and Glicksman, specifically note the holding in Strickler: "In 1988, the IBLA ruled that a mineral patentee has no right of access

across federal lands to the patented lands but must apply for a right-of-way under FLPMA." PUBLIC NATURAL RESOURCES LAW, PUBNRL, at §10E:6.

This was also the USFS' position in a recent federal court case. In Oregon, the USFS specifically required a FLPMA special use permit to access mining lands patented under the 1872 Mining Law – with no mention of any rights under the Mining Law or the applicability of the 228 regulations. Alleman v. U.S., 372 F.Supp.2d 1212, 1220 (D. Or. 2005). (because the land was patented, "[t]he Forest Service informed Mr. Alleman that he would need a Special Use Permit (SUP) to continue having vehicular access" to the property). The court affirmed the agency's position that access to patented lands is via the SUP process. Id. at 1228.

Only "valuable mineral deposits in lands belonging to the United States," are subject to the 1872 Mining Law. 30 U.S.C. § 22. Private lands are thus not governed by the Mining Law. Because Rosemont's patented lands are merely private lands, the Forest Service inappropriately relied upon its 36 CFR Part 228 authority as the mechanism for granting access to the private lands, as well as its determination that the agency's authority over the mining was constrained by the 1872 Mining Law (see also discussion elsewhere herein). Any right of access to patented land, and any review of operations proposed in support of private mineral properties, however, must be obtained through an alternative legal mechanism and not through the 1872 Mining Law – in this case, FLPMA Title V and the 36 CFR Part 251 regulations for access and the Organic Act, NFMA, and general multiple-use authorities for the private minerals/lands. As detailed herein, these regulatory mechanisms require strict environmental protection requirements not found in the Part 228 mining regulations.

In addition to misapplying federal law to the Rosemont's private property, the USFS violated the Federal Land Policy and Management Act (FLPMA) and the 1872 Mining Law, and made an arbitrary and capricious decision without evidentiary support, by not requiring Rosemont to pay Fair Market Value (FMV) for the use of public lands not covered by valid mining claims, based on the lack of any evidence that the vast majority of the mining claims (or indeed any claims at all) at the Project site contain locatable minerals and the requisite discovery of a valuable mineral deposit. Similarly, the agency's position also violates provisions of FLPMA and the Multiple Use Sustained Yield Act, NFMA, 1897 Organic Act, and other laws mandating that the agencies manage, or at least consider managing, these lands for non-mineral uses – something which the agencies refused to do or consider in this case.

The FEIS's review and the agencies' proposed approval of the Project in the Draft ROD are based on the overriding assumption that Rosemont has statutory rights to use all of the public lands at the site under the 1872 Mining Law. However, where Project lands have not been verified to contain, or do not contain, such rights, the USFS's more discretionary multiple-use authorities apply. *See* Mineral Policy Center v. Norton, 292 F.Supp.2d 30, 46-51 (D.D.C. 2003) (although that case dealt with Interior Department lands, the same analysis applies to USFS lands.)

A proper application of USFS's multiple use, public interest, and sustained yield mandates to those areas not covered by valid claims would result in a very different Project review, alternatives, and level of protection for public land resources and values, as well as reducing or eliminating the adverse impacts to the use of these lands by members of the public and

Objectors

The Mineral Policy Center court specifically recognized the federal government's duty to apply its broader, multiple use authority when mineral development operations are proposed on lands not subject to valid and perfected claims:

> While a claimant can explore for valuable mineral deposits before perfecting a valid mining claim, **without such a claim, she has no property rights against the United States (although she may establish rights against other potential claimants), and her use of the land may be circumscribed beyond the UUD standard because it is not explicitly protected by the Mining Law**.

292 F.Supp.2d at 47 (emphasis added). Although the "UUD standard" was at issue in that case (BLM's duty to "prevent unnecessary or undue degradation" under FLPMA), the holding that development "rights" under the mining laws only apply to lands covered by valid claims applies equally to the USFS and BLM. The court was equally clear as to what was required to "perfect" a mining claim:

> The Mining Law gives individuals the right to explore for mineral resources on lands that are "free and open" in advance of having made a "discovery" or perfected a valid mining claim. United States v. Locke, 471 U.S. 84, 86, 105 S.Ct. 1785, 85 L.Ed.2d 64 (1985). The Mining Law provides, however, that a mining claim cannot be perfected "until the discovery of the vein or lode." 30 U.S.C. § 23.

Id. at 46 n. 19. As a result:

> **[b]efore an operator perfects her claim, because there are no rights under the Mining Law that must be respected, BLM has wide discretion in deciding whether to approve or disapprove of a miner's proposed plan of operations.**

Id. at 48 (emphasis added). Yet, in its review of the Rosemont Project, the USFS erroneously believed that it did not have – and never even considered – this "wide discretion" to "approve or disapprove" any part of Rosemont's Plan of Operations.

The fact that Rosemont proposes to use mining claims for ancillary operations does not mean, automatically, that each mining claim is invalid. The Mining Law does not prohibit any and all uses of a mining claim for milling or processing activities. Indeed, a 1955 enactment of Congress specifically authorizes the use of mining claims for "prospecting, mining or processing operations and uses reasonably incident thereto." Surface Resources Act of 1955, 30 U.S.C. § 601,603, 611-615.

However, the 1955 Act did not create any surface use rights independent of the underlying mining claim. This is because the overall intent of the 1955 Act was to limit, not expand, mining claimants' rights. *See generally* Clayton J. Parr & Dale A. Kimball, "Acquisition of Non-Mineral Land for Mine Related Purposes," 23 Rocky Mtn. Min. L. Inst. 595,635-36

(1977). The 1955 Act must therefore be read as not altering the principle that the right of a mining claimant to use the surface of a mining claim is derived from the right to mine the discovered mineral deposit. In other words, although the 1955 Act authorizes "reasonably incident" uses, discovery is still required on each claim in order to establish rights against the United States.

Consequently, if a mining claim is proposed to be used solely for activities that are "reasonably incident" to extracting minerals from other lands, it must be supported by the requisite discovery. This is especially true because federal courts have long and consistently held that a mining claimant's right to use an unpatented mining claim is limited to purposes connected with the removal of minerals from that claim, and not for other purposes. *See, e.g.*, Teller v. United States, 113 F. 273 (8th Cir. 1901); United States v. Rizzinelli, 182 F. 675 (D. Idaho 191 0). As one mining industry author stated:

> [Tlhe use of the surface of an unpatented mining claim for mining and processing minerals removed from other lands may not be authorized. It appears that the use of the surface of unpatented mining claims would be more likely to be challenged if permanent damage is caused to the surface and no mining is conducted under the mining claim.

Richard G. Allen, "Utilization of Adjacent Properties, Cross-Mining, and Commingling," 26 Rocky Mtn. Min. L. Inst. 419,428 (1980); *see also* Parr & Kimball, at 634-36 (concluding that the "surface rights of the locator [of a mining claim are tied] to extraction of the mineral deposit contained within the boundaries of the claim," and therefore if a claim is being used for "dumping of waste, stripping, or some other similar use causing permanent surface disturbance" in connection with mining off that claim, it is questionable at best).

The leading mining industry treatise stated:

> Several early cases recognized the right of an operator to occupy and use unoccupied public domain in connection with mining operations. However, it is doubtful that such rights continue to exist in light of the comprehensive land use procedures adopted in the Federal Land Policy and Management Act of 1976. When ground is held by a mining claim that is not valid, an operator's rights are limited to those conferred under the doctrine of *pedis possesio*.

4 Am. L. Mining 2d, supra note 17, 110.02[3][d] (Aug. 1997) (citations omitted). Thus, the USFS cannot in this case determine that Rosemont is "entitled" under the Mining Law to use its lode claims for waste dumping, tailings, etc., when there is no evidence in the record that those claims are supported by any rights under the Mining Law against the United States. This is even more true for the use of these claims to support the development of minerals from Rosemont's private lands.

Regarding the requirement for the federal government to obtain FMV for the use of lands not covered by valid claims, the court held that, under FLPMA, "the United States [must] receive fair market value of the use of the public lands and their resources unless otherwise provided for by statute." 43 U.S.C. §1701(a)(9). The court held that unless the lands were covered by valid claims (*i.e.* the situation "otherwise provided for by statute" in § 01(a)(9)), the agencies must comply with their FMV duty:

> Operations neither conducted pursuant to valid mining claims nor otherwise explicitly protected by FLPMA or the Mining Law (*i.e.*, exploration activities, ingress and egress, and limited utilization of mill sites) must be evaluated in light of Congress's expressed policy goal for the United States to "receive fair market value of the use of the public lands and their resources." 43 U.S.C. § 1701(a)(9).

Mineral Policy Center, at 51.

At Rosemont, the USFS has utterly failed to even consider the application of its multiple use authority, and related FMV requirements pursuant to the Court's Order in Mineral Policy Center – a violation of FLPMA, the Mining Law, and their multiple-use mandates, as well as being an arbitrary and capricious decision under the Administrative Procedure Act (APA).

As noted above, the vast majority of the proposed disturbance on public land involves waste rock, tailings, processing and other non-extractive uses covered by unpatented lode claims. There is no evidence in the record that any of these claims are valid or indeed contain locatable minerals (outside of arguably the lode claims covering the edges of the mine pit, although the validity of these claims has also never been ascertained).

In addition to the lack of any evidence that the claims to be used for waste rock dumps, tailings facilities, and other non-extraction operations are valid under the Mining Law, the evidence in the record shows the opposite. *See, e.g.*, FEIS Figure 29 (FEIS at 157), showing that these facilities would be on lands far from the mineralizedzone. *See also* Figure 30 (FEIS at 159). Each of these Figures, as well as the accompanying FEIS text, at 15464, show that these facilities are clearly on lands that do not contain the requisite valuable mineral deposit. Indeed, based on these figures, it appears that these lands contain common varieties of rock that are not even considered locateable minerals under federal mining law.

Thus, it is likely that the lands covering the waste rock, tailings, and other ancillary facilities do not contain the requisite locatable minerals, which is a prerequisite for claim validity. *See* 30 U.S.C. § 22 (only "valuable mineral deposits" are covered by the Mining Law); 30 U.S.C. § 611 ("common varieties" of minerals are not locatable under the Mining Law). As the Interior Department has held:

> Generally, absent the discovery of a "valuable mineral deposit" on each of the unpatented lode mining claims, [the claimant]would not be entitled to the "exclusive right of possession and enjoyment of all the surface [of the claim]" and subsurface rights under 30 U.S.C. §§ 22 and 26, good against the United States, or ultimately to a patent of the claimed lands, pursuant to 30 U.S.C. §§ 22 and 29 (2000). Best v. Humboldt Placer Mining Co., 371 U.S. 334, 335-36 (1963); Wilbur v. Krushnic, 280 U.S. 306, 316-17 (1930); Cameron v. United States, 252 U.S. 450, 460 (1920); Cole v. Ralph, 252 U.S. 286, 294-96 (1920). In such circumstances, BLM would have discretion to modify or even reject an MPO filed to engage in mining operations and related activity. Great Basin Mine Watch, 146 IBLA 248, 256 (1998) ("Rights to mine under the general mining laws are derivative of a discovery of a valuable mineral deposit".)

Center for Biological Diversity, 162 IBLA 268, 278 (2004). "[T]he location of a mining

claim does not render a claim presumptively valid and the Department may require a claimant to provide evidence of validity before approving an MPO or allowing other surface disturbance in connection with the claim." Id. at 281. As stated in the USFS Minerals Manual: "**In order to successfully defend rights to occupy and use a claim** for prospecting and mining, a claimant must meet the requirements as specified or implied by the mining laws, in addition to the rules and regulations of the USFS. These **require a claimant to: … 2. Discover a valuable mineral deposit. … (and) 7. Be prepared to show evidence of mineral discovery**." FSM 2813.2 (emphasis added).

Under the Mining Law, in order to be valid, mining claims must contain the "discovery of a valuable mineral deposit." 30 U.S.C. § 22. *See* herein discussion of test for valid claims. According to the USFS Minerals Manual: "A claim unsupported by a discovery of a valuable mineral deposit is invalid from the time of location, and the only rights the claimant has are those belonging to anyone to enter and prospect on National Forest lands." FSM §2811.5.

> The term "valid claim" often is used in a loose and incorrect sense to indicate only that the ritualistic requirements of posting of notice, monumentation, discovery work, recording, annual assessment work, payment of taxes, and so forth, have been met. This overlooks the basic requirement that the claimant must discover a valuable mineral deposit. Generally, a valid claim is a claim that may be patented.

FSM § 28115.

The FEIS shows that the mining claims proposed to be buried by the hundreds of millions of tons of waste and rock in the ancillary facilities do not contain sufficient mineralization to be considered valuable, ore-bearing claims. FEIS at 154-64. These Figuresin particular show that the mineralized ore zones are in the area proposed for the mine pit, not the thousands of acres to be buried by the ancillary facilities. Thus, based on the record, the lands to be covered by the large ancillary waste and processing facilities do not contain the requisite valuable and locatable mineral deposits.

In addition, USFS's decision not to require the payment of FMV, and to limit its authority over the use of the ancillary lands, must be supported by substantial evidence in the record – evidence which does not exist. The agencies cannot simply assume, without any evidence (and indeed the evidence points to the contrary) that the lands to be buried by the dumps and processing facilities are covered by valid mining claims. The Supreme Court has explained:

> [A]n agency rule would be arbitrary and capricious if the agency has **relied on factors which Congress has not intended it to consider**, entirely failed to consider an important aspect of the problem, **offered an explanation for its decision that runs counter to the evidence before the agency**, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.

Motor Vehicle Mfrs. Ass'n of U.S., Inc. v. State Farm Mut. Auto Ins. Co., 463 U.S. 29, 43 (1983)(emphasis added). The Ninth Circuit, citing Motor Vehicle Mfrs, has explained:

> [T]he APA requires us to determine whether the Commission's decision was a

> reasonable exercise of its discretion, based on consideration of relevant factors, and supported by the record. . . . While our standard of judicial review is highly deferential, it may not be uncritical. Under the APA, an agency's discretion is not boundless, and we must satisfy ourselves that the agency examined the relevant data and articulated a satisfactory explanation for its action based upon the record.

People of State of Cal. v. F.C.C., 905 F.2d 1217, 1230 (9th Cir. 1990). *See also* Marsh v. Oregon Natural Resources Council, 490 U.S. 360, 378 (1989)(requiring that courts ensure that agency decisions are founded on a reasoned evaluation "of the relevant factors.").

Put another way, it defies the record in this case, and indeed common sense, for the agencies to assume that Rosemont would permanently bury "valuable mineral deposits" with hundreds of millions of tons of waste rock and contaminated tailings. Indeed, it is very likely that these ancillary lands do not contain sufficient mineralization to qualify as "valuable mineral deposits" and are in fact simple "common varieties" of rock covering the non-mineralized portions of the Project site.

At a minimum, the agencies should have inquired as to whether the vast majority of the Project lands contained "common varieties" or "valuable mineral deposits." T he USFS recognizes that a valid claim under the Mining Law cannot be made for common variety minerals. "The 1955 Multiple-Use Mining Act (69 Stat. 367; 30 U.S.C. 601, 603, 611-615) amended the United States mining laws in several respects. The act provides that common varieties of mineral materials shall not be deemed valuable mineral deposits for purposes of establishing a mining claim." FSM §2812. The agency admits that only "locatable minerals" can be the subject of a valid mining claim. FEIS at 148-49.

The FEIS and Draft ROD take the position that "[m]ining claim location and demonstration of mineral discovery are not required for approval of locateable minerals operations subject to Forest Service regulations at 36 CFR Subpart A." FEIS at 148. This position misunderstands the law, as well as the January 27, 2012 comments and this Objection. Although it may be true that the lack of valid mining claims does not outright bar the agency from approving mining on public lands (it can approve mining similar to other multiple uses under other authorities), the law prohibits the agency from assuming that Rosemont had a statutory "right" under the Mining Law to have all these operations approved when no evidence exists to support that assumption or right. As shown herein, that "right" only exists if based on valid claims.

In other words, without any evidence that this "right" attaches to the claim(s), then the USFS makes an arbitrary and capricious decision when it assumes these rights without any evidence to support the assumption. The agency can approve mining operations that are not on valid claims under other authorities (e.g., Special Use Permits, assuming all requirements are followed) but that is not what is proposed. Rather, the agency admits that it is "constrained" by these alleged mining rights, when there is no evidence to support this self-imposed constraint.

The USFS's response to these issues raised in the January 27, 2012 comments showed that it mistakenly believed that a full claim validity review was demanded for every proposed mining operation.

> The Forest Service has reviewed the comments and references provided in light of the information available, and has determined that statements about the statutory right of

> the proponent to access and recover their mineral resources are correct as stated in the DEIS and FEIS. **It is not common practice, nor is it Forest Service policy, to challenge mining claim validity**, except when (a) proposed operations are within an area withdrawn from mineral entry; (b) when a patent application is filed; and (c) when the agency deems that the proposed uses are not incidental to prospecting, mining, or processing operations. This last category includes such management concerns as illegal occupancy or use of mining claims for non-mining or non-mineral processing purposes. For operations proposed in accordance with Forest Service regulations, and where the above situations do not exist, conducting a validity exam is not in line with Forest Service policy. The placement of waste rock and mill tailings on the Forest are considered to be activities connected to mining and mineral processing as per 36CFR228 subpart A, and as such they are authorized activities regardless of whether they are on or off mining claims. This reasoning also follows direction and policy per section 2800 of the Forest Service Manual concerning administration of locatable minerals on National Forest System lands.

USFS Appdx. G (Disc) Response #548 (emphasis added).[11]

Although a complete mineral report and claim validity verification is not required for every single mining proposal, the agency must have evidence that the claims meet the legal prerequisites to establish rights under the Mining Law. At a minimum, evidence needs to be in the record supporting valid rights under the mining law **if** the agency reviews and approves every facility and land use under an assumed right under the Mining Law – rights that accrue only if based on valid claims as shown by the legal decisions noted herein. As stated in the USFS Minerals Manual: "In order to successfully defend rights to occupy and use a claim for prospecting and mining, a claimant must meet the requirements as specified or implied by the mining laws, in addition to the rules and regulations of the USFS. These require a claimant to: … 2. Discover a valuable mineral deposit. … (and) 7. **Be prepared to show evidence of mineral discovery**." FSM 2813.2 (emphasis added).

In other words, if the agency's review and approval of the Project is based on "rights" under the Mining Law, the record must contain evidence that the legal prerequisites for establishing those rights exist in fact and law. Any policy or decision to the contrary is illegal.

In this case, due to the lack of such evidence, and indeed evidence showing that the lands proposed for the waste dumping, tailings, and other non-extractive uses do **not** contain the requisite valuable minerals, and are likely "common variety" minerals, USFS's assumptions of "rights" or an "entitlement" under the Mining Law are legally and factually erroneous. The agency's assumption regarding these alleged rights and entitlements should be investigated and supported by detailed factual evidence in a revised or supplemental DEIS. Until then, no PoO can be approved, and no ROD authorizing mine approval can be issued.

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[11] At the outset, this "policy" for the use of lands for waste dumping, etc. that do not contain valuable minerals, yet are part of the mining operation, contradicts the agency requirement noted above that for roads used in the mining operation, a FLPMA Title V ROW/Special Use Permit is required unless the road is on lands covered by "valid mining claims."

The FEIS Does Not Provide An Adequate Cumulative Effects Analysis And Fails To Consider Connected Actions.

Among the many NEPA violations raised in the January 27, 2012 comments and herein, one of the most salient is the USFS' failure to review all connected actions and cumulative impacts.[12] The failure of the agency cannot be excused by simply saying that Rosemont has yet to submit the required information.

> NEPA is not designed to postpone analysis of an environmental consequence to the last possible moment. Rather, it is designed to require such analysis as soon as it can reasonably be done. *See* Save Our Ecosystems v. Clark, 747 F.2d 1240, 1246 n. 9 (9th Cir.1984) ("Reasonable forecasting and speculation is ... implicit in NEPA, and we must reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as 'crystal ball inquiry,'" quoting Scientists' Inst. for Pub. Info., Inc. v. Atomic Energy Comm'n, 481 F.2d 1079, 1092 (D.C.Cir.1973)).

Kern v. U.S. Bureau of Land Management, 284 F.3d 1062, 1072 (9th Cir. 2002). Foremost among these errors is the agency's refusal to review and require a plan to process/mill/smelt the ore concentrate.

The FEIS Fails to Fully Evaluate Connected Actions

As noted herein, and in the January 27, 2012 comments, the FEIS's failure to analyze the processing and milling of the ore violates the agency's duties under NEPA to review connected actions, or if milling is not considered a connected action (which it is), the cumulative effects/impacts from the milling and related activities. Without a mill, the Mine cannot successfully operate. Thus, the mill and the Mine are clearly "connected actions" under NEPA and must be analyzed as such in the revised DEIS. Under NEPA, 42 U.S.C.S. § 4321 *et seq.*, a single NEPA review document is required for actions or projects when the projects are connected, cumulative or similar. 40 C.F.R. § 1508.25. Council on Environmental Quality (CEQ) regulations provide that actions are "connected" if they … "(ii) Cannot or will not proceed unless other actions are taken previously or simultaneously," or "(iii) Are interdependent parts of a large action and depend on the larger action for their justification." 40 C.F.R. § 1508.25(a)(1). Even if the Mine could conceivably occur without the previous or simultaneous occurrence of the smelter/mill, which is not the case here, if it could not occur without such actions it is a connected action and must be considered within the same NEPA document as the underlying action. "[E]ven though an action could conceivably occur without the previous or simultaneous occurrence of another action, if it would not occur without such action it is a 'connected action' and must be considered within the same NEPA document as the underlying action." Dine Citizens Against Ruining Our Env't v. Klein, 747 F. Supp. 2d 1234, 1254 (D. Colo. 2010). Thus, because the Mine is dependent on the smelter/mill to successfully "develop the Rosemont copper, Molybdenum and silver deposit" (FEIS at ix) and

[12] The USFS failed to adequately respond to, and failed to correct the factual and legal deficiencies noted within, the cumulative impacts issues raised in the January 27, 2012 comments, at pp. 116-126, which are incorporated by reference herein pursuant to 36 CFR 218.8.

produce a final product, they are connected actions that must be reviewed in one revised DEIS.

The FEIS Fails to Fully Evaluate Cumulative Impacts

At a minimum, even if the USFS erroneously concludes that the mill and the Mine are not "connected actions" (a view not supported by NEPA or the facts), the agency must fully review the impacts from all "past, present, and reasonably foreseeable future actions." These are the "cumulative effects/impacts" under NEPA. The January 27, 2012 comments noted these failures.

To comply with NEPA, the USFS must consider all direct, indirect, and cumulative environmental impacts of the proposed action. 40 CFR § 1502.16; 40 CFR § 1508.8; 40 CFR § 1508.25(c). "Direct effects" are caused by the action and occur at the same time and place as the proposed project. 40 CFR § 1508.8(a). "Indirect effects" are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. 40 CFR § 1508.8(b). All types of impacts include "effects on natural resources and on the components, structures, and functioning of affected ecosystems," as well as "aesthetic, historic, cultural, economic, social or health [effects]." Id. "Cumulative effects" are defined as:

> [T]he impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 CFR § 1508.7. In a cumulative impact analysis, an agency must take a "hard look" at all actions.

> [A]nalysis of cumulative impacts must give a sufficiently detailed catalogue of past, present, and future projects, and provide adequate analysis about how these projects, and differences between the projects, are thought to have impacted the environment. … Without such information, neither the courts nor the public ... can be assured that the [agency] provided the hard look that it is required to provide.

Te-Moak Tribe of Western Shoshone, 608 F.3d 592, 603 (9th Cir. 2010) (rejecting NEPA review for mineral operation that had failed to include detailed analysis of impacts from nearby proposed mining operations).

A cumulative impact analysis must provide a "useful analysis" that includes a detailed and quantified evaluation of cumulative impacts to allow for informed decision-making and public disclosure. Kern v. U.S. Bureau of Land Management, 284 F.3d 1062, 1066 (9th Cir. 2002); Ocean Advocates v. U.S. Army Corps of Engineers, 361 F.3d 1108 1118 (9th Cir. 2004). The NEPA requirement to analyze cumulative impacts prevents agencies from undertaking a piecemeal review of environmental impacts. Earth Island Institute v. U.S. Forest Service, 351 F.3d 1291, 1306-07 (9th Cir. 2003).

The NEPA obligation to consider cumulative impacts extends to all "past," "present," and "reasonably foreseeable" future projects. Blue Mountains, 161 F.3d at 1214-15; Kern v. BLM,

284 F.3d at 1076; Hall v. Norton, 266 F.3d 969, 978 (9th Cir. 2001) (finding cumulative analysis on land exchange for one development failed to consider impacts from other developments potentially subject to land exchanges); Great Basin Mine Watch v. Hankins, 456 F.3d 955, 971-974 (9th Cir. 2006)(**requiring "mine-specific … cumulative data," a "*quantified assessment* of their [other projects] combined environmental impacts," and "objective quantification of the impacts" from other existing and proposed mining operations in the region**)(emphasis added).

Thus, in this case, the USFS must consider the cumulative impacts from all past, present, and reasonably foreseeable future projects in the region on, at a minimum, water and air quality including ground and surface water quantity and quality, recreation, cultural/religious, wildlife, transportation/traffic, scenic and visual resources, etc.

As held by the court decisions noted herein, this means that the impacts from other projects – not just the current Mine under review – must be fully reviewed. This includes, at a minimum, the impacts from the transportation of ore to a smelter/mill, as well as the environmental impacts from the smelter/mill itself.

Regarding cumulative impacts from other activities, the Ninth Circuit has rejected the argument that reliance on state-issued permits or analysis satisfied the agency's independent duty under NEPA.

> BLM argues that the off-site impacts need not be evaluated because the Goldstrike [mill] facility operates pursuant to a state permit under the Clean Air Act. This argument also is without merit. A non-NEPA document -- let alone one prepared and adopted by a state government -- cannot satisfy a federal agency's obligations under NEPA. Klamath-Siskiyou Wildlands Center v. BLM, 387 F.3d 989, 998 (9th Cir.2004).

South Fork Band Council, 588 F.3d at 726.

In addition to the lack of cumulative impacts analysis related to smelting/milling noted herein, the FEIS fails to provide the NEPA-required level of analysis for other past, present, or reasonably foreseeable future activities in the region. The FEIS's analysis of impacts from other activities in the area, as well as other activities such as grazing, energy exploration and development, logging, off-road recreation, etc., is minimal at best and fails to provide the "sufficiently detailed catalogue of past, present, and future projects, and provide adequate analysis about how these projects, and differences between the projects, are thought to have impacted the environment." Te-Moak Tribe of Western Shoshone, 608 F.3d 592, 603 (9th Cir. 2010). The FEIS fails to provide the project specific "cumulative data," a "quantified assessment of their [other projects'] combined environmental impacts," and "objective quantification of the impacts" from other existing and proposed activities in the region. Great Basin Mine Watch v. Hankins, 456 F.3d at 971-974.

The FEIS lists all of the "reasonable foreseeable future activities/actions" it considered in supposedly meeting these NEPA duties. FEIS at 140-143. This list is repeated throughout the FEIS for each resource area or impact covered (e.g., air quality, ground and surface water quantity and quality, wildlife, seeps/springs, etc.). Yet for each of these resources/impacts, none of the required "cumulative data," "quantified assessment of their [other projects']

combined environmental impacts," and "objective quantification of the impacts" from other existing and proposed activities in the region is provided. Great Basin Mine Watch v. Hankins, 456 F.3d at 971-974. As the Ninth Circuit has further held:

> Our cases firmly establish that a cumulative effects analysis "must be more than perfunctory; it must provide a *useful analysis* of the cumulative impacts of past, present, and future projects." Klamath–Siskiyou, 387 F.3d at 994 (emphasis added) (quoting Ocean Advocates v. U.S. Army Corps of Eng'rs, 361 F.3d 1108, 1128 (9th Cir.2004)). To this end, we have recently noted two critical features of a cumulative effects analysis. First, it must not only describe related projects but also enumerate the environmental effects of those projects. *See* Lands Council v. Powell, 395 F.3d 1019, 1028 (9th Cir.2005) (holding a **cumulative effects analysis violated NEPA because it failed to provide "adequate data of the time, place, and scale" and did not explain in detail "how different project plans and harvest methods affected the environment"). Second, it must consider the interaction of multiple activities and cannot focus exclusively on the environmental impacts of an individual project. *See* Klamath–Siskiyou, 387 F.3d at 996 (finding a cumulative effects analysis inadequate when "it only considers the effects of the very project at issue" and does not "take into account the combined effects that can be expected as a result of undertaking" multiple projects)**.

Oregon Natural Resources Council Fund v. Brong, 492 F.3d 1120, 1133 (9th Cir. 2007)(emphasis added). None of the "cumulative effects/impacts" sections of the FEIS for the various resources and impacts contain this required quantification and other detailed reviews required by NEPA.

For example, as just one example, for air quality, the FEIS admits that:

> **Sufficient data are not currently available to quantify potential air pollutant emission sources from the foreseeable actions listed above**. Therefore, cumulative impacts from the proposed Rosemont Copper Project and the foreseeable actions are addressed qualitatively. These reasonably foreseeable actions could further degrade air quality in ways similar to the action alternatives, through emissions from surface disturbance, tailpipe and fugitive dust emissions from mobile sources, and point-source emissions from industrial activities.

FEIS at 282 (emphasis added). However, simply stating that the agency did not quantify the potential emissions from these other sources does not excuse compliance with NEPA's mandate to provide "quantified assessment" of these impacts. This error is compounded by the admission that:

> Cumulatively, these foreseeable actions could combine with predicted impacts from the Rosemont Copper Project action alternatives to potentially result in the following:
> • Further additions to the total emissions within Pima County, **which cumulatively could lead to an exceedance of the PM10 and O3 NAAQS in the Tucson and Saguaro National Park East areas and to the risk of "nonattainment"designation of these areas for PM10 and/or O3**;

• Further increases to concentrations of other air pollutants in the Tucson and Saguaro National Park areas; and
• Further degradation of visibility in the Saguaro National Park area.

FEIS at 282. The USFS's Draft Programmatic EIS for Revision of the Coronado National Forest Land and Resource Management Plan also recognizes the adverse cumulative impact resulting from the Rosemont Project along with other sources:

> Potential sources of emissions on the Coronado may result from the following activities.
>
> **Vehicle and heavy equipment operation, including on- and off-road travel and recreational vehicle use,** release combustion gases (exhaust) and particulates to the air, both of which contribute to ambient concentrations of pollutants regulated by the NAAQS. While most emissions are confined locally and are temporary, large road or facility construction projects and sizeable mining operations, such as the proposed Rosemont Copper Mine, would contribute enough particulates over extensive periods of time to negatively affect ambient concentrations. Quantifiable concentrations of pollutant emission would be calculated during every site-specific environmental review of future proposed actions.

Draft Programmatic EIS, at 200 (emphasis in original). http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5440356.pdf Despite this recognition, the FEIS for the Rosemont Project failed to conduct the required cumulative impacts review.

As noted herein, and in the January 27, 2012 comments, the USFS cannot approve any PoO without assurance that all air quality standards and requirements will be met at all times. Yet, the FEIS here admits that some of these requirements may be violated by the Project's cumulative emissions with other reasonably foreseeable sources. Not only does this violate the agency's substantive environmental protection requirements, it highlights the procedural violations of NEPA. In other words, without knowing the extent of these combined emissions, the agency's statement that the Project will not cause any violation of air quality standards/requirements lacks the requisite evidentiary support and cannot stand.

The same is true regarding all of the other resources/impacts analyzed in the FEIS. The agency cannot support its conclusions that the Project will comply with all laws (e.g., water quality, air quality, wildlife protection) when it failed to quantitatively assess the impacts from all of the past, present, and reasonably foreseeable future actions when combined with the direct and indirect impacts from Rosemont.

NEPA regulations also require that the FEIS obtain the missing "quantitative assessment" information:

> When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.

> (a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.
> (b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement:
> (1) A statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment, and (4) the agency's evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, "reasonably foreseeable" includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.

40 CFR § 1502.22. "If there is 'essential' information at the plan- or site-specific development and production stage, [the agency] will be required to perform the analysis under § 1502.22(b)." Native Village of Point Hope v. Jewell, --- F.3d ----, 2014 WL 223716, *7 (9th Cir. 2014). Here, the cumulative emissions from Rosemont when added to other past, present or reasonably foreseeable future actions is clearly essential to the USFS' determination (and duty to ensure) that the Project will not cause or contribute to a violation of an any environmental standard or requirement (such as air and water quality standards).

"[W]hen the *nature* of the effect is reasonably foreseeable but its *extent* is not, we think that the agencay may not simply ignore the effect. The CEQ has devised a specific procedure for 'evaluating reasonably foreseeable significant adverse effects on the human environment' when 'there is incomplete or unavailable information.' 40 C.F.R. § 1502.22." Mid States Coalition for Progress v. Surface Transportation Board, 345 F.3d 520, 549-550 (8th Cir. 2003)(emphasis in original). The USFS's failure to obtain this information, or make the necessary showings under § 1502.22, for all direct, indirect and cumulative impacts thus violates NEPA.

BLM, in its comments on the Preliminary Administrative FEIS, specifically found that the USFS failed to conduct the proper cumulative impacts analysis for numerous resources, including wildlife:

Cumulative effects do not adequately explain possible additive, countervailing, or synergistic effects to Empire Gulch or Cienega Creek.

> …
> There is no analysis of cumulative, interacting or synergistic effects at Empire Gulch and Cienega Creek of drawdown, reduction in flow, and lost stream length (see above comments) and potential effects this would have to water quality (e.g. from concentration) of what water would still be available to listed species (e.g. lesser long-nosed bat, southwestern willow flycatcher, Chiricahua leopard frog,

> Gila chub, Gila topminnow, Huachuca water umbel), critical habitat (e.g. Gila chub and Chiricahua leopard from and proposed for southwestern willow flycatcher), and primary constituent elements of critical habitat.
>
> The Cumulative Effects section in the PAFEIS does not appear to meet the minimum requirements of NEPA and CEQ. For example, the effects for the following subjects are not analyzed: temporal scope, reasonably foreseeable actions (e.g. additional pit mines), resource issues, condition of the environment, thresholds, residual effects after mitigation.

August 15, 2013 Letter from David Baker, Field Manager, BLM Tucson Field Office to USFS Supervisor Jim Upchurch, "BLM Comments on the Rosemont Copper Project," Attachment at p. 5 of 9.

The Ninth Circuit has rejected the agency's attempt to avoid reviewing cumulative impacts by simply discussing general effects (and even that was not done in the FEIS):

> As we have observed on multiple occasions, "general statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." *Klamath–Siskiyou,* 387 F.3d at 993–94 (quoting *Ocean Advocates,* 361 F.3d at 1128). Even if the BLM was unable to indicate with any great degree of certainty the results of the Project, because the cumulative effects analysis requires an agency to predict future conditions, uncertainty is an inherent part of the process. Therefore, a general statement about uncertainty does not satisfy the procedural requirement that an agency take a hard look at the environmental effects of an action. The BLM can certainly explain specific projections with reference to uncertainty; however, it may not rely on a statement of uncertainty to avoid even attempting the requisite analysis.

Oregon Natural Resources Council Fund v. Brong, 492 F.3d 1120, 1134 (9th Cir. 2007).

As another example, the FEIS cumulative impacts list notes that "BLM proposes to approve an MPO [mining plan of operations] to expand the Andrada Mine limestone quarry in the Davison Canyon drainage." FEIS at 141. This Mine has significant environmental concerns to the local and regional environment – especially considering its location within the impact zone of the Rosemont Project (see herein discussion on ground and surface water impacts, air, recreation, wildlife, seeps/springs, etc.). The BLM has prepared an Environmental Assessment (EA), which has resulted in significant public concern. *See* attached public comment letter, July 2013. All of the cumulative impacts issues in that letter should have been reviewed in the Rosemont EIS. *See also* State exploration permits granted to Andrada in 2012 and 2013 (showing expanded operations not included in original mining plan and also not reviewed in the FEIS).

In addition to the basic lack of the required quantified assessment and related cumulative impacts reviews, the FEIS's list of reasonably foreseeable activities/actions is deficient. For example, regarding the mining of the Charles Seel leases in Davison Canyon (a critical area for wildlife and water resources as explained herein), the FEIS was based on the conclusion that "[t]here are no known plans to explore for or develop mineral resources on this lease in

the foreseeable future." FEIS at 142. Yet this ignores the fact that the State of Arizona considers mining to be reasonably foreseeable on these lands. In response to an inquiry from a local citizen concerned about mining on these lands, a State Geologist stated:

> A Mine Operations Plan and a Reclamation and Closure Plan dated May 14, 2004 was included within the Mineral Development Report submitted in support of the Mineral Lease renewal application. This Mineral Development Report was reviewed and the Mineral Lease approved and finalized on May, 13, 2010. **This approved Mine Operations Plan remains in effect** according to the provisions specified within Article 25 of the Mineral Lease.

January 24, 2014 email from Larry Meier, Geologist, Minerals Section, Natural Resources Division, Arizona State Land Department (attached).

Further, there is no mention, let alone analysis, of the Cal Portland Empire Mountains mining operations in Davidson Canyon. The US EPA and Fish and Wildlife Service have specifically noted many adverse effects from these operations. *See* attached EPA and FWS letters issued in 2009. None of these impacts or concerns were analyzed in the FEIS.

Another mineral project in the same general area was also recently approved by the State of Arizona. *See* Geovic mineral exploration permits and maps (attached). As the map for these projects shows, they straddle the Cienegas Creek area. Again, the FEIS is devoid of any review of the cumulative impacts to the environmental and other resources of these projects when considered with Rosemont.

The FEIS states that there are seven proposed mining projects in Santa Cruz County that, along with the proposed Rosemont mine, may contribute to cumulative impacts to socioeconomic resources in the area. FEIS at 1126. Omitted from this list is the proposed CH project in the Patagonia Mountains, a 5 hole exploratory drilling operation.

All of these Santa Cruz drilling operations were described as having "the same cumulative impacts as the Heliz Margarita exploration activities." The Heliz Margarita activities are described as having the same cumulative impacts as the Andrada Mine Limestone quarry, but that the Heliz Marguerita impacts "would likely be of a smaller magnitude, as these exploration activities are generally small-scale, temporary actions and are not typically visually evident."

Six of the seven listed proposed mining activities in Santa Cruz County are located in the Patagonia Mountains. These proposed activities are: Arizona Minerals, Inc,; Regal Resources; the Moore and Moore No. 4 Placer Mine; the Dice No. 8 Placer Mine; Javelina Minerals; and OZ Exploration; as well as the CH project which was not included in the FEIS list of foreseeable actions. The Patagonia Mountains are an important socioeconomic resource for the surrounding communities. This area is internationally known as a premier birding destination. The Arizona National Scenic Trail goes through the Patagonia Mountains offering opportunities for birding, hiking, mountain biking, cycling, and equestrian activities. Other recreational activities include, camping, hunting, stargazing, geo-caching, motorcycle touring, OHV travel, shooting, backpacking, wildlife watching and tracking, and peak bagging. Visitors who participate in these activities bring a significant amount of revenue to the tourist oriented businesses in the surrounding communities. Impacts to tourism from the proposed Rosemont

project, along with the six proposed mining operations in the Patagonia Mountains, would have significant and permanent adverse impacts on the economic well-being of the Sonoita, Elgin and Patagonia area.

The proposed Regal Resources project will block access to Humboldt Canyon during their one year exploratory drilling project. Humboldt Canyon is a very popular birding, hiking, and hunting area. These recreationists will no longer have access to this unique canyon. Additionally, the noise from the 24 hour a day, 7 day a week drilling operation will discourage other quiet recreation in areas nearby in the National Forest. It will also frighten away wildlife, discouraging hunting and wildlife viewing nearby. The wildlife track monitoring project that occurs every eight weeks in Humboldt Canyon will also be discontinued by the drilling activities and road closure

Arizona Minerals, Inc. has 48 separate sites slated for exploratory drilling, geotechnical drilling, test pits, and/or hydrogeologic drilling/monitoring wells spread out over 2 square miles of the Patagonia Mountains in the Coronado National Forest. Drilling would occur for 2 years with well monitoring happening for up to 15 years as stated in the AMI MPO, not 10 years, as stated on page 1126 of the Rosemont FEIS. Anyone traveling on Harshaw Road, Harshaw Creek Road, Meadow Valley or in the San Rafael Valley will be visually impacted by this project. Many recreational motorists and mountain bikers travel on these roads. Also, traffic on Forest Road 49 and Forest Road 58 will be greatly increased by the commuting mine workers and mine traffic, given that the 48 sites are spread so far apart. Cumulative traffic effects must also take into consideration the activities of the Department of Homeland Security. The 24 hour, 7 day a week noise, traffic, lights and dust from the AMI exploration will discourage recreational activities and tourism, significantly impacting the economics of the area. These exploration activities can hardly be described as "small-scale, temporary actions and not typically visually evident."

The proposed Rosemont Mine project, along with the cumulative effects of these six mining proposals in the Patagonia Mountains, will have a significant impact on the traffic traveling on Highway 82 and Highway 83. After years of claiming that the Rosemont truck traffic would only go north to Tucson, now the Sonoita and Patagonia area are faced with the prospect of Rosemont's haul trucks traveling back and forth to Nogales via Highways 83 and 82. The cumulative effects of the traffic from all of the proposed mining activities will clog Highways 82 and 83, discouraging visitors and therefore, negatively affecting the area's tourist based economy.

The USFS must explain, clarify, correct, and quantify the cumulative effects of these six proposed mining projects and the increased traffic they will produce, along with the proposed Rosemont project, on the Sonoita, Elgin and Patagonia economies, and this information should be presented for public review and comment in a revised DEIS.

See herein for additional examples of unexamined cumulative impact projects/actions.

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The Project Fails To Comply With The Clean Water Act And All Environmental Laws, Standards, And Requirements.

As noted herein and in our previous comments, the project is predicted to violate numerous environmental laws andstandards. This is especially true for air and water quality. Under the Organic Act and USFS mining regulations, the agencies cannot approve any mining plan that may result in such exceedences/violations. "Operator shall comply with applicable Federal and State air quality standards, including the requirements of the Clean Air Act, as amended (42 U.S.C. 1857 et seq.)." 36 CFR 228.8(a); 228.8(b)(same, for water quality requirements/standards and the Clean Water Act).

Yet the FEIS and Draft ROD are based on the USFS' legal position that: "**The Forest Service does not have the responsibility or jurisdiction to determine whether or not the mine would degrade water quality or violate water quality standards."** FEIS at 553. That is a fundamental misunderstanding of federal law and as such, renders the agency's analysis and conclusions regarding water quality and related issues (such as habitat and wildlife protection and impacts) unsupportable as a matter of law.

In addition to the agencies' regulations, under the Clean Water Act (CWA) Section 313, the agencies cannot approve any activity that may result in a violation of a water quality standard.

> Under the Clean Water Act, all federal agencies must comply with state water quality standards, including a state's antidegradation policy. 33 U.S.C. § 1323(a). Judicial review of this requirement is available under the Administrative Procedure Act. Oregon Natural Resources Council v. U.S. Forest Service, 834 F.2d 842, 852 (9th Cir. 1987).

Idaho Sporting Congress v. Thomas, 137 F.3d 1146, 1153 (9th Cir. 1998). *See also* Marble Mountain Audubon Soc'y v. Rice, 914 F.2d 179, 182-83 (9th Cir. 1990); Oregon Natural Resources Council v. Lyng, 882 F.2d 1417, 1424-25 (9th Cir. 1989); Hells Canyon Presv. Council v. Haines, 2006 WL 2252554, *4-5 (D. Or. 2006)(USFS mine approvals must comply with CWA standards).

EPA's antidegradation standards, which the USFS must ensure compliance with, requires that: "Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained." 40 CFR § 131.12 (a)(1). As detailed herein, the agency has not ensured that all instream uses and water quality "shall be maintained." Indeed, as noted herein, the FEIS and Draft ROD admits that many such uses in local streams will either be reduced or eliminated altogether.

In addition, under the Organic Act, and the 36 CFR Part 228 regulations, the agency cannot approve an MPO unless it can be demonstrated that all feasible measures have been taken to "minimize adverse impacts" on National Forest resources, including all measures to protect water quality and habitat. *See* Rock Creek Alliance v. Forest Service, 703 F.Supp.2d 1152, 1170 (D. Montana 2010) (Forest Service PoO approval violated Organic Act and 228 regulations by failing to protect water quality and fisheries).

Under the CWA and EPA regulations, water quality standards include the protection of

beneficial uses. "A water quality standard defines the water quality goals of a water body, or portion thereof, by designating the use or uses to be made of the water and by setting criteria necessary to protect the uses." 40 CFR § 131.2. The minimal designated use for a water body is the "fishable/swimmable" designation which "provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water." 33 U.S.C. § 1251(a)(2).

> The text [of the CWA] makes it plain that water quality standards contain two components. We think the language of § 303 is most naturally read to require that a project be consistent with *both* components, namely, the designated uses *and* the water quality criteria. **Accordingly, under the literal terms of the statute, a project that does not comply with a designated use of the water does not comply with the applicable water quality standards.**

PUD No. 1 of Jefferson County v. Washington Department of Ecology, 511 U.S. 700, 714-15 (1994) (*italics* emphasis in original, **bold** emphasis added). Thus, the CWA prohibits any activity that will not fully protect all of the designated uses for that water body.

As the FEIS acknowledges (as noted herein), the mine also violates the CWA's/Arizona's "antidegradation" requirements. Antidegradation policies "shall, at a minimum, be consistent with . . . [e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." 40 CFR §131.12(a)(1). Under this regulation, "'no activity is allowable . . . which could partially or completely eliminate any existing use.'" PUD No. 1, 511 U.S. at 718-19 (*citing* EPA, Questions and Answers on Antidegradation 3 (Aug. 1985)). (*citing* EPA, Questions and Answers on Antidegradation 3 (Aug. 1985)). In addition, because Davidson Canyon and Cienega Creek are designated "Outstanding Waters," the prohibitions against any degradation or impairment apply – something which the project cannot meet. *See* 40 CFR §131.12(a)(3) ("Where high quality waters constitute an outstanding National resource, such as waters of National and State parks and wildlife refuges and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.")

As just one example, the FEIS admits that the Project could eliminate existing water quality uses and thus violate water quality standards protecting such uses, in Cienega Creek:

> Cienega Creek extends from its headwaters near Sonoita approximately 36 miles downstream, flowing through both the Las Cienegas National Conservation Area and the Cienega Creek Natural Preserve. Throughout much of this length, Cienega Creek exhibits perennial or intermittent stream flow, and an extensive gallery of cottonwood and willow is supported along the Creek. In addition, the flood plain of Cienega Creek contains the remnants of once-extensive cienegas, or areas of shallow groundwater and wetland complexes.
>
> Cienega Creek is noted for both scenic beauty and ecological significance. It forms an important connection for wildlife movement between sky islands in southern Arizona. It is one of the few remaining examples of a desert riparian community, exhibiting a high level of plant diversity in a relatively small geographic area. Pima County notes that the habitat along Cienega Creek supports

> more than 280 native species of mammals, birds, reptiles, amphibians, fish, and insects that either reside in or frequent the preserve and provides habitat for neotropical migratory birds, which seasonally use the area for nesting. The presence of perennial stream flow supports native frog and fish populations, including threatened and endangered species.
>
> The ecological, recreation, and cultural importance of Cienega Creek is tied irrevocably to its hydrology. Cienega Creek is valuable because it is a perennial riparian corridor. Predictions of impact to Cienega Creek are less certain than those for Empire Gulch and encompass a wide range of possibilities, from no impact at all, **to extensive dewatering and drying.** The timing is also uncertain, with possible changes occurring many decades or hundreds of years in the future. **Changes in the hydrology severe enough to cause dewatering of Cienega Creek are one possible outcome of the mine, and the likelihood of mine effects becoming severe enough to dewater Cienega Creek also increases with climate change and increased groundwater demand within the basin. If these severe effects were to occur, much of the value of Cienega Creek for recreation, wildlife habitat, scenic beauty, and cultural importance would be lost.**

FEIS at 547 (emphasis added). The agency further admits to the Project's potential, indeed certainty, of long-term loss of water quality and related uses:

> Upper Cienega Creek currently meets the regulatory definition of a wadeable, perennial stream. As such, **regulatory requirements specific to biological integrity (taxa richness, species composition, tolerance, and functional organization comparable to that of a stream with reference conditions in Arizona) and bottom deposits would need to be met**. The potential for reductions in stream flow would potentially drive water quality changes as well, as discussed earlier in this section. Results of the models are mixed. By 50 years after closure, only one modeling scenario out of five suggests that there would be an increase in the risk of low-flow conditions occurring. By 150 years after closure, four out of five modeling scenarios suggest that there would be an increase in the risk of low-flow conditions occurring. **By 1,000 years after closure, all modeling scenarios agree that there would some level of increase in the risk of low-flow conditions.**
>
> **These low-flow conditions would increase water temperature, increase nutrient loads, and decrease the assimilative capacity of the stream. Changes in these characteristics would have an effect on the aquatic biota and the characteristics of biological integrity listed above**.

FEIS at 554-55 (emphasis added). The USFS cannot fail to protect these resources simply by saying that it is "uncertain" whether the impacts may occur.

> [W]e [the federal courts] nonetheless have a responsibility to ensure that an agency's decision is not arbitrary. **It is not enough for the Service to simply invoke "scientific uncertainty" to justify its action**. As the Supreme Court has

> explained, "[r]ecognizing that policymaking in a complex society must account for uncertainty ... does not imply that it is sufficient for an agency to merely recite the terms 'substantial uncertainty' as a justification for its actions." State Farm, 463 U.S. at 52, 103 S.Ct. 2856. The Service must rationally explain why the uncertainty regarding the impact of whitebark pine loss on the grizzly counsels in favor of delisting now, rather than, for example, more study. *See* id. Otherwise, we might as well be deferring to a coin flip.

Greater Yellowstone Coalition v. Servheen, 665 F.3d 1015, 1028 (9th Cir. 2011)(emphasis added).[13] Also, the uncertainties concerning the extent of groundwater drawdown and its effect on riparian habitats does not relieve the Forest Service of the responsibility under NEPA to analyze the mitigation of likely impacts at the outset. South Fork Band Council v. U.S. Department of the Interior, 588 F. 3d 718 (9th Cir, 2009).

> BLM argues that an effectiveness discussion was not required because it is impossible to predict the precise location and extent of groundwater reduction, and that problems should instead be identified and addressed as they arise. But NEPA requires that a hard look be taken, if possible, *before* the environmentally harmful actions are put into effect. *National Parks & Conservation Association v. Babbitt,* 241 F.3d 722, 733 (9th Cir.2001).
>
> In this instance, the EIS states that BLM has identified fifty perennial springs and one perennial creek that are the most likely to dry up, though among these it is impossible to "conclusively identify specific springs and seeps that would or would not be impacted." **That these individual harms are somewhat uncertain due to BLM's limited understanding of the hydrologic features of the area does not relieve BLM of the responsibility under NEPA to discuss mitigation of reasonably likely impacts at the outset**. *See National Parks,* 241 F.3d at 733("lack of knowledge does not excuse the preparation of an EIS; rather it requires [the agency] to do the necessary work to obtain it.") Even if the discussion must necessarily be tentative or contingent, NEPA requires that the agency give some sense of whether the drying up of these water resources could be avoided.

South Fork Band Council, 588 F.3d at 727 (emphasis added). Here, the lack of an adequate analysis of the impacts to ground water, surface water, and their dependent resources noted herein, along with the lack of an adequate mitigation discussion (including effectiveness) violates NEPA.

In addition to the potential violation of water quality standards and uses here admitted by the agency, the elimination of perennial flow of the Creek which "supports native frog and fish populations, including threatened and endangered species," violates the agency's duties under the ESA, Organic Act/Part 228, NFMA and other laws requiring the protection of wildlife and fisheries and their habitat from mining operations.

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[13] This rule applies to all of the instances noted herein, where the USFS fails to fully protect affected resources because the predicted impacts are based on modeling, or that long-term impacts are uncertain.

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The beneficial use/designated use protection is not limited to streams which support fish; a water body composed of solely plants and invertebrates is also protected under the antidegradation policy. Bragg v. Robertson, 72 F. Supp.2d 642, 662 n.38 (S.D. W. Va. 1999) (citing EPA, Water Quality Standards Handbook § 4.4) *reversed on other grounds* 248 F.3d 275 (4th Cir. 2001). By contributing to a loss of beneficial uses in aquatic life and its supporting habitat, and/or by directly violating stream standards, the project violates the stream standards and the antidegradation policy. As such, the operations cannot be authorized.

The loss of critical riparian areas also violates the USFS's own requirements for riparian and wetland protection. For example, the agency's overriding Objective for riparian areas that may be affected by a project requires the agency: "1. **To protect, manage, and improve riparian areas** while implementing land and resource management activities. 2. To manage riparian areas in the context of the environment in which they are located, recognizing their unique values." FSM § 2526.02 (emphasis added). The agency's policy requires it to:

> 1. Manage riparian areas in relation to various legal mandates, including, but not limited to, those associated with floodplains, wetlands, water quality, dredged and fill material, endangered species, wild and scenic rivers, and cultural resources.
>
> 2. Manage riparian areas under the principles of multiple-use and sustained-yield, while **emphasizing protection and improvement of soil, water, and vegetation, particularly because of their effects upon aquatic and wildlife resources. Give preferential consideration to riparian-dependent resources when conflicts among land use activities occur.**
>
> 3. Delineate and evaluate riparian areas prior to implementing any project activity. Determine geographic boundaries of riparian areas by onsite characteristics of water, soil, and vegetation.
>
> 4. Give attention to land along all stream channels capable of supporting riparian vegetation (36 CFR 219.27e).
>
> 5. Give special attention to land and vegetation for approximately 100 feet from the edges of all perennial streams, lakes, and other bodies of water. This distance shall correspond to at least the recognizable area dominated by the riparian vegetation (36 CFR 219.27e). **Give special attention to adjacent terrestrial areas to ensure adequate protection for the riparian-dependent resources.**

FSM § 2526.03 (emphasis added). *See also* FSM 2527.02 (requiring the USFS "To preserve and restore the natural and beneficial values of floodplains and wetlands.").[14] Due to the severe adverse impacts to, and elimination of many, of riparian and wetland areas, the USFS cannot approve any of the action alternatives.

Also, the Project cannot be approved without the required CWA Section 401 Certification. Hells Canyon Preservation Council v. Haines, 2006 WL 2252554, *4 (D. Or. 2006).

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[14] Thus, as noted herein, the USFS cannot simply defer its review and protection of wetlands to the CWA Section 404 process. It has a separate and independent duty to protect wetland areas.

Although the FEIS mentions that a 401 Certification would be required, there is no evidence that an adequate Certification can be obtained. This is due in part to the herein-noted predicted potential water quality violations and degradation/loss of beneficial uses.

Further, there are additional water quality concerns that have not been adequately addressed. For example, it does not appear that the agencies will require Rosemont to obtain NPDES permit coverage for the sediment and other pollutants discharged from the road culverts and other water management structures. As the Ninth Circuit has stated:

> Further, the term man-made "conveyance," the essential trigger for finding a "point source" under the CWA, is broadly defined. [W]hen stormwaterrunoff is collected in a system of ditches, culverts, and channels and is then discharged into a stream or river, there is a "discernable, confined and discrete conveyance" of pollutants, and there is therefore a discharge from a point source. In other words, runoff is not inherently a nonpoint or point source of pollution. Rather, it is a nonpoint or point source under § 502(14) depending on whether it is allowed to run off naturally (and is thus a nonpoint source) or is collected, channeled, and discharged through a system of ditches, culverts, channels, and similar conveyances (and is thus a point source discharge).

Northwest Environmental Defense Center v. Brown, 640 F.3d 1063, 1070-71 (9th Cir. 2011) (culverts directing stormwater flows are point sources subject to NPDES permitting) *overturned on other grounds* Decker v. Nw. Envtl. Def. Ctr., 133 S.Ct. 1326 (2013). The Ninth Circuit recently reiterated, in light of the Supreme Court's and its previous decision in those cases, that:

> The Court left intact our holding that "when stormwater runoff is collected in a system of ditches, culverts, and channels and is then discharged into a stream or river, there is a 'discernable, confined and discrete conveyance' of pollutants, and there is therefore a discharge from a point source" within the meaning of the Clean Water Act's basic definition of a point source in 33 U.S.C. § 1362(14).

Northwest Environmental Defense Center v. Decker, 728 F.3d 1085-86 (9th Cir. 2013).

Without the required CWA permits (and Section 401 Certification), the USFS cannot approve the Plan of Operations. *See* Dubois v. U.S. Dept. of Agriculture, 102 F3d 127, 1300 (1st Cir. 1996) ("the Forest Service was obligated to assure itself that an NPDES permit was obtained before permitting the [requested activity].").

Thus, the USFS must ensure that Rosemont has obtained a Section 401 Certification for the Project, and must fully review the quality of the discharges of all culverts related to the roads and other Project facilities. Here, the FEIS does not fully review the quality of the waters that will be discharged from all culverts and similar Project point sources – in violation of NEPA. In addition, the FEIS and Draft ROD's failure to ensure that all water quality standards, including all beneficial uses, will be protected at all times violates CWA Section 313, as well as the Organic Act and Part 228 regulations. As noted herein, the agency cannot escape its water quality protection duties, and its NEPA review duties, by deferring to future Arizona regulatory reviews.

In addition, the Draft ROD proposes to authorize Rosemont to divert jurisdictional waters around the mine site, without protecting the aquatic life and habitat in the stream reach to be

moved, and without requiring NPDES coverage for the outfall from the constructed channel. As the Ninth Circuit has held, discharges from such mine diversion channels must be covered by an NPDES permit and be considered when determining whether a project meets all water quality requirements. Friends of Pinto Creek v. EPA, 504 F.3d 1007, 1015-16 (9th Cir. 2007). Although the FEIS mentions this diversion as a means to mitigate other water quality impacts (e.g., keeping flows away from mine facilities), there is no analysis, or permit coverage, for this new water conveyance structure and discharge.

The FEIS and Draft ROD commit a number of other additional and fundamental errors, especially regarding water quality. For example, the FEIS and Draft ROD are based on the agency's belief that:

> **The Forest Service does not have the responsibility or jurisdiction to determine whether or not the mine would degrade water quality or violate water quality standards** in the Outstanding Arizona Water reaches; this determination responsibility lies with ADEQ. However, the Forest Service does have the responsibility to assess and disclose potential resource impacts.

FEIS at 553 (emphasis added). The FEIS repeats this position numerous times, see, e.g.,:

> [B]ased on discussions with ADEQ on preliminary drafts of the FEIS, it was made clear to the Coronado that **the responsibility and jurisdiction for assessing whether the mine meets antidegradation criteria lie with ADEQ. The person seeking authorization for a regulated discharge to a tributary to, or upstream of, an Outstanding Arizona Water (in this case Rosemont Copper) has the responsibility to demonstrate to the State of Arizona that the regulated discharge will not degrade existing water quality** in the downstream Outstanding Arizona Water. This demonstration by Rosemont Copper, and determination by the State of Arizona, has not yet been completed.

FEIS at 549 (emphasis added). The USFS further states its abdication of its water quality protection responsibilities:

> **The State of Arizona has the sole authority to make a determination about whether or not the proposed project would violate State water quality regulations** by degrading Outstanding Arizona Waters. The person seeking authorization for a regulated discharge to a tributary to, or upstream of, an Outstanding Arizona Water (in this case Rosemont Copper) has the responsibility to demonstrate to the State of Arizona that the regulated discharge will not degrade existing water quality in the downstream Outstanding Arizona Water. **This demonstration by Rosemont Copper, and determination by the State of Arizona, has not yet been completed**.

FEIS at 503, 512 (emphasis added).

These legal positions are incomplete and inaccurate. Although the Forest Service is correct that it has a duty under NEPA to review all impacts, it also has a separate and independent duty to ensure that all water quality requirements and standards are met – under the CWA, Organic Act, and Part 228 regulations. *See* Idaho Sporting Congress v. Thomas, 137 F.3d

1146, 1153 (9th Cir. 1998). *See also* Marble Mountain Audubon Soc'y v. Rice, 914 F.2d 179, 182-83 (9th Cir. 1990); Oregon Natural Resources Council v. Lyng, 882 F.2d 1417, 1424-25 (9th Cir. 1989); Hells Canyon Presv. Council v. Haines, 2006 WL 2252554, *4-5 (D. Or. 2006)(USFS mine approvals must comply with CWA standards).

Although Arizona has its own water quality mandates, the USFS cannot delegate-away what Congress has entrusted with the USFS regarding operations on public lands (and operations approved by the USFS with off-site impacts). The fact that Arizona may issue permits for these activities does not eliminate the USFS's independent duties under the CWA, Organic Act/Part 228 and NEPA. "A non-NEPA document – let alone one prepared and adopted by a state government-cannot satisfy a federal agency's obligations under NEPA. *Klamath-Siskiyou Wildlands Center v. BLM,* 387 F.3d 989, 998 (9th Cir.2004)." South Fork Band Council v. Dept. of Interior, 588 F.3d 718, 726 (9th Cir. 2009). The same NEPA violation was found in Klamath-Siskiyou, 387 F.3d at 998, where the Ninth Circuit rejected as "without merit" identical arguments that an agency may excuse itself from its NEPA hard look duty where a "facility operates pursuant to a state permit under the Clean Air Act."

NEPA requires that the "Environmental impact statement shall state how alternatives considered in it and decisions based on it will or will not achieve the requirements of sections 101 and 102(1) of the Act [NEPA] and other environmental laws and policies." 40 CFR § 1502.2(d). *See, e.g.*, Montana Wilderness Ass'n v. McAllister, 658 F.Supp.2d 1249, 1256 (D. Mont. 2009)("By failing to explain how the changes meet the requirements of the Wilderness Study Act, the Forest Service violated NEPA. *See* 40 C.F.R. § 1502.2(d).").

NEPA regulations also require that environmental impacts "shall be discussed in proportion to their significance." 40 C.F.R. § 1502.2(b). "Significance" is measured in terms of context and intensity and includes "[w]hether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment." 40 C.F.R. § 1508.27(b)(10). *See* WildEarth Guardians v. Salazar, 880 F.Supp.2d 77, 93 (D.D.C. 2012)(Section 1508.27(b)(10) requires that an EIS analyze compliance with "laws imposed for the protection of the environment"). *See also* Coal. on Sensible Transp. Inc. v. Dole, 642 F.Supp. 573, 590 (D.D.C.1986) (characterizing 40 C.F.R. § 1508.27(b)(10) as "requir[ing] consideration of whether a project threatens a violation of federal, state, or local environmental laws."), *aff'd,* 826 F.2d 60 (D.C.Cir.1987).

Thus, in addition to the USFS's duties under the CWA, Organic Act and other mandates noted herein to ensure compliance with all water quality requirements (and other environmental protection mandates), the agency has a duty under NEPA to fully analyze whether each and every applicable requirement will be met. Such analysis cannot be deferred to the future, especially to a state agency under no NEPA obligations.

For example, as noted herein, the discharges from the soil cover and waste rock are predicted to violate water quality standards and requirements. FEIS at 472-73, 548-553. Yet the "mitigation" measures proposed for these facilities are delegated to Rosemont's stormwater permit issued by Arizona, which "requires Rosemont Copper to select, design, install, and implement control measures (including best management practices), as appropriate, to ensure the discharge meets applicable water quality standards. The permit does not dictate the specific control measures that must be implemented." FEIS at 473.

Despite the reliance on these measures/controls, these measures have yet to be fully reviewed by the USFS, or the public. As held by the Ninth Circuit, however, such NEPA review cannot be delegated to a state-issued environmental permit:

> BLM argues that the off-site impacts need not be evaluated because the Goldstrike facility operates pursuant to a state permit under the Clean Air Act. This argument also is without merit. A non-NEPA document -- let alone one prepared and adopted by a state government -- cannot satisfy a federal agency's obligations under NEPA. Klamath-Siskiyou Wildlands Center v. BLM, 387 F.3d 989, 998 (9th Cir.2004).

South Fork Band Council, 588 F.3d at 726. In addition, there is no analysis of the effectiveness of these mitigation measures, itself a fundamental NEPA violation.

> [NEPA] does require that an EIS discuss mitigation measures, with "sufficient detail to ensure that environmental consequences have been fairly evaluated." Methow Valley, 490 U.S. at 352, 109 S.Ct. 1835. An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective. *Compare* Neighbors of Cuddy Mountain v. U.S. Forest Service, 137 F.3d 1372, 1381 (9th Cir.1998) (disapproving an EIS that lacked such an assessment) *with* Okanogan Highlands Alliance v. Williams, 236 F.3d 468, 477 (9th Cir.2000) (upholding an EIS where "[e]ach mitigating process was evaluated separately and given an effectiveness rating"). The Supreme Court has required a mitigation discussion precisely for the purpose of evaluating whether anticipated environmental impacts can be avoided. Methow Valley, 490 U.S. at 351–52, 109 S.Ct. 1835(citing 42 U.S.C. § 4332(C)(ii)). A mitigation discussion without at least *some* evaluation of effectiveness is useless in making that determination.

South Fork Band Council v. Dept. of Interior, 588 F.3d 718, 727 (9th Cir. 2009)(rejecting EIS for open pit mine for failure to conduct adequate review of mitigation and mitigation effectiveness in mine EIS).

Overall, the USFS cannot approve any operation which has not "demonstrated" that the Project will comply with all water quality standards and protect all beneficial uses. Without this demonstration, which the FEIS admits has not been made, the FEIS violates NEPA as well as the USFS's substantive water quality protection responsibilities.

For the analysis the FEIS did conduct (albeit inadequately), the agency admits that the Project will degrade water quality and associated beneficial uses. For example, as noted herein, the Project (especially the groundwater pumping and loss of headwaters tributaries) will result in severe adverse impacts to Empire Gulch and Cienega Creek. FEIS at 546-547. For Empire Gulch, the Project is predicted to result in "changes that would occur in the type of vegetation and habitat in Empire Gulch, and the potential transition of the stream from perennial to ephemeral." FEIS at 546. The FEIS admits that:

> [I]mpacts to Empire Gulch are more certain to occur than those to other perennial streams, and most scenarios indicate that effects would be seen within 50 years of closure of the mine. These effects would gradually increase over time, likely

> affecting flow at the springs in Empire Gulch, stream flow within the Empire Gulch channel, and the riparian gallery present along the channel.

FEIS at 546. Instead of preparing a mitigation plan to prevent these serious impacts to water quality and wildlife (itself a NEPA violation per the mitigation requirements noted herein), the agency believes that it does not have any authority to mitigate or prevent these impacts. **"Due to the Forest Service's jurisdictional limitation that mitigation measures can be required only on NFS surface resources, no mitigation measures are proposed that would directly offset the impacts predicted to occur along Empire Gulch."** FEIS at 546 (emphasis added). Due to the lack of mitigation measures for other off-site streams (e.g., Cienega Creek), this position was adopted throughout the USFS' review of the Project. Note that this failure to even consider this mitigation not only violates the substantive laws noted herein, but the USFS's procedural duties under NEPA as detailed herein.

The USFS's self-imposed restriction on its environmental protection authority is not found in the law. Contrary to the FEIS and Draft ROD, the Forest Service has the authority to impose mitigation measures to protect public resources, even if those impacts occur off of USFS lands.

The USFS offers no legal support for its determination that it does not have any authority over the off-site impacts from the Mine, as they are related to the agency's duties to manage and protect public land under the Property Clause of the U.S. Constitution and the Organic Act, among other authorities. This is true both for the review and approval of the PoO as well as for any ROW/SUP. "Congress may regulate conduct occurring on or off federal land which affects federal land. *See, e.g.,* Kleppe v. New Mexico, 426 U.S. 529, 539 (1976); Minnesota v. Block, 660 F.2d 1240, 1249 (8th Cir.1981)." Duncan Energy Co. v. U.S. Forest Service, 50 F.3d 584, 589 (8th Cir. 1995) (upholding Forest Service authority over private property interests). **"It is well established that [the Property Clause of the U.S. Constitution] grants to the United States power to regulate conduct on non-federal land when reasonably necessary to protect adjacent federal property or navigable waters."** U.S. v. Lindsey, 595 F.2d 5, 6 (9th Cir. 1979)(emphasis added).

The Supreme Court has recognized for over a century that Congress may regulate activity on private lands as a means of protecting public property. *See* Camfield v. United States, 167 U.S. 518 (1897); United States v. Alford, 274 U.S. 264, 267 (1927) ("Congress may prohibit the doing of acts upon privately owned lands that imperil the publicly owned forests."). "[T]he power granted by the Property Clause is broad enough to reach beyond territorial limits." Kleppe v. New Mexico, 426 U.S. 529, 538 (1976).

As noted herein, the agency's illegally-cramped view of its authority in this case undermines its review of the impacts from the Project, as well as the documented (and admitted) failure of the agency to prevent or mitigate damage to significant public resources. This fatally flaws the FEIS and Draft ROD and thus the agency cannot approve any action alternative unless and until it reconsiders the Project under the correct legal regime.

In addition to its failure to protect all existing stream uses and quality, the agency admits that direct discharges from mine facilities have the potential to violate water quality standards.

> The screening analysis for runoff from waste rock indicates that **two constituents may be elevated in mine runoff at levels that suggest they could present**

> **antidegradation problems: total and dissolved molybdenum, and total and dissolved sulfate.** The screening analysis for runoff from soil cover suggests that molybdenum and sulfate would not be elevated but that **dissolved arsenic, dissolved iron, and dissolved sodium could present antidegradation problems. In addition, dissolved and total mercury is substantially higher.** Most waste rock samples contained mercury concentrations below detection limits (74 out of 78 samples collected), but these detection limits are higher than surface water standards and therefore are not able to be incorporated into this part of the analysis. Many or even all of these unusable samples could have very low mercury concentrations. The usable samples include one sample with a very high concentration of mercury (0.03 mg/L). Because of the small number of usable samples, this single sample has a large influence on the predictions. However, it appears to be a legitimate sample, and it still **indicates a potential for degradation from stormwater interacting with soil cover.** The actual runoff water quality would be predicted to be a mix of the waste rock and soil cover estimates.

FEIS at 549 (emphasis added). *See also* Tables 111 and 112, FEIS at 548, 550-552.

> Predicted runoff water quality from waste rock and soil cover meets surface water quality standards in Barrel Canyon, or standards are already exceeded. Full analysis of antidegradation standards and compliance with surface water standards in the Outstanding Arizona Water reaches of Davidson Canyon and Cienega Creek is under the jurisdiction of ADEQ and has not yet been conducted. However, screening analysis developed by the Coronado suggests that molybdenum and sulfate may be elevated in mine stormwater runoff but are likely to be reduced in part by several mitigations, including waste rock segregation requirements (discussed in detail below, see table 112).

FEIS Table 111. *See also* FEIS at 472-473 (noting predicted exceedences of water quality standards).[15]

In addition to the repeated error that compliance with water quality standards is under the sole "jurisdiction of ADEQ," the USFS cannot rely on the fact that "standards are already exceeded." The Ninth Circuit has ruled that discharges into impaired streams (i.e., where "standards are already exceeded") cannot be allowed without a plan to remediate the exceedences and return the stream to standards. Friends of Pinto Creek v. EPA, 504 F.3d 1007 (9th Cir. 2007)(because such new discharges may "cause or contribute" to a violation of standards which are already exceeded, they are prohibited).

Here, neither the FEIS or Draft ROD contains any such plan or the required NEPA review of these exceedences. Further, the FEIS's reliance on mitigation measures that "are likely to reduce" these exceedences does not ensure that all water quality standards "shall be maintained and protected." 40 CFR § 131.12 (a)(1). As such, in addition to the other violations of water

[15] In addition to the failure to protect water quality, this passage admits that the "Full analysis of antidegradation standards and compliance with surface water standards … has not yet been conducted." As noted herein, such a failure to provide the requisite analysis violates NEPA.

quality protection requirements noted herein, the FEIS and Draft ROD must be remanded back to the Coronado to correct all errors.

Lastly, the FEIS admits that it failed to conduct any quantitative assessment of the cumulative impacts from other actions/activities that may adversely affect water quality in the affected waters. *See* herein NEPA discussion of cumulative impacts.

> The reasonably foreseeable actions discussed in the "Surface Water Quantity" resource section all have not only the potential to change the amount of surface water flows in the analysis area but would represent additional disturbance that could increase erosion in the analysis area, which would impact surface water quality. As a whole, these changes are unlikely to be significant when assessed in the context of the watershed as a whole.

FEIS at 480. Despite thus admitting that the reasonably foreseeable actions in the area would likely adversely affect water quality and related resources, the agency concludes, with no detailed analysis at all, that they are "unlikely to be significant when assessed in the context of the watershed as a whole." The FEIS repeats this error in the "Surface Water Quantity" section:

> Expansion of the limestone quarries in lower Davidson Canyon could further reduce surface water quantity beyond the reductions expected under the action alternatives, depending on surface water management plans for those facilities. However, because the area is relatively small, compared with the watershed, and would be required by the ASLD to be reclaimed after the mine is closed, the additional impacts to surface water quantity would be minimal and localized.

FEIS at 437. No evidentiary support or data is provided for these conclusions. And as noted herein, this ignores not only the other mines in the area (see herein cumulative impacts discussion), but the substantial environmental concerns, especially dealing with water quality/quantity and related issues raised by the EPA and FWS to these operations (see attached).

This fundamentally violates the agency's cumulative impacts duties under NEPA, but also fails to provide the requisite support for such a bald conclusion.

> [A]llowing the Forest Service to rely on expert opinion without hard data either vitiates a plaintiff's ability to challenge an agency action or results in the courts second guessing an agency's scientific conclusions. As both of these results are unacceptable, we conclude that NEPA requires that the public receive the underlying environmental data from which a Forest Service expert derived her opinion. In so finding, we note that NEPA's implementing regulations require agencies to "identify any methodologies used and [ ] make explicit reference by footnote to the scientific and other sources relied upon for conclusions" used in any EIS statement. 40 C.F.R. § 1502.24.

Idaho Sporting Congress v. Thomas, 137 F.3d 1146, 1150 (9th Cir. 1998). Thus, without an adequate cumulative impacts review, the agency's conclusion that water quality standards and

uses would be violated or degraded, and thus all laws including the Clean Water Act, Clean Air Act, etc., would not be violated, is without support and cannot stand.

The Project Has Additional Environmental, NEPA, Water Quality And Clean Water Act Errors, Omissions, And Violations.

As noted in the January 27, 2012 comments, and herein, the Project fails to comply with all water quality protective requirements. This includes the failure to comply with 40 CFR §§ 230.10(b), (c) and (d) of the CWA Section 404 Guidelines (and thus cannot be permitted as proposed, including the Barrel Alternative). The environmentally-damaging nature of the proposed project *(i.e.,* a large-scale, long-lasting, extractive mineral mine) and its geographic location *(i.e.,* large, high-functioning, undisturbed landscape) will combine to cause and/or contribute to significant, persistent degradation of the regional aquatic environment. This sensitive area is adjacent to both federal and local nature preserves, is home to ten federally listed species, and is a hydrologic source area for state designated Outstanding Resource waters. These aquatic resources are recognized as being of regional and national importance. Contrary to the USFS's position, the FEIS and ROD must demonstrate compliance with the wetland/waters protection mandates of the CWA. As noted herein, this is required by the CWA itself as well as the Organic Act and Part 228 regulations. In addition, and independent of the CWA and the duties of the U.S. Army Corps of Engineers and EPA under CWA Section 404, the USFS must comply with all of the provisions of Executive Order of May 24, 1977, # 11990--Protection of Wetlands, 42 Fed. Reg. 26961. In that EO, the President required that:

> [I]n order to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative, it is hereby ordered as follows:
>
> **Section 1.** (a) Each agency shall provide leadership and shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for (1) acquiring, managing, and disposing of Federal lands and facilities; and (2) providing Federally undertaken, financed, or assisted construction and improvements; and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities. (b) This Order does not apply to the issuance by Federal agencies of permits, licenses, or allocations to private parties for activities involving wetlands on non-Federal property.
> **Sec. 2.** (a) In furtherance of Section 101(b)(3) of the National Environmental Policy Act of 1969 (42 U.S.C. 4331(b)(3)) to improve and coordinate Federal plans, functions, programs and resources to the end that the Nation may attain the widest range of beneficial uses of the environment without degradation and risk to health or safety, each agency, to the extent permitted by law, shall avoid undertaking or providing assistance for new construction located in wetlands unless the head of the agency finds (1) that there is no practicable alternative to such construction, and (2) that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use. In

making this finding the head of the agency may take into account economic, environmental and other pertinent factors.

EO 11990 at 1. As noted herein, the FEIS and Draft ROD fail to demonstrate compliance with these mandates.

The project will impact aquatic and wetland resources within Pima County's Cienega Creek Natural Preserve and the Bureau of Land Management's (BLM) Las Cienegas National Conservation Area (NCA). The National Landscape Conservation System was established to protect some of the most remarkable public lands in the American West. At its nearest point, the mine site lies only roughly 3 miles from the NCA. The Las Cienegas NCA was established by Congress and the President, in large part, to conserve, protect and enhance the unique and nationally important aquatic, wildlife, vegetation and riparian resources such as those in the Cienega Creek watershed. Six types of rare ecosystems are protected within the NCA, including aquatic ecosystems such as cienegas (marshlands), cottonwood- willow riparian wetlands, and mesquite bosques.

Impacts from the proposed Project include direct fill and secondary impacts which will result in the loss, conversion and functional degradation of aquatic and terrestrial habitats over several thousand acres. The consequence of groundwater drawdown from the proposed mine pit is the indirect loss or conversion of hundreds of acres of riparian vegetation, including wetlands, and the drying of streams currently characterized by permanent flow. These large-scale shifts in the amount and species composition of riparian areas and the loss of stream surface flows is an example of an ecological regime shift; a large threshold change in the ecological state or condition of the Cienega Creek watershed to drier conditions.

The project site supports at least 101.6 acres of waters, including wetlands associated with springs and seeps. The project will adversely affect three types of Special Aquatic Sites (wetlands, sanctuaries and refuges, and riffle and pool complexes, see 40 CFR 230.40-45) as well as Tier 3 "unique waters"; portions of Davidson Canyon Wash and Cienega Creek are designated by the State of Arizona as "Outstanding Arizona Waters" (section 303 of the CWA and 40 CFR 131.12). EPA has identified these waters as "Aquatic Resources of National Importance" pursuant to the CWA §404(q) MOA.

Filling streams, constructing the massive mine pit (2,900 feet deep), and land clearing disturbances will dramatically alter in perpetuity the topography and surface and subsurface hydrology within the Cienega Creek watershed. Placement of permanent fill and other mine-related features within this undisturbed landscape will fragment high-functioning blocks of aquatic and terrestrial wildlife habitat used as foraging and movement corridors, rendering surrounding habitats less suitable for fish and wildlife. For example, the U.S. Fish and Wildlife Service's biological opinion concludes that, because of the indirect effects of groundwater drawdown, the proposed project is likely to adversely affect designated critical habitat for the federally-listed endangered Gila chub and threatened Chiricahua leopard frog, and likely to adversely affect the federally-listed endangered Gila topminnow.

The proposed project will directly fill 39.97 acres of waters, including a largely undisturbed network of 18 linear miles of streams comprised of up to 154 individual drainages. In addition, five springs and their associated wetlands will be filled. EPA's Guidelines (40 CFR 230.11(h)) and the 2008 Mitigation Rule (40 CFR 230.93) clearly state the need to compensate for losses

of waters due to secondary impacts. The requirement that secondary impacts be fully compensated is consistent with standard practice for projects of this magnitude and essential given that the range, extent and severity of secondary adverse impacts upon aquatic resources are as significant as the direct impacts.

As described herein, secondary impacts have yet to be analyzed upstream of the mine and downstream of the mine beyond the confluence of Davidson Canyon and Cienega Creek. Moreover, the secondary impacts that are currently assessed by the Forest Service rely upon models that, while valid, lack the sensitivity to detect adverse impacts to much of the affected arid aquatic environment. These assessments will be necessary under the CWA/404 Guidelines to make defensible decisions regarding the regulatory restrictions on discharges and the possibility of mitigation.

As discussed herein, the project site supports 101.6 acres of waters of which 39.97 acres will be directly impacted. The remaining 62 acres of waters on the project site will likely be indirectly impacted. Some of these secondary impacts are accounted for with regard to reduced surface stormwater flows in Barrel and Davidson Canyons within the project area downstream of the mine site. However, there will also be secondary impacts to drainages upstream of the mine. These impacts include severing surface hydrology and connectivity, decreasing quality of wildlife habitat, and fragmentation of animal movement corridors. Secondary impacts to waters that lie upstream from the mine site need to be more completely quantified and ultimately mitigated.

Estimated indirect impacts to jurisdictional waters in Barrel and Davidson canyons downstream from the proposed mine due to modeled reductions in surface water volume resulting from the Rosemont Project include 28.4 acres during mine operation. The estimate shows impacts at the confluence of Cienega Creek and Davidson Canyon, but ceases its analysis at that confluence. Yet data showing an impact at this confluence is a signal that impacts are likely to extend some point beyond this confluence. Secondary impacts to waters downstream from the mine site include the reach of Cienega Creek from its confluence with Davidson Canyon downstream to Pantano Dam. Reductions in surface water flow volume have the potential to adversely affect other surface waters, including wetlands, in Cienega Creek downstream from the confluence of Davidson Canyon. These surface water impacts are likely to be significant, especially given the cumulative effects of predicted reductions in groundwater levels from the proposed mine pit.

Secondary effects on the aquatic environment include dramatic and persistent changes to surface hydrologic and hydraulic regimes driven by groundwater hydrology. For example, following mine closure the pit lake will continue to permanently divert, capture and evaporate 35-127 acre-feet of mountain-front groundwater recharge in perpetuity. This natural groundwater would otherwise replenish sensitive downstream receiving waters. *See* Comment Letter from Pima County to U.S. Forest Service on PAFEIS, dated August 14, 2013). http://www.rosemonteis.us/files/cooperator-review/agency-comments/pima-county-comments-to-administrative-draft-feis.pdf. During active mining, the pit will cause significant losses to recharge between 18,000-26,000 acre-feet, or about 900-1300 acre-feet annually.

Portions of sensitive and regionally significant downstream receiving waters, including Outstanding Arizona Waters, rely in part or whole on groundwater contributions to baseflow.

Secondary impacts from project-related groundwater drawdown will reduce streamflows, increase water temperatures, and disrupt breeding, spawning, rearing and migratory movements, or other critical life history requirements of fish and wildlife resources.

At a minimum, eleven springs are highly likely to be indirectly impacted due to groundwater drawdown. An additional fifty-nine springs may be indirectly impacted due to drawdown. An additional 13 riparian areas associated with springs would be directly or indirectly disturbed with high certainty and an additional 36 riparian areas associated with springs may be indirectly disturbed. Although not formally delineated, subsets of these riparian areas contain jurisdictional wetlands and other waters of the U.S. As noted in the EPA's Nov. 7, 2013 letter to the Corps of Engineers (copy to the USFS already in the administrative record and attached), "A June 2013 field inspection by EPA, BLM and Pima County staff estimates the presence of tens to hundreds of acres of jurisdictional waters/wetlands in the assessment area likely to be impacted by groundwater drawdown. To date, the geographic extent of potentially jurisdictional waters along Empire Gulch, Gardner Canyon, Cienega Creek, and the other noted waters, has not been formally delineated and therefore secondary impacts to jurisdictional waters have not been quantified." EPA Letter at 4, n. 6 (attached).

Modification to the water balance along portions of Davidson Canyon, Empire Gulch, Gardner Canyon and Cienega Creek will adversely impact special aquatic sites. The 2,900-foot deep mine pit will permanently convert the hydrologic regime of the site from a water source area to a terminal sink, significantly lowering the surrounding regional aquifer. The pit will permanently reverse the natural direction of groundwater flow toward and into the mine pit, and away from the sensitive aquatic habitats in Las Cienegas NCA and Cienega Creek Natural Preserve. This will add to a baseline trend of decreasing groundwater, causing a permanent reduction of water in streams and wetlands along Empire Gulch, Mattie Canyon, Gardner Canyon and Cienega Creek with potential adverse impacts to over 30 seasonal and perennial wetlands, and threatened and endangered aquatic habitat dependent plants, fish and wildlife.

Groundwater drawdown will result in stress and degradation of riparian habitat, including wetlands. The FEIS admits that indirect effects from the proposed mine project will change the composition of 1,071 acres of riparian vegetation along Empire Gulch *(i.e.,* 407 acres of hydroriparian) and Barrel and Davidson canyons. Several additional springs, seeps, streams, emergent marshes, and riparian areas within the project assessment area likely contain jurisdictional waters, including wetlands, which will be indirectly impacted by the proposed project, primarily from groundwater drawdown.[16]

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[16] As noted in the EPA's November 7, 2013 letter, "for Empire Gulch and Cienega Creek all three groundwater models predict near- and long-term stream flow drawdown along Upper Cienega Creek. Comparing these projected model drawdowns with minimum monthly stream flows (2001-2010 period of record) for Upper Cienega Creek indicates that the predicted drawdown would cause the stream to go dry during critical low flow months (Chapter 3, Figure 70). The FElS further concludes that a small change in stream flow could result in the loss of surface flow during these drought periods. In addition, the FEIS states that Upper Cienega Creek receives surface water [and groundwater] flow from Empire Gulch and the potential exists for a reduction in Empire Gulch stream flow to result in reductions in Cienega Creek's stream flow as well. Small amounts of groundwater drawdown could affect near-and long-term stream flow in Empire Gulch and Cienega Creek and hydrologic changes predicted for Empire

All three groundwater models utilized by the Forest Service show an increasing, long-term trend of significant declines in groundwater levels due to the mine pit. Although there are limitations in groundwater model accuracy, the drawdown at Upper Empire Gulch Spring is within the accuracy of the models to predict *(i.e.,* 5- foot drawdown contour) and therefore, impacts to streamflow and wetlands from drawdown within Empire Gulch are reasonably certain and will be significant.

No compensatory mitigation plan compliant with the regulations has been prepared to date. A complete mitigation plan that satisfies each element of the 2008 Mitigation Rule will be necessary to comply with the CWA (including Section 404). Based on Rosemont's Conceptual Habitat Mitigation and Monitoring Plan Summary, dated on or about September 25, 2013, (Summary), proposed 404 mitigation consists of: 1) enhancement of waters and non-aquatic upland habitat at Cienega Creek below Pantano Dam, and, if necessary 2) conservation and establishment of waters at Sonoita Creek Ranch (SCR) and 3) conservation of a 160 acre parcel along a portion of Mulberry Canyon. These components are sequential; the SCR and Mulberry Canyon activities are presented as a contingency if an ILF project with sufficient credits is not available for Rosemont's purchase at Pantano Dam. To date, there is not any supporting documentation or assessment demonstrating the mitigation proposed to offset impacts to waters is compensatory. Also, such revised mitigation plans should have been in the Draft EIS, and as such any such consideration in the FEIS without full public review beforehand violates NEPA. *See also* Nov. 7, 2013 EPA letter and the issues raised therein for further evidence that the Project, even with Rosemont's proposed mitigation, can comply with the CWA.

There are significant flaws in Rosemont's plans for offsetting the project's environmental harm. First, the proposals lack an adequate functional assessment characterizing the services performed by streams/springs and wetlands directly and indirectly impacted by the project, or of those resources at the proposed mitigation lands. Second, the compensatory mitigation proposals do not account for the interrelationship of the headwater streams and the surrounding terrestrial ecology and will not replace the high quality resources in the Cienega Creek watershed. Enhancement of existing waters and upland habitat (Pantano Dam) in the lower watershed would not offset the mine's impacts to high quality headwater streams. Third, despite some assurances inherent in ILF (In Lieu Fee) proposals, there is great ecological uncertainty in the Pantano Dam proposal. Based on the information to date, the proposed mitigation is grossly inadequate to compensate for mine impacts.

The FEIS notes that, with the exception of several springs in Davidson Canyon, isotopic data have not been made available to help determine the sources of water to springs in the analysis.

Gulch from drawdown could have a potential effect on springs and stream flow, potentially shifting some or all of the stream length from perennial to intermittent. Pima County, as well as the BLM which manages the NCA, have expressed similar concerns regarding the secondary effects to Empire Gulch and Cienega Creek surface waters from groundwater drawdown (Comments submitted to the Forest Service by Pima County and BLM on the PAFEIS, dated August 14, 2013). In addition, secondary impacts to intermittent surface flows are likely to occur in Box Canyon, Sycamore Canyon, Adobe Tank Wash, and Mulberry Canyon which all lie within the modeled 5-foot drawdown area (Comments submitted to the. Forest Service by Pima County on the PAFEIS, dated August 14, 2013)." EPA letter at 4, n. 8.

Isotopic data for all potentially affected springs in Davidson Canyon would be invaluable. Do isotopic data exist for other potentially affected streams in Davidson Canyon or elsewhere in the study area? If such data are available, they should be acquired, analyzed and incorporated into the revised DEIS.

For individual springs and seeps for which there is insufficient data to determine the source of water and probable impact, the FEIS correctly assumes that there will be an impact. The same approach should be applied when discussing the scope of impacts related to groundwater drawdown, given that the results from the groundwater modeling contain uncertainty.

Several springs, seeps, streams, and riparian areas within the assessment area likely contain jurisdictional waters of the United States, including wetlands that will be indirectly impacted by the proposed project, primarily from groundwater drawdown. Although the FEIS estimates 407 acres of mapped hydroriparian habitat in the assessment area, a subset of these are jurisdictional waters of the United States that have not been delineated. For example, BLM staff estimate that over thirty perennial and seasonal wetlands of various acreages are associated with Cienega Creek within the Las Cienegas National Conservation Area (J. Simms, personal communication with Dr. Robert Leidy, EPA, June 2013), some or all of which may be waters of the U.S. *See* EPA August 1, 2013 Comments to USFS on Preliminary Administrative Draft FEIS, at 2. http://www.rosemonteis.us/files/cooperator-review/agency-comments/epa-comments-to-administrative-draft-feis.pdf.

Without a jurisdictional determination covering the assessment area, the public, as well as the Corps and EPA, are unable to determine the full scope of indirect impacts to areas regulated under the Clean Water Act. The revised DEIS should acknowledge and analyze that potentially extensive areas of waters of the United States, including wetlands, occur in the analysis area, that the reach and extent of these waters has not yet been determined, and that, therefore, potential indirect impacts from the proposed actions on these waters has not been quantified.

The FEIS concludes that no seeps, springs, hydroriparian or mesoriparian habitat, areas with perennial stream flow, or critical areas that would be affected by groundwater drawdown were identified within or beyond the western model boundary. But the FEIS failed to clarify whether the required detailed surveys of springs and seeps, and other critical areas (similar to surveys conducted on the eastern slopes of the Santa Rita Mountains within the model boundaries) were conducted within and immediately adjacent to the western model boundary, particularly within the Santa Rita and Empire mountains.

Additional information regarding the potential adverse environmental consequence of seemingly small changes in groundwater levels must be added in the revised DEIS. The FEIS repeatedly characterizes changes in ground water levels of < 1 foot as "small." The use of the descriptors "small" or "very small" are not meaningful absent some relative measure of ecological significance or risk. Seemingly "small" changes in groundwater levels may have profound adverse affects on surface and shallow subsurface (*i.e.*, groundwater and hyporheic) flows. In part, this is because the wetted surface area of many aquatic habitats in the arid Southwest, including the Cienega Creek watershed, is characterized by shallow surface water depths (*e.g.*, << than a few inches), especially during the drier portions of the year (April-early July), and is, therefore, extremely susceptible to drying from small changes in groundwater levels. Significant changes to stream base flow are possible because, typically, inflow to

streams originates from the topmost portions of the subsidizing aquifer; small declines in the water table can significantly reduce groundwater contributions that sustain stream flow.

The FEIS acknowledges that predicted increases in temperatures and reduced precipitation resulting from climate change will continue to reduce the quantity of stormwater and groundwater available for use by riparian vegetation; result in shifts from perennial to intermittent flow along upper Cienega Creek and Empire Gulch; and increase the vulnerability of springs and riparian vegetation. The FEIS does not, however, adequately characterize potential cumulative effects from project-related groundwater drawdown and increasing demand for groundwater as a result of residential and commercial growth within the context of drought and projected climate change. Currently, only 13 percent of the length of Cienega Creek within the preserve exhibits a wetted channel during the driest portion of the year (*i.e.*, June) on the heels of the ongoing drought. The FEIS should reflect the latest science on climate change by explicitly acknowledging the moderate-to high levels of confidence of the latest climate change science model predictions for the American Southwest. If, as the FEIS admits, prolonged droughts similar to the ongoing Southwestern drought brought on by climate change could result in similar shifts from perennial to intermittent flow along upper Cienega Creek and Empire Gulch, then the potential additive/cumulative adverse effects from the project and other water demands on streams, wetlands, and riparian areas in the context of climate change should be clearly discussed in the revised DEIS.

The groundwater analysis area extends east of Cienega Creek, yet appears that seeps, springs, streams, wetlands and riparian areas that may lie east of Cienega Creek were not inventoried or assessed for potential effects of groundwater drawdown. Over thirty perennial and seasonal wetlands of various acreages are associated with Cienega Creek within the Las Cienegas National Conservation Area (BLM staff estimate). According to BLM, the majority of these wetlands are adjacent to Cienega Creek between Cinco Canyon and Oak Tree Canyon, and include the Cienequita, Spring Water, and Cinco Ponds wetlands. Other wetlands are found upstream of the Mattie Gulch and Cienega Creek confluence (*i.e.*, Cold Spring wetland). Many of these wetlands and aquatic features would likely qualify as jurisdictional waters of the United States. If there are potential project effects on Cienega Creek from groundwater drawdown, it follows that there would also be potential effects from groundwater drawdown on these waters, as they are immediately adjacent and hydrologically connected to Cienega Creek. The revised DEIS should describe these aquatic features adjacent to Cienega Creek, identify their likely CWA jurisdictional status, and indicate what the potential impacts to these features may be.

The FEIS does not include a discussion of the federal Clean Water Act (CWA) or Department of Army regulations as influencing or guiding the analysis of biological resources. In particular, there is no reference to the 404(b)(1) Guidelines and restrictions on discharge, most notably 40CFR 230.10(b)(3): adverse effects on endangered species; and (c): significant degradation of waters of the United States; and 40CFR 230.11(g) and (h) determination of cumulative and indirect/secondary effects on aquatic ecosystems. There is no discussion of impacts to jurisdictional waters of the United States impacted by the project. The revised DEIS must include a discussion of applicable portions of the CWA and 404(b)(1) Guidelines, and Department of Army regulations. It should also provide assessment of impacts to jurisdictional waters of the United States.

The FEIS does not discuss the extensive riverine and palustrine wetland systems within and

adjacent to Empire Gulch, Gardner Canyon and Cienega Creek that will or may be indirectly impacted by the proposed action. Many of these wetlands are likely to be jurisdictional waters of the United States, but the reach and extent of federally regulated wetlands have not been delineated; therefore, the extent of indirect impacts to these waters has yet to be determined. These waters should be delineated in the revised DEIS

The discussion of hydroriparian vegetation types does not acknowledge that portions of this vegetation type include jurisdictional wetlands regulated under the federal CWA. The reach and extent of these federally regulated wetlands have not been delineated; therefore, the extent of indirect impacts to these waters has yet to be determined in violation of NEPA.

The indirect/secondary effects of reduced aquifer recharge and bank storage from the proposed action on downstream waters in Davidson Canyon and Cienega Creek are potentially significant, as aquifer recharge is important in maintaining surface flows and shallow subsurface water levels for aquatic organisms and riparian vegetation and wetlands. The failure to provide quantified analysis of reductions in aquifer recharge violates NEPA as noted herein. Estimates of pre- and post-project aquifer recharge have been conducted for several development scenarios in the adjoining San Pedro River watershed (for example see (1): Levick L., et al. 2006. Simulated changes in runoff and sediment in developing areas near Benson, Arizona. U.S. EPA Office of Research and Development, Las Vegas, NV, and USDA Agricultural Research Service, Tucson, AZ, EPA/600/R-06/158 and ARS/1873. (2): Goodrich D.C. et al. 2004. Comparison of methods to estimate ephemeral channel recharge, Walnut Gulch, San Pedro River Basin, Arizona. Pp. 77-99 In Recharge and Vadose Zone Processes: Alluvial Basins of the Southwestern United States, ed. By F.M. Phillips, J.F. Hogan, and B. Scanlon, Water Science and Application 9, Washington D.C.). These sources are noted in EPA's August, 2013 comments to the USFS on the Preliminary Administrative Draft Final EIS.

The FEIS does not adequately support the statement that mitigation measures compensate for impacts to waters of the U.S. Implementation of the mitigation measures described in the FEIS and discussed herein would not fully compensate for the project's impacts to waters of the United States (waters) (40 CFR 230 Subpart J). *See* EPA August, 2013 comments to the USFS – which detail the inadequacies of Rosemont's proposed mitigation measures. The substantial loss and degradation of water quality and other aquatic ecosystem functions are likely if the proposed mine is constructed. Of particular concern is that the geographic extent of indirect effects to waters from groundwater drawdown related to the mine dewatering is not fully known, in part because waters have not been fully delineated within the assessment area. In the absence of a full delineation of waters, it is not possible to provide adequate compensatory mitigation for indirect effects.

As stated in the 404(b)(1) Guidelines, no discharge of dredged or fill material shall be permitted if it causes or contributes to violations of an applicable state water quality standard (40 CFR 230.10(b)(1)). Reductions in stream flows, alterations in sediment transport, groundwater drawdown and increases in the concentrations of pollutants have the potential to degrade water quality (*e.g.,* warm water aquatic wildlife) and the aquatic ecosystem. The proposed project does not comply with the restriction on discharge as required by the Guidelines. Indirect effects may also result in significant degradation to outstanding natural resource waters in violation of applicable water quality standards.

Any degradation of Davidson Canyon and Cienega Creek water quality would be significant because they are designated as high quality waters that constitute Outstanding National Resource Waters due to their exceptional recreational and ecological significance to the State of Arizona. The State of Arizona classifies Davidson Canyon and Cienega Creek as Arizona Outstanding Waters (AOWs), also referred to as Tier III waters under federal anti-degradation policy. Arizona's anti-degradation rules provide that the "[d]egradation of an AOW ... is prohibited." ACC R18-11-107. This provision is consistent with federal anti-degradation requirements, which provide that water quality shall be maintained and protected in Tier III waters, and that the water quality in Tier III waters may not be lowered to accommodate economic or social development in the area where the waters are located. 40 CFR 131.12(a).

As discussed herein, the proposed project's potential to result in reduction in stream flows to Davidson Canyon Wash and Cienega Creek, its alteration of sediment transport, groundwater drawdown, and contribution of metals such as selenium represents a failure to maintain and protect existing water quality in those AOWs. This would be inconsistent with applicable antidegradation policy. The 404(b)(1) Guidelines at 40 CFR 230.10(b)(1) restrict discharges that would violate applicable State water quality standards (which include anti degradation policies) in waters. Such significant degradation of the aquatic ecosystem in Outstanding Natural Resource Waters is also not consistent with the 404(b)(1) Guidelines at 40 CFR 230.10(c), and 230.11(h).

The FEIS notes that mitigation measures, both onsite and offsite, can help offset effects in the project area. Yet the proposed mitigation would not effectively offset all impacts, and significant impacts to habitat and some species would remain. As noted herein, the development of two ILF programs and land conservation are not adequately compensatory. Further, while certain design features may qualify as mitigation for the NEPA analysis, this form of mitigation is related to impact avoidance and minimization, not compensation. Section 404 of the CWA requires "mitigation" to consist of all three, with compensation required for impacts that are not avoidable (e.g., through design features). The proposed mitigation is insufficient to meet the restrictions on discharge required by the Guidelines at 40 CFR 230.10(d) and 40 CFR 230.12(a)(3)(iv).

Independent of the requirements to avoid, minimize and, finally, compensate for impacts, the 404(b)(1) Guidelines prohibit discharges which will cause or contribute to significant degradation of waters of the United States. In consideration of the mitigation measures described in the FEIS, the direct and indirect/secondary impacts from discharges of dredged or fill material from the proposed project will not be adequately offset. As a result, these impacts are likely to cause or contribute to significant degradation of waters.

The FEIS (albeit lacking in many requirements as noted herein) shows that the proposed project will result in significant degradation because it will have significant direct and indirect/secondary effects on the structure and function of the aquatic ecosystem such as: significant adverse effects to regional water circulation and fluctuation; and significant adverse effects to aquatic organisms due to reduced flows, increased water temperatures, suspended sediments and potential increases in selenium contamination. The proposed project will also result in significant degradation to waters, including the "Outstanding Waters" of Davidson Canyon and Cienega Creek. These impacts are substantial and unacceptable impacts to aquatic resources of national importance.

The FEIS concludes that any stormwater discharge would not result in an impact to the downstream Outstanding Water because ADEQ's issuance of coverage under the Multi-Sector General Permit (MSGP) would not allow it. FEIS at 473. Yet this conclusion cannot be reached until the required Storm Water Pollution Prevention Plan (SWPPP) has been submitted and accepted by ADEQ under the MSGP requirements. The SWPPP must demonstrate that any discharge will not degrade water quality in the downstream OAW. For the purposes of NEPA, it cannot be assumed that mitigation measures applied under the SWPPP would be fully effective without foreknowledge of the nature of the mitigation and control measures that would be employed. As noted herein, the failure to review and analyze these future mitigation measures, and their effectiveness, violates NEPA. As such, a revised DEIS must be prepared and submitted for public and agency review.

The USFS Fails To Review Bond/Financial Assurance Issues During The NEPA Process.

The agency recognizes the critical importance of the need for reclamation financial assurance/bonding as mitigation for the Project's impacts, to consider all potential impacts, and to assure compliance with all laws, FEIS at 97-99. "As part of the approval of the final MPO for the Rosemont Copper Project, the Forest Service would require Rosemont Copper to post a financial assurance amount that would provide adequate funding to allow the Forest Service to complete reclamation and postclosure operations, maintenance activities, and necessary monitoring for as long as required to return the site to a stable and acceptable condition. The financial assurance amount would be determined by the Forest Service and would "address all Forest Service costs that would be incurred in taking over operations because of operator default. (U.S. Forest Service 2004a)[USFS Training Guide for Reclamation Bond Estimation]."

Despite this, no discussion of the actual bond amount is provided at all. According to the FEIS, such review will only occur **after** the NEPA process is closed. "The Forest Service process does not require calculation of the bond prior to publication of the FEIS or completion of the NEPA process." FEIS at 98. This violates NEPA's requirement for a full discussion of all mitigation measures and impacts.

NEPA requires that mitigation measures be fully reviewed in the FEIS, not in the future. "[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse effects." Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 353 (1989). NEPA requires that documents: (1) "include appropriate mitigation measures not already included in the proposed action or alternatives," and (2) "include discussion of . . . Means to mitigate adverse environmental impacts (if not already covered under 1502.14(f))." 40 C.F.R. § 1502.14(f); 40 C.F.R. § 1502.16(h). "Mitigation" is defined as a way to avoid, minimize, rectify, or compensate for the impact of a potentially harmful action. 40 C.F.R. §§ 1508.20 (a)-(e). Mitigation measures must be discussed with "sufficient detail to ensure that environmental consequences have been fairly evaluated." Robertson, 490 U.S. at 352. The discussion of mitigation measures must also assess their effectiveness. "An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective." South Fork Band Council v. Dept. of Interior, 588 F.3d 718, 726

(9th Cir. 2009).

The USFS failed to provide the required mitigation analysis during the NEPA public review process (including the required effetiveness analysis) for a number of critical resources as noted herein, including for reclamation bonding.For example, the public has no idea as to how "effective" the mitigation/reclamation bond would be for any of the action alternativesbecause neither Rosemont nor the USFS have divulged this information. Such elimination of the public's rights to fully participate in the NEPA process cannot stand.

> NEPA establishes "action-forcing" procedures that require agencies to take a "hard look" at environmental consequences.
> …
> An EIS serves two purposes:
> First, [i]t ensures that the agency, in reaching its decision, will have available, and will carefully consider, detailed information concerning significant environmental impacts. Second, it guarantees that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision.

Center for Biological Diversity v. Dept. of Interior, 623 F.3d 633, 642 (9th Cir. 2010). Such public review was denied in this case.

The US EPA specifically notified the USFS that bonding must be discussed and reviewed as part of the NEPA process. "[T]he Draft EIS does not contain any information in regards to the nature of the post-closure activities that the site may require, nor the projected costs associated with these activities. EPA is, therefore, unable to determine the extent to which the project may represent a long term financial liability." EPA letter to USFS dated Feb. 21, 2012. In the face of the USFS's refusal to divulge or require any bonding information, the EPA reiterated its position that such a failure violates NEPA: "[W]e continue to believe that disclosure of financial assurance requirements in the EIS is an important aspect of NEPA disclosure for those projects with the potential for post-closure impacts requiring long-term management." EPA August 2013 comments to USFS on Preliminary Administrative Draft FEIS, at 32.

Despite this, the USFS refused to provide any information on bonding in the FEIS. Like EPA, the public has been denied their rights under NEPA to review and comment upon such a critical mitigation, reclamation, and impacts issue. As such, the revised or supplemental DEIS must contain a review of bonding levels for the action alternatives.

In our previous comments, we pointed out that the DEIS failed to provide an adequate analysis of the adequacy of reasonableness of the proposed bonding amounts shown on Rosemont's Aquifer Protection Permit Application. (SSSR et al. at 108-109.) We also stated that the DEIS failed to discuss the amount of the required reclamation bonds or provide any information regarding how the bond amounts are calculated or who determines the calculations and decides the final amounts. We stated, "No information is provided regarding additional bonding requirements from the State or other permits that require bonds, and how it is evaluated by the USFS in its analysis of the required bonds. Not doing this analysis prior to determining an alternative deceives the public, as the process is not transparent and unavailable for the public to comment on. An independent third party is requested to analyze the entire financial issues raised here prior to making any decision on this mine permit." (*Id.*) We stated that the agency

"must afford the public an opportunity to comment on the adequacy of the financial assurances that are developed between the USFS and Rosemont." (*Id.*).

With the FEIS, the USFS continues to deny the public an opportunity to comment on the size and adequacy of reclamation bonding. Instead, the USFS states it will determine bonding amounts after a Final Record of Decision is issued and prior to approving the final Mine Plan of Operations. (FEIS at 99.) The USFS also provides no assessment or evaluation of Rosemont's proposed bonding plan submitted in Section 13 of its Aquifer Protection Permit submitted to the Arizona Department of Environmental Quality that includes all reclamation costs, including bonds for the Forest Service, Arizona State Mine Inspector, and ADEQ. The USFS states, "These calculations have not yet been reviewed by the Forest Service. Since the information that is necessary to calculate the bond is not fully known at this time, it is premature for the Forest Service to calculate bond amounts." (*Id.*)

According to the USFS, the "Basic Forest Service bonding process as supported by regulations and guidance" (as illustrated in FEIS Figure 25) calls for the initial bond calculations to be based on conceptual designs in the Final MPO, after completion of the NEPA process and issuance of the final ROD. (FEIS at 98.) As noted herein, this violates NEPA.

Despite assurances that the USFS "will require Rosemont Copper to post a financial assurance amount that would provide adequate funding to allow the Forest Service to complete reclamation and post closure operations, maintenance activities, and necessary monitoring for as long as required to return the site to a stable and acceptable condition," there is no information provided in the FEIS that supports this promise. The FEIS fails to analyze the adequacy of Rosemont's bonding amounts submitted in Section 13 of Rosemont's Aquifer Protection Permit. The USFS does not address whether Rosemont's proposed reclamation bonds were calculated in a way that meets the guidelines set forth in the Forest Service guidance document for financial assurance calculations. (*Training Guide for Reclamation Bond Estimation and Administration for Mineral Plans of Operation Authorized and Administered under 36 CFR 228A*, USFS, April 2004.)(attached). The agency also fails to discuss whether all the appropriate indirect costs were included in the calculations, and if included whether they meet Forest Service guidelines.

The USFS also ignores the Coalition Comments to review the financial capability of Augusta Resources. The Company's financial future hinges entirely on issuing a Final ROD and Mine Plan of Operations that may or may not include a sufficient reclamation bond to protect the public's land and ensure adequate reclamation. Instead, the USFS continues to take the position that the agency will determine the amount of the reclamation bond after the final ROD is issued and prior to issuing a final Mine Plan of Operations. This proposed action eliminates any public participation and review of a crucial financial requirement that is supposed to ensure that the public's land will be restored and the environment protected from possible ongoing and future contamination from the mine site.

Suggested Remedies: The proposed project is well enough defined to allow the USFS to conduct a detailed analysis to determine whether Rosemont's suggested reclamation bonds submitted in Section 13 of the Aquifer Protection Permit are sufficient to protect the public's resources. This analysis must be conducted and should include information regarding whether all the appropriate indirect costs were included in the calculations, and if included whether they meet Forest Service guidelines. This information must be included in a revised DEIS that is

released for public review and comment.

In our previous comment we pointed out that "[t]here seems an underlying assumption in the DEIS that Rosemont Copper is financially viable and able to meet whatever financial requirements are needed for operating the mine as planned in the MPO, such as all bonding requirements." We stated, "While financial issues are not usually covered in the NEPA process reviewing a mining plan of operation for activity within a national forest, the issue is relevant in this circumstances because of the environmental impacts that will ensue if Rosemont and its parent Augusta Resources fail to have adequate capital or experience to carry out the work for which approval of the MPO is requested." (*Id.*)

We noted, "In December [2011], SSSR filed complaints with securities regulators in British Columbia, Canada, and the United States requesting they investigate Augusta Recourse, the parent company of Rosemont Copper, regarding that corporation's failure to disclose required and material information in securities filings. The omissions date at least as far back as 2001 and include certain officers' personal and corporate bankruptcies, an insider trading settlement agreement, cease trade orders, and the delisting of a company on the American Stock Exchange. This apparent lack of disclosure is potentially significant in that it deprives the public and investors of material information important for making investment decisions concerning Augusta Resource." (SSSR et. al. at 109.) Our comments went on to note, "[t]he financial history of the officers and directors of AZC show personal and business bankruptcies. Their track record of broken promises, non-disclosures of material information and failure to safeguard the environment in past mining ventures provide no assurances that AZC can be viable as a mining company." (SSSR et al. at 108.) Finally, we noted, "The possibility of this mine operator abandoning the site prior to completion of the reclamation is a real possibility. This is reasonably foreseeable based on the Rosemont's lack of any mining history and its precipitous financial status. Long-term financial assurances and Rosemont's ability to meet them must be provided before any decision is made on this permit." (SSSR et al. at 109.)

The Forest Service did not respond to any of the Coalition's Comments concerning the financial capability of Augusta Resource and its subsidiary, Rosemont Copper Company, to execute the Mine Plan of Operations. Meanwhile, Augusta Resource's financial condition continues to worsen and the amount of debt it has incurred to the RK Mine Finance Trust (A London-based metals hedge fund) has sharply increased. Augusta warned investors in its 3rd Quarter Financial Statement and Management Discussion & Analysis reports filed Nov. 14, 2013 with Canadian securities regulators that its financial condition indicates "the existence of a material uncertainty that raises substantial doubt about the Company's ability to continue as a going concern and is dependent on the Company raising additional debt or equity financing."

The latest financial statements filed by Augusta for the period ending Sept. 30, 2013, shows the company had only $749,000 cash and was forced to issue $10 million in convertible debt securities to an officer (Chairman Richard Warke) and major investor, Ross Beaty. Augusta has also increased its borrowings from RK Mine Finance and now owes as much as $109 million, plus interest, that is due this July. Augusta has pledged all the assets of the Rosemont Copper Company as collateral for the RK loan. Augusta is a highly diluted (144 million common shares of stock outstanding), heavily leveraged company with no cash flow from existing operations that is relying entirely on increasing debt to maintain its operations.

Suggested Remedies: The USF must respond to these concerns regarding the real possibility

that Augusta Resources does not or will not have the financial capability to meet its bonding requirements. The USFS must include this information in a revised DEIS that is released for public review and comment.

The Project Violates The Organic Act, 36 CFR Part 228, And The Surface Resources Act Of 1955.

As noted in the January 27, 2012 comments, and herein, the Draft ROD and FEIS, and any proposed approval of any action alternative, violates the Organic Administration Act of 1897 ("Organic Act"), 16 U.S.C. §551, and the USFS's implementing mining regulations at 36 CFR part 228. The Forest Service's authority to regulate mining operations is governed by the Organic Administration Act of 1897 ("Organic Act"), 16 U.S.C. §551, among other laws, which authorizes the agency to promulgate rules and regulations for the national forests in order "to regulate their occupancy and use and to preserve the forests thereon from destruction . . . ."

As noted by the Ninth Circuit in Clouser v. Espy, a leading case on the Forest Service's authority over mining, the Organic Act "specifies that persons entering the national forests for the purpose of exploiting mineral resources 'must comply with the rules and regulations covering such national forests.'" Clouser v. Espy, 42 F.3d 1522, 1529, n.7 (9th Cir. 1994), *cert. denied*, 115 S. Ct. 2577 (1995), *and reh'g. denied*, 116 S. Ct. 18 (1995). The relevant portions of the Organic Act state that:

> The Secretary of Agriculture shall make provisions for the protection against destruction by fire and depredations upon the public forests and national forests . . . and he may make such rules and regulations and establish such service as will insure the objects of such reservations, namely, to regulate their occupancy and use and to preserve the forests thereon from destruction.

16 U.S.C. §551. However, under the Organic Act, the agency may not categorically prohibit mining if conducted on valid claims: "Nothing in section . . . 551 of this title shall be construed as prohibiting . . . any person from entering upon such national forests for all proper and lawful purposes, including that of prospecting, locating, and developing the mineral resources thereof." 16 U.S.C. §478.

In 1974 and 1981, the agency adopted regulations under this authority, now known as the "36 CFR Part 228 regulations". The Supreme Court noted the connection between the Organic Act and the Part 228 regulations: "Through this delegation of authority, the Department of Agriculture's Forest Service has promulgated regulations so that 'use of the surface of National Forest System lands . . . shall be conducted so as to minimize adverse environmental impacts on National Forest System surface resources.'" California Coastal Commission v. Granite Rock Co., 480 U.S. 572, 582 (1987) (quoting 36 CFR § 228.1).

In United States v. Richardson, the Ninth Circuit Court of Appeals discussed the relationship between the Organic Act and mining rights, affirming a District of Oregon decision enjoining a particular prospecting method. United States v. Richardson, 599 F.2d 290 (9th Cir. 1979) (limiting mining proponent to non-destructive exploration methods). Both courts upheld the Forest Service's prohibition against "destructive" methods, noting "the Forest Service may

require the locator of an unpatented mining claim on national forest lands to use nondestructive methods of prospecting." Id. at 291. Since the dispute arose just before the adoption of the current Forest Service mining regulations, the court based its decision on the "interrelationship of federal statutes concerning the national forests and mining on public lands [, namely] Rule 5.2, 30 U.S.C. § 26, 30 U.S.C. § 612, 16 U.S.C. § 551, and 16 U.S.C. § 478." Id. at 291-92.

In Clouser v. Espy, the Ninth Circuit affirmed the Forest Service's authority to impose significant restrictions on a mining operation, in that case limiting the claimant to access via pack-mule only. Clouser v. Espy, 42 F.3d 1522 (9th Cir. 1994). The court rejected the claimant's argument that such a restriction violated federal mining laws:

> In light of the broad language of [Organic Administration Act §] 551's grant of authority, [Organic Administration Act §] 478's clarification that activities of miners on national forest lands are subject to regulation under the statute, and this substantial body of case law, there can be no doubt that the Department of Agriculture possesses statutory authority to regulate activities related to mining—even in non-wilderness areas—in order to preserve the national forests.

Id. at 1530. Recent decisions have reinforced the USFS's broad authority over mining. "[T]he Secretary of Agriculture has long had the authority to restrict motorized access to specified areas of national forests, including to mining claims. *See* Clouser [v. Espy], 42 F.3d 1522, 1530 (9th Cir. 1994)." Public Lands for the People v. U.S. Dept. of Agriculture, 697, F.3d 1192, 1198 (9th Cir. 2012)(emphasis added)(upholding denial of access routes to mining claims in travel management plan).

Indeed, in Clouser, the court affirmed the ability of the agency to restrict mining even to the point that the project would no longer be economically viable. **"Virtually all forms of Forest Service regulation of mining claims—for instance, limiting the permissible methods of mining and prospecting in order to reduce incidental environmental damage—will result in increased operating costs, and thereby will affect claim validity**." Id. In fact, under the Mining Law itself, the expense associated with compliance with environmental regulations may so increase the cost of mining as to render a claim not valuable. United States v. Kosanke Sand Corp., 12 IBLA 282, 299 (1973). *See also* Great Basin Mine Watch, 146 IBLA 248, 256 (1998).

Thus, any argument that the agency is precluded from meeting its statutory and regulatory obligations because they allegedly make a mine operation "too expensive" is not supported by federal law and applicable court decisions and thus can be rejected.

Further, under the Organic Act, and the 36 CFR Part 228 regulations, the agency cannot approve a mining PoO unless it can be demonstrated that all feasible measures have been taken to "minimize adverse impacts" on National Forest resources, including all measures to protect wildlife and habitat. The "operator shall take all practicable measures to maintain and protect fisheries and wildlife habitat." 36 CFR 228.8(e).

This language was recently relied upon by the federal courts in overturning a USFS-approved mining operation that did not adequately protect wildlife. "The operator also has a separate regulatory obligation to 'take all practicable measures to maintain and protect fisheries and

wildlife habitat which may be affected by the operations.' 36 C.F.R.§ 228.8(e)." Rock Creek Alliance v. Forest Service, 703 F.Supp.2d 1152, 1164 (D. Montana 2010) (Forest Service PoO approval violated Organic Act and 228 regulations by failing to protect water quality and fisheries). "Under the Organic Act the Forest Service must minimize adverse environmental impacts where feasible and must require [the project applicant] to take all practicable measures to maintain and protect fisheries and wildlife habitat." Id. at 1170.

In summary, the Forest Service's Organic Act requires that the agency "must . . . ensure that its approval of a plan or project does not result in the 'destruction' and 'degradation' of the public forests." Clouser v. Madigan, 1992 WL 694368, at *4 (D. Or. 1992), *aff'd sub nom.* Clouser v. Espy, 42 F.3d 1522 (9th Cir. 1994).

The USFS failed to meet these mandates in this case. As shown herein, including the numerous examples showing the unacceptable environmental impacts that are predicted to occur if any of the action alternatives are approved (even with the limited mitigation measures proposed), impacts which the agency has failed to prevent or minimize, the USFS has and will violate the Organic Act and Part 228 regulations. This includes, as noted herein, the proposed amendment to the Coronado Forest Plan, which would also violate the Organic Act as well as the NFMA.

In addition, the agency also bases its entire FEIS and Draft ROD on an erroneous legal view of its authority over mining. The Draft ROD and FEIS were prepared under the view that: "The Coronado … cannot materially interfere with reasonably necessary activities under the General Mining Law that are otherwise lawful." Draft ROD at 11; FEIS at 94. Even if the agency's interpretation of Rosemont's "rights under the General Mining Law" is legally correct (which as noted herein it is not), the self-imposed restraint that the USFS cannot "materially interfere with mining" is also legally wrong. *See, e.g.*, Clouser, 42 F.3d at 1530.

The "material interference" standard used by the USFS in this case comes from the Surface Resources Act of 1955. 30 U.S.C. § 612 (b). However, contrary to the USFS's view in Draft ROD and FEIS, this provision does not limit the agency's authority to regulate mining operations. Rather, this limitation applies to the agency's direct use of the lands covered by mining claims, or to the issuance of "permits and licenses" for other, non-mineral, uses of the lands encompassed by a mining claim.

> Any such mining claim shall also be subject, prior to issuance of patent therefor, to the right of the United States, its permittees, and licensees, to use so much of the surface thereof as may be necessary for such purposes or for access to adjacent land: *Provided, however,* **That any use of the surface of any such mining claim by the United States, its permittees or licensees, shall be such as not to endanger or materially interfere with prospecting, mining or processing operations or uses reasonably incident thereto.**

30 U.S.C. 612 (b)(bold emphasis added). Nothing in this law limits direct USFS authority over mining operations to just those measures that do not "materially interfere" with mining operations. The Ninth Circuit has recognized that this "no material interference" provision applies **not** to the USFS's regulation of mining to protect public resources, but to the **other** uses allowed by the USFS on the claims. "[T]he other uses by the general public cannot materially interfere with the prospecting and mining operation." U.S. v. Curtis-Nevada

Mines, Inc., 611 F.2d 1277, 1285 (9th Cir. 1980).

Therefore, the agency's truncated and illegal restriction on its review and regulation of the Rosemont Project illegally and unnecessarily taints and undermines the entire review process. As such, the Draft ROD and FEIS must be remanded back to the Coronado and no PoO can be approved until it has been properly considered under the correct legal regime.

The Project Fails To Protect Federally-Reserved Water Rights On The Las Cienegas National Conservation Area (LCNCA) As Well As Public Water Reserves.

As noted in our previous comments and herein, the Project, especially the massive groundwater pumping, is predicted to dewater or significantly reduce the flows in the area's critical surface waters, springs, and seeps. This will have irreparable, permanent, and severe impacts to fish, wildlife, aquatic life, recreation, and water quality, among other affected resources and uses. As we noted then and herein, the USFS' failure to prevent or adequately mitigate against such devastating impacts violates a host of federal and state laws, regulations, and policies, including the Clean Water Act, the Endangered Species Act, the Organic Act/Part 228, the NFMA, etc.

Regarding the noted failure to protect waters in streams and springs/seeps, the resulting dewatering/drawdown fails to protect the federal reserved water rights in the area, especially those in the Las Cienegas National Conservation Area and in the springs reserved under Public Water Reserve No. 107.

> The BLM has raised concerns about their Federal reserved water rights, particularly those associated with Las Cienegas National Conservation Area. Of the 21 surface water rights identified for BLM, 3 are associated with springs on the west side of the Santa Rita Mountains (Helvetia, Chavez, and Zackendorf Springs), 4 are associated with ephemeral tributaries to Cienega Creek (North Canyon, Middle Canyon, and Oak Tree Canyon), and 13 are associated with Empire Gulch. The Empire Gulch water rights cover the entire reach from the confluence with Cienega Creek upstream to the boundary of the Las Cienegas National Conservation Area near SR 83.

FEIS at 422. BLM has expressly stated to the USFS that: *"BLM does not relinquish existing BLM surface and groundwater rights."* August 15, 2013 Letter from David Baker, Field Manager, BLM Tucson Field Office to USFS Supervisor Jim Upchurch, "BLM Comments on the Rosemont Copper Project," Attachment at p. 3 of 9. http://www.rosemonteis.us/files/cooperator-review/agency-comments/blm-comments-to-administrative-draft-feis.pdf.

BLM recently highlighted the inadequacies of the EIS and NEPA process in connection to the unacceptable adverse impacts to the LCNCA and its water rights. First, BLM stated numerous times that the USFS's conclusion regarding the lack of adverse impacts to Cienegas Creek is "contradictory." Id. "If there are impacts to Empire Gulch then impacts to Cienega Creek are expected because Empire Gulch is a tributary to Cienega Creek." Id. "If there are impacts 'because of the downgradient impacts on the surface water and groundwater' then it follows that if there are impacts to Empire Gulch then there are impacts to Cienega Creek." Id. at 4 of

9. "The FEIS states 'Upper Cienega Creek also receives surface water flow from Empire Gulch, and the potential for reduction in Empire Gulch stream flow could therefore also result in reductions in Cienega Creek's stream flow as well.'" Id.

The Arizona Dept. of Game and Fish reiterated the connection between the loss of flows in Empire Gulch and the loss of flows and associated habitat in Cienega Creek:

> The FEIS does not clearly address additive effects of loss of water in the watershed on Cienega Creek. In addressing the effects of groundwater drawdown on Cienega Creek, this section acknowledges that all models predict drawdown of Empire Gulch, and that loss of water throughout the watershed resulting from the mine pit dewatering "have an additive effect that could impact riparian vegetation or aquatic species" and that "this possibility was disclosed in the DEIS and remains valid (page 34 line 28-31.")
>
> However, the summary on page 34, line 42 states "there is no reasonable analysis to indicate that the stream flow in Cienega Creek would be impacted by groundwater drawdown caused by mine pit dewatering." **This is contradictory and seems designed to confuse the reader into thinking that Cienega Creek will not be impacted (under "any reasonable analysis") when in fact the analysis shows that the additive impacts "*have an additive effect.*"**

Az. Dept. of Game and Fish, August 15, 2013 comments on Preliminary Administrative Draft FEIS, at p. 10 of attachment to letter (italics in original, bold emphasis added). http://www.rosemonteis.us/files/cooperator-review/agency-comments/agfd-comments-to-administrative-draft-feis.pdf.

These reserved waters will be severely impacted, if not eliminated altogether:

> The following physical impacts are likely to affect the BLM water rights:
> • Helvetia, Chavez, and Zackendorf Springs are highly likely to be impacted if their source of water arises from the regional aquifer. Drawdown of several feet is modeled to occur by the end of the active mining phase, gradually increasing to more than 60 feet after 1,000 years. Helvetia Spring is believed to derive water from the regional aquifer; the source of water for Chavez and Zackendorf Springs is less certain. **These levels of drawdown would almost certainly affect or eliminate flow in Helvetia Spring and possibly Chavez and Zackendorf Springs.**
> • Water rights associated with ephemeral tributaries to Cienega Creek are not likely to be impacted by drawdown in the regional aquifer.
> • Stream flow in Empire Gulch is expected to be impacted, although impacts are highly uncertain. Modeling scenarios differ on the time frame for when changes in stream flow would occur in Empire Gulch. Some modeling scenarios suggest that Empire Gulch would begin to transition from a perennial stream to an intermittent or ephemeral stream by 50 years after mine closure, whereas others suggest these changes would happen later. However, all modeling scenarios agree that by 1,000 years after mine closure, Empire Gulch would transition from a perennial stream to an ephemeral stream. Water rights along Empire Gulch would likely be impacted by these changes.

FEIS at 431.

As stated by the BLM: **"The FEIS documents that impacts to the Las Cienegas National Conservation Area (NCA) are likely to occur which are detrimental to the purposes for which the Las Cienegas NCA has been established if the preferred alternative is implemented**. The Bureau of Land Management would like the opportunity to provide a dissenting opinion to be included in publication of the FEIS concerning the nature, scope, and intensity of these impacts on NCA resources." August 15, 2013 letter from BLM to USFS Supervisor Upchurch, at p. 1 (emphasis added).

The USFS is under an obligation to ensure that federal reserved water rights are not impaired, used, or appropriated by private interests such as Rosemont to the detriment of the purposes for which the right was created. In the seminal decision in Cappaert v. U.S., 426 U.S. 128 (1976), the Supreme Court rejected a challenge by private appropriators and the State of Nevada to federal protection of reserved lands and waters that would be impacted by groundwater pumping.

Federal reserved water rights and lands are federal property and are "superior to the rights of future appropriators." Cappaert, 426 U.S. at 138. "[T]he United States can protect its water from subsequent diversion, whether the diversion is of surface or groundwater." Id. at 143. "Where reserved rights are properly implied, they arise without regard to equities that may favor competing water uses. *See* Cappaert v. U.S., 426 U.S. 128, 138-39." Colville Confederated Tribes v. Walton, 752 F.2d 397, 405 (9th Cir. 1985).

The USFS cannot disregard its duty to protect such federal property. "Only Congress, and not an executive branch agency, can authorize the disposition of federal property." High Country Citizens Alliance v. Norton, 448 F.Supp.2d 1235, 1248 (D. Colo. 2006), citing Gibson v. Chouteau, 80 U.S. 92, 99 (1871). *See also* Lake Berryessa Tenants' Council v. U.S., 588 F.2d 267, 271 (9th Cir. 1978)(federal agency "cannot by their conduct cause the Government to lose its valuable rights by their acquiescence, laches, or failure to act."). In High Country Citizens, the court found that the Interior Department illegal allowed the private appropriation and use of a federal reserved water right below the level needed to protect that use. Id. Thus, the USFS is under an obligation to prevent any impairment of the Las Cienegas and PWR 107 reserved water rights, both under the Las Cienegas Act and PWR 107 itself (and the SRHA) as well as the general duty to not dispose of federal property without appropriate authorization. That it failed to do here.[17]

Regarding the Las Cienegas water rights, as noted in our previous comments, Congress established the LCNCA, "[i]n order to conserve, protect, and enhance for the benefit and enjoyment of present and future generations the unique and nationally important aquatic,

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[17] The United States has recognized this duty elsewhere in Arizona. In one recent and ongoing case, BLM/DOI filed a lawsuit challenging Arizona's failure to protect federal reserved water rights from state-approved groundwater pumping. *See*, United States' Opening Brief in Robin Silver, M.D.; United States of America, U.S. Department of the Interior Bureau of Land Management, et al v. Sandra A. Fabritz-Whitney [Director of the Arizona Dept. of Water Resources], et al., Superior Court of the State of Arizona in and for the County of Maricopa, No. LC2013-000264-001DT (Sept. 13, 2013)(attached); United States' Consolidated Reply Brief in same case (filed Nov. 18, 2013)(attached).

wildlife, vegetative, archaeological, paleontological, scientific, cave, cultural, historical, recreational, educational, scenic, rangeland, and riparian resources and values of the public lands…"" (SSSR et al. at 44-45.) *quoting* Pub. Law 106-538, §4(a). We stated, "Given the potential suggested by the models for significant drawdown of the zone of saturation through time and many kilometers from the mine, there are major biological risks that need to be recognized and assessed prior to a decision on mine approval. The obvious element concerns surface-water loss and reduction of riparian-zone area, such as along Empire Gulch. Congress was clear when it established Las Cienegas National Conservation Area that protection of wildlife and riparian areas was one of its key purposes." (SSSR et al. Appendix D(i) at 11; emphasis added.)

Our previous comments included the results of additional scientific study demonstrating that the impacts to the water resources of the Sonoita Plain southeast of the proposed project would be much greater than those identified in the USFS analysis. (*See* SSSR et al. Appendix D(i).) We noted that because of these impacts, this project threatens to undermine the Las Cienegas National Conservation Area (LCNCA) and the purposes for which it was designated: "The proposed pit for the proposed Rosemont Mine will create a permanent hydraulic sink that will result in a drawdown in the regional aquifer as well as impacts to the perennial stream flows in the region including those in the Las Cienegas National Conservation Area (LCNA.) The legislation creating the LCNA identified the preservation of the desert riparian habitats as a priority. The impacts identified in the DEIS would be inconsistent with this federal legislation as well as compromising significant taxpayer resources used to purchase and manage this land." (SSSR et al. Appendix A at 2; emphasis added.)

The BLM highlighted these same concerns in its comments on the administrative draft of FEIS: "The FEIS documents that impacts to the Las Cienegas National Conservation Area (NCA) are likely to occur which are detrimental to the purposes for which the Las Cienegas NCA has been established if the preferred alternative is implemented." (ltr. from David Baker, Tucson Field Office Manager, BLM, to Jim Upchurch, Forest Supervisor, Coronado National Forest, Aug. 15, 2013.)

In the FEIS, the USFS acknowledges the catastrophic impacts that this project may have on Empire Gulch, Cienega Creek, and the LCNCA, but the fails to meaningfully consider that this will undermine the LCNCA establishing legislation or acknowledge that because of this, this project will violate the law if allowed to proceed.

Noting that impacts of "drawdown on stream flow in the Empire Gulch could reasonably lie anywhere within the range of estimates provided", the FEIS estimates that "drawdown at Empire Gulch would increase the risk of dry conditions occurring to 361 days a year (98.9 percent) and would increase the risk of dry or extremely low-flow conditions occurring to 362 days per year (99.1 percent)." (FEIS at 528, 529; emphasis added.) Over the long term the estimated drawdown at Empire Gulch "would increase the risk of dry conditions occurring to 365 days per year (100 percent)." (FEIS at 530.)

For Upper Cienega Creek, the FEIS again notes that the impacts of drawdown on stream flow "could reasonably lie within the range of estimates provided", and goes on to predict that, in the long term, the predicted drawdown "would increase the risk of dry conditions occurring to 351 days per year (96.2 percent) and would increase the risk of dry or extremely low-flow conditions occurring to 354 days per year (96.9 percent)" (FEIS at 533.)

The FEIS goes on to state, "Changes in the hydrology severe enough to cause dewatering of Cienega Creek are one possible outcome of the mine, and the likelihood of mine effects becoming severe enough to dewater Cienega Creek also increases with climate change and increased groundwater demand within the basin. If these severe effects were to occur, much of the value of Cienega Creek for recreation, wildlife habitat, scenic beauty, and cultural importance would be lost." (FEIS at 547; emphasis added.)

Despite these grim predictions, the USFS goes to great lengths in the FEIS to avoid the issue of whether this project will violate the BLM's reserved water rights in LCNCA. The agency admits that "The BLM has raised concerns about their Federal reserved water rights, particularly those associated with Las Cienegas National Conservation Area" and acknowledges that BLM does hold these rights. FEIS at 422. It also admits that BLM does indeed "hold water rights within the area of groundwater drawdown that could possibly be indirectly impacted by this project" and that those rights are "primarily associated with the Las Cienegas National Conservation Area." FEIS at 422.

However, the agency goes on to state, "Whether surface water rights associated with these water sources would be impacted is not possible to determine from a regulatory standpoint; both priority and validity of these surface water rights have not yet been determined through the General Stream Adjudication of the Gila River." (FEIS at 431; emphasis added.) The agency claims that "the regulatory status of BLM's water rights is not definite," however it admits that based on the analysis of impacts to water sources, "[w]ater rights along Empire Gulch would likely be impacted by these changes." (*Id.*; emphasis added.).

Contrary to the USFS's position, the failure of Arizona to formally adjudicate these rights does not mean that they do not exist. Indeed, the Ninth Circuit has held that, prior to formal adjudication by the state, federal reserved water rights deserve full protection – and the federal government is under an obligation to protect those rights. The Court held that the Interior Department was responsible for recognizing and protecting federal reserved water rights, in that case minimum stream flows to protect Indian fishing rights, despite the fact that "the State of Montana was in the process of determining water rights within the state, an undertaking expected to consume many years." Joint Board of Control of the Flathead, Mission, and Jocko Irrigation Districts v. United States, 832 F.2d 1127, 1130 (9th Cir. 1987). The Court invalidated an injunction that had been issued by the district court which had prevented the agency from protecting the minimum flows.

The Court noted that the protection of the federally-reserved flows against competing private claims was the paramount obligation of the federal agency. The Court emphasized the agency's "duty" to protect the reserved water flows. Id. at 1132. "[O]nly after fishery waters are protected does the BIA [Bureau of Indian Affairs] … have a duty to distribute fairly and equitably the *remaining* waters among irrigators." Id. (emphasis in original). In a subsequent and related case, the Department's Board of Indian Appeals rejected a competing claim from the local irrigation districts, relying on the Ninth Circuit's ruling that the agency has "the responsibility and authority" to protect the reserved rights. Joint Board of Control v. Portland Area Director, Bureau of Indian Affairs, 19 IBIA 31, 32-33 (1990), 1990 WL 321072, **1.

Regarding the PWR 107 reserved waters, although not formally adjudicated, these springs and waters are reserved under PWR 107 and are entitled to all the protections afforded adjudicated

PWR rights. "The [PWR 107] Order has withdrawn all lands containing springs and water holes … **regardless of whether the water source has been the subject of an official finding as to its existence and location**." Interior Department, Federal Water Rights of the National Park Service, Fish and Wildlife Service, Bureau of Reclamation, and the Bureau of Land Management, 1979 WL 34241, *587 (June 25, 1979).

The agency also admits that this project is inconsistent with LCNCA Resource Management Plan (RMP), violating numerous goals for the Upper Cienega Creek Watershed, including those to "Maintain and improve watershed health"; "Maintain and improve native wildlife habitats and populations"; "Maintain and restore plant diversity and abundance;" "Protect water quantity"; and "Maintain the region's scenic beauty and open spaces". (FEIS at 1144.) The agency admits, "Projected groundwater draw from the mine pit down could reduce surface water flows, resulting in changes to riparian vegetation and associated wildlife habitat… No practicable ways to significantly mitigate the drawdown of groundwater from the pit were identified. Therefore the conflict between implementation of the Rosemont Copper Project and achieving the goals of the resource management plan cannot be rectified." (*Id.*)

Despite these admissions, however, the agency completely dismisses concerns regarding whether this project violates the implementing legislation for the LCNCA. The agency's only stated rationale for disregarding these concerns is that the LCNCA implementing legislation includes the following provision: "The establishment of the Conservation Area shall not lead to the creation of protective perimeters or buffer zones around the Conservation Area." (FEIS at 1145, quoting Public Law 106-538 § 5(i).)

The fact that the LCNCA implementing legislation prevents buffer zones from being created is completely irrelevant to the issue of whether this project violates the BLM's federally reserved water rights by undermining the purposes for which the LCNCA was established. Further, the agency's claim that the status of BLM's reserved water rights on the LCNCA "is not definite" is wrong as a matter of law.

The seminal US Supreme Court case in Federal reserved water rights jurisprudence demonstrates that a federal reserved water right need not be finally decreed before being entitled to protection. (Cappeart v. United States, 426 US 128 (1976).) In Cappeart, no decree or even quantification of water was necessary for the Court to conclude the federal reserved water right was impacted. In that case, the Court determined the United States was entitled to a water level sufficient to submerge a rock shelf in an underground pool, allowing the endangered pupfish to spawn. (426 US at 133-134.) Because the protection of the pupfish was a stated purpose of the reservation, the Court found sufficient water was reserved to fulfill the congressionally-mandated purpose. Even in Winters v. United States, the case in which the US Supreme Court first articulated the federal reserved water rights doctrine and used it to enjoin infringing water uses, the rights recognized by the Court had not been quantified in an adjudication. (*See* 207 US 564 (1908).)

Here, the stated purposes of the establishment of the LCNCA are clear in the implementing legislation: "to conserve, protect, and enhance for the benefit and enjoyment of present and future generations the unique and nationally important aquatic, wildlife, vegetative, archaeological, paleontological, scientific, cave, cultural, historical, recreational, educational, scenic, rangeland, and riparian resources and values of the public lands…" (PL 106-538 § 4(a).) The USFS cannot ignore the BLM's federally reserved water rights on the LCNCA,

which are unquestionably clearly superior to any water rights this proposed project may have, as the LCNCA was created in 2000. As Cappaert shows, impacts to the reserved water and the resources it is intended to protect – whether the water is adjudicated in a final decree or not – affect the legal availability of water for other users.

Regarding PWR 107, these reserved rights are held by the Interior Dept./BLM and are among the federal reserved water rights acknowledged in the FEIS to be within the groundwater drawdown area. FEIS at 421 (Table 87, "offsite surface water rights within the area of groundwater drawdown"). "Helvetia, Chavez, and Zackendorf Springs are highly likely to be impacted if their source of water arises from the regional aquifer. Drawdown of several feet is modeled to occur by the end of the active mining phase, gradually increasing to more than 60 feet after 1,000 years. Helvetia Spring is believed to derive water from the regional aquifer; the source of water for Chavez and Zackendorf Springs is less certain. **These levels of drawdown would almost certainly affect or eliminate flow in Helvetia Spring and possibly Chavez and Zackendorf Springs**." FEIS at 431 (emphasis added). Although the FEIS foes not explicitly state that these springs are PWR 107 springs (itself a failure under NEPA and the USFS's public land and water protection duties), no other explanation is offered and under the law, these are PWR 107 springs.

The FEIS recognized the severe impairment, if not outright elimination of these reserved water rights:

> Analysis of impacts to BLM Federal reserved water rights associated with Helvetia, Zackendorf, and Chavez Springs is included in the "Indirect Impacts to Offsite Water Rights" part of the "Surface Water Quantity" resource section of this chapter. **Water rights associated with these three springs are likely to be affected by the described impacts. Helvetia is believed to derive water from the regional aquifer and therefore there is a high likelihood of impacting the BLM water right.** The source of water for Chavez and Zackendorf Springs is not clear, but if their source of water is also derived from the regional aquifer, impacts to these water rights would also occur.

FEIS at 562 (emphasis added).

Springs and waterholes on public land in the West are reserved for public use by Public Water Reserve No. 107 ("PWR 107"), which was created by Executive Order by President Calvin Coolidge in 1926. PWR 107 provides:

> [I]t is hereby ordered that every smallest legal subdivision of public land surveys which is vacant, unappropriated, unreserved public land and contains a spring or water hole, and all land within one quarter of a mile of every spring or water hole located on unsurveyed public land, be, and the same is hereby, withdrawn from settlement, location, sale, or entry, and reserved for public use in accordance with the provisions of Section 10 of the Act of December 29, 1916.

Executive Order of Apr. 17, 1926, *quoted in* Great Basin Mine Watch v. Hankins, 456 F.3d 955, 966 (9th Cir. 2006).

> According to one court, "[t]he purpose of the reservation was to prevent monopolization of water needed for domestic and stock watering purposes." United States v. City & County of Denver, 656 P.2d 1, 32 (Colo. 1983); see also U.S. v. Idaho,

> 959 P.2d, 449, 453 (Idaho 1998) ("The purpose of PWR 107 was to prevent the monopolization by private individuals of springs and waterholes on public lands needed for stock watering").

Great Basin Mine Watch, 456 F.3d at 966. The reserved water rights and associated land withdrawals were promulgated under the authority of Section 10 of the Stock-Raising Homestead Act of 1916, 39 Stat. 865 (SRHA), which provided that withdrawn "lands containing water holes or other bodies of water needed or used by the public for watering purposes … shall, while so reserved, be kept and held open to the public use for such purposes…."[18] As stated by the Interior Department shortly thereafter: "The above order was designed to preserve for general public use and benefit unreserved public lands containing water holes or other bodies of water needed or used by the public for watering purposes." 51 I.D. 457-58, 1926 I.D. LEXIS 45 (1926). A more recent Interior Department decision affirmed the continuing applicability of PWR 107:

> Assuming that the water is a spring and is on public land it would be subject to the Executive Order of April 17, 1926, establishing Public Water Reserve No. 107. The Executive Order withdrew all springs and water holes on public lands and the surrounding acreage [smallest legal subdivision or all lands within one quarter mile for unsurveyed lands]. It was designed to preserve for the general public lands containing water holes and other bodies of water needed or used by the public for water purposes.

Desert Survivors, 80 IBLA 111, 115 (1984) (rejecting BLM approval of a mining plan that did not adequately consider and protect PWR 107 waters), 1984 IBLA LEXIS 337, *10. The Interior Department has held that: "the purpose for reserving public springs and water holes was to prevent monopolization of the public lands by withdrawing from settlement, location, sale or entry the lands surrounding important springs and water holes on the public lands." Purposes of Executive Order of April 17, 1926, Establishing Public Water Reserve No. 107, 1983 I.D. LEXIS 12, *5-6 (1983).

These waters are held by BLM pursuant to a federal reserved water right and are to be used for the purposes of the reservation – i.e. public watering uses. *See* U.S. v. State of Idaho, 959 P.2d 449, 453 (Idaho 1998)(affirming PWR 107 reserved rights). Under PWR 107 and related laws, the USFS cannot authorize activities that will impair the public use of the reserved waters. As the Interior Department has held, "if this is a public water reserve of the class contemplated by Executive Order of April 17, 1926, a mineral entryman cannot legally divert or make inaccessible the water." Memorandum, Interior Dept. Regional Counsel to Manager, Land & Survey Office, dated September 24, 1953 (attached). According to the Department, if springs on public land are "needed or used by the public for watering purposes" then "they are not subject to appropriation, either by individuals or by any branch of the Government, but shall, while so reserved, be kept and held open to the public use for such purposes." 55 I.D. 371, 377, 1935 I.D. LEXIS 52, *18 (1935).

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[18] Although the SRHA and the underlying authority of the President to withdraw such lands pursuant to the Pickett Act of 1910, 36 Stat. 847, was repealed by FLPMA in 1976, withdrawals (such as the 1926 Executive Order) made pursuant to those authorities remain in force. 43 U.S.C. §1701 note (c).

In general, for the loss of springs/seeps and surface and ground waters, the agency's plan to simply monitor the losses before even considering corrective action (and even there the agency fails to acknowledge its authorities to prevent these impacts as noted herein) not only fails to protect these resources, it violates NEPA's mandate that mitigation measures be fully reviewed in the Draft and Final EISs for public review.

Further, the purported plan to "mitigate" for the loss of springs/seeps and surface and ground waters (discussed herein) proposes largely to deliver water to other locations away from the affected waters. Even if this plan could compensate for the overall water loss due to the Project (which as shown herein and by the EPA is not the case), it utterly fails to protect these water resources at their location. For example, there is no plan to replace the water at the location of the PWR 107 springs to protect these waters and the lands surrounding them which were withdrawn from entry. "The Executive Order withdrew all springs and water holes on public lands and the surrounding acreage [smallest legal subdivision or all lands within one quarter mile for unsurveyed lands]. **It was designed to preserve for the general public lands containing water holes and other bodies of water** needed or used by the public for water purposes." Desert Survivors, 80 IBLA 111, 115 (1984)(emphasis added).

Thus, the USFS cannot approve any of the action alternatives, and the FEIS and Draft ROD must be remanded back to the Coronado. No PoO can be authorized or approved that would fail to fully protect all rights, resources, lands, waters, and uses noted herein.

The "Non-Significant" Finding For The Coronado National Forest Plan Amendment Is Illegal And Is Based On Flawed And Inadequate Analysis.

Under the National Forest Management Act (NFMA), the agency cannot approve a mining PoO that would violate any provision of the Forest Plan. Once a Forest Plan is adopted, all resource plans, permits, contracts, and other instruments for use of the lands must be consistent with it. 16 U.S.C. § 1604(i). The NFMA requires all site-specific actions authorized by the Forest Service to be consistent with Forest Plan standards and guidelines. Friends of Southeast's Future v. Morrison, 153 F.3d 1059, 1068 n.4 (9th Cir. 1998). Forest Service authorization of mining and mineral exploration must comply with all Forest Plan and NFMA requirements. *See* Hells Canyon Preservation Council v. Haines, 2006 WL 2252554, *7-*10 (D. Oregon 2006) (finding ROD and PoO approval for mining violated Forest Plan and other standards); Rock Creek Alliance v. U.S. Forest Service, 703 F.Supp.2d 1152, 1187, n. 23 (D. Mont. 2010)(same).

In addition, and overall, the Forest Service cannot amend Forest Plan as proposed in order to accommodate the Project. As noted herein, the Project, if approved under any action alternative, would violate a number of current Plan requirements. The Standards and Guidelines in the Plan were implemented to protect the invaluable environmental resources that will be either destroyed or severely degraded by the Mine and related activities.

In the FEIS and Draft ROD, the Forest Service incorrectly assumes the 1872 Mining Law requires it to amend the Plan to allow the proposed project to proceed. That is wrong as a matter of law. Federal courts have required the Forest Service to comply with all Forest Plan Standards and Guidelines in reviewing and approving mining Plans of Operations submitted pursuant to claims filed under the 1872 Mining Law. *See* Hells Canyon Preservation Council

v. Haines, 2006 WL 2252554, at *6-10 (D. Oregon 2006)(Forest Service approval of mining PoO violated the National Forest Management Act, NFMA, when approval violated Forest Plan Standards and Guidelines). In that case, the court held that the Forest Service's PoO approvals violated the road density and riparian and fisheries requirements, among other requirements.

Under the NFMA, all activities authorized by the USFS must be consistent with and comply with the Forest Plan. There is no exemption for mining projects under NFMA. Thus, the agencies are under no obligation to amend, eliminate, or otherwise weaken the Plan prescriptions or Standards and Guidelines.

Indeed, the USFS **cannot** weaken or eliminate the standards contained in the Plan since that would, as the FEIS admits, be incompatible with the agency's duties to protect the environmental and cultural resources and uses of the site. As noted herein, these standards were enacted and implemented for a reason – to protect the important public resources covered by the Standards.

Further, although the FEIS and Draft ROD argue that the USFS must amend the Forest Plan to accommodate the Project, such a weakening of these protections would violate a number of the laws governing the USFS's decision in this case (see laws noted herein). For example, under the Organic Act, and the 36 CFR Part 228 regulations, the agency cannot approve a mining PoO unless it can be demonstrated that all feasible measures have been taken to "minimize adverse impacts" on National Forest resources. *See* Rock Creek Alliance v. Forest Service, 703 F.Supp.2d 1152, 1170 (D. Montana 2010) (Forest Service PoO approval violated Organic Act and 228 regulations by failing to protect water quality and fisheries).

Changing the Plan standards and other protections that were established to protect these resources would violate these protective standards and the agency's statutory and regulatory duties noted herein. In other words, even if the agency had the discretion to eliminate/weaken the Plan's protective requirements, doing so would violate the protective requirements of the Organic Act, 228 regulations, and the laws, regulations, and policies noted herein aimed at protecting the non-mineral resources and uses of the area. As a result, none of the proposed action alternatives can be approved.

Further, in our previous comments on the DEIS, we disagreed with USFS's assertion that the proposed forest plan amendment would not significantly alter the multiple use goals and objectives of the current forest plan, in part because of the obvious violations of the Multiple Use Sustained Yield Act caused by converting an area currently used for multiple activities into one that only supports a single use. (SSSR et al. at 140.) We further noted that the USFS is making its decision based on the assumption that the 1872 mining law requires the agency to amend the plan to allow the project to proceed, yet this assumption is wrong as a matter of law. (*Id.*) In fact, courts have required the USFS to comply with all forest plan standards and guidelines when approving mining plans of operations as required under the NMFA, including those that are submitted pursuant to claims filed under the 1872 Mining Law. (*Id.*) At least 29 current Forest Plan standards and guidelines will be violated if this project is implemented, and we pointed out that CNF's decision to weaken these standards by amending them rather than ensuring the project is in compliance with them violates the Organic Act of 1897, which prohibits the agency from approving an activity unless it can be demonstrated that all feasible

measures have been taken to minimize adverse impacts on forest resources. (SSSR et al. at 140-141.)

We disagreed with the conclusion that activities would not have wide-ranging effects across CNF. The DEIS (and now the FEIS) is replete with descriptions of wide-ranging, significant impacts, including the likely drawdown of groundwater and impacts to surface water resources that reach far beyond the immediate area of the mine and the displacement of numerous recreation opportunities from this popular recreation area onto other areas of the forest and surrounding region. (SSSR et al. at 140.) In addition, we noted that the USFS rationale to determine the significance of this amendment by placing it in context of the entire Forest rather than putting into context of the importance of this area to particular users and for particular functions allows the Forest to greatly downplay the significance of this amendment; however, "numbers alone are an insufficient basis for concluding that closure of the area to all public uses is non-signficant." (SSSR et al. at 149.)

In response, the USFS notes its obligation to process permit applications such as mine plans of operation and further notes that, "[f]or mining proposals where the applicant owns private mineral rights, the Forest Service may reasonably regulate mining activities to protect surface resources, but there are statutory and constitutional limits to its discretion. Although the Forest Service may reasonably regulate mining activities to protect surface resources, there are statutory and constitutional limits to its discretion. The Forest Service may reject an unreasonable Mine Plan of Operation but cannot categorically prohibit mining or deny reasonable and legal mineral operations under the mining laws." (FEIS at Appendix G #252.)

The USFS states that Forest Plans can "be amended in any manner whatsoever after final adoption after public notice..." and that such an amendment is allowable, and "respectfully disagrees with the assertion that the Rosemont Copper project violates federal law or regulation. As described in the FEIS, the project complies with relevant law and regulation, including 36 CFR 129.7; the Multiple-Use Sustained-Yield Act; the Organic Act; and the National Forest Management Act." (FEIS at Appendix G #252.). As noted herein, this is incorrect factually as well as legally.

Regarding the non-significance finding, the USFS says, "It is important to note that an amendment to a forest plan is assessed in the context of its effects to the entire planning area - in this case the entire Coronado National Forest. As specified in both the preliminary and final Finding of Non-Significant Amendment, the amendment will not significantly alter the long-term relationship between levels of multiple-use goods and services originally projected in the Coronado Forest Plan; affects only a small portion of the Coronado National Forest (0.5% of the Forest land base); and will not cause significant changes in the multiple-use goals and objectives for long-term land and resource management." (FEIS Appendix G # 252 at 14, 16.)

While the USFS may have the authority to amend the Forest Plan, however it cannot do so if it will violate other laws. As the agency admits, it has the authority to "<u>reasonably</u> regulate mining activities to protect surface resources, but there are statutory and constitutional limits to its discretion." However, amending the Forest Plan is not one of those limits on its discretion; the Forest Supervisor has the discretion to amend the Forest Plan, or not. In this case, he has chosen to use his discretion to weaken current standards and guidelines rather "reasonably regulate mining activities to protect surface resources," a choice that violates the Organic Act of 1897, which prohibits the agency from approving an activity unless it can be demonstrated

that all feasible measures have been taken to minimize adverse impacts on forest resources. Clearly, weakening standards that are in place specifically to protect forest resources instead of ensuring compliance with those standards in no way demonstrates that all feasible measures have been taken to minimize impacts; in fact, it clearly demonstrates the opposite.

An amendment is significant if it involves "changes that may have an important effect on the entire land management plan or affect land and resources throughout a large portion of the planning area during the planning period." (Forest Service Manual (FSM) 1926.52; Draft ROD at 57; emphasis added.) The USFS cites the following reasons for its decision: "the amendment will not significantly alter the long-term relationship between levels of multiple-use goods and services originally projected in the Coronado Forest Plan; affects only a small portion of the Coronado National Forest (0.5% of the Forest land base); and will not cause significant changes in the multiple-use goals and objectives for long-term land and resource management." (FEIS Appendix G # 252 at 14, 16.)

First, the amendment will significantly alter the long-term relationship between levels of multiple-use goods and services on the CNF, and it will cause significant changes in the multiple-use goals and objectives for long-term land and resource management. As we stated in our previous comments, it will allow a project to proceed that will transform this biologically rich area into an industrial site. According to the CNF draft LMRP, Rosemont would "permanently change the … setting from a natural area to an industrial landscape." (Draft Programmatic EIS for Revision of the Coronado National Forest Land and Resource Management Plan (CNF LRMP Revision EIS) at 348; emphasis added.) As evidenced by the FEIS and all available evidence, it will convert an area currently used for multiple activities into one that only supports a single use, with indirect, and cumulative impacts continuing to ripple out from the project site onto other forest and public and private land resources indefinitely. (SSSR et al. at 140.)

The USFS admits in the Draft ROD that "when compared with the existing standards and guidelines for management areas 1, 4, and 7, changes go beyond what could be considered minor. However, when considered on a forest-wide basis, changes will be minor because they apply to the proposed management area 16 area only, which constitutes only 0.61 percent of the net acres of the Coronado National Forest (based on net forest acres of 1,726,514 from forest plan table 2a; and net management area 16 acres of 10,531 derived from geographic information system (GIS) data)." (Draft ROD at 58.) *(It's worth noting that the Draft ROD provides a different percentage of acres impacted (0.61%) than the information in the FEIS (0.5%) and no explanation is given for this discrepancy.)*

According to the USFS itself, the changes in the amendment "go beyond what could be considered minor." It seems the primary reason the USFS reaches a non-significant finding is that the agency considers the amendment in the context of the entire land base of the Coronado, or 1,726,514 acres. This is an unreasonably large geographic scope that ignores the non-contiguous and widely scattered nature of the CNF land base. Further, the agency considers the impacted area unreasonably small, only considering impacts to proposed Management Area 16, or 10,531 acres.

The Forest can either narrow the context within which Management 16 is being considered, or the USFS can consider the actual scope of the impacts, which extend far beyond the management area. However, considering the significance of the amendment in the context of

the entire Forest, without considering the very significant impacts that will occur throughout the forest as the result of the displacement of people and wildlife, is simply wrong as a matter of law.

Considering the amendment in the context of the entire 1.7 million acre forest ignores the disconnected nature of the CNF land base. The CNF is unique in that it consists of five non-contiguous ranger districts that are spread across five counties in southern Arizona and one county in New Mexico. The drat revised LMRP states, "The lands of the Coronado National Forest consist of 16 widely scattered mountain ranges representative of basin and range topography, and are often characterized as "sky islands." (CNF Draft Land and Resource Management Plan (LRMP) at 4; emphasis added.) This is because "they rise dramatically from the desert floor and contain unique and geographically isolated ecosystems." (CNF Draft LRMP EIS at 3; emphasis added.)

The CNF's five ranger districts are further divided into 12 ecosystem management areas (EMA). According to the Draft LRMP, "Each ecosystem management area supports a unique combination of vegetation, habitats, and wildlife, thus harboring an amazing amount of biological diversity. Distinct species have evolved within the Coronado's sky islands due to barriers to movement. Mountain ranges harbor numerous endemic and rare species such as Mount Graham red squirrel, Peloncillo talussnail, Huachuca water umbel, and Chiricahua fox squirrel." (CNF Draft LRMP at 4; emphasis added.)

There is simply no management or policy rationale to consider this amendment in the context of the entire forest, considering that the five ranger districts and 12 EMAs are geographically isolated from one another. Considering its geographic isolation from the rest of the Nogales District, much less the rest of the Forest, it would be far more appropriate and justifiable to consider Management Area 16 within the geographic scope of the Santa Rita EMA, which is 148,421 acres. (*See* CNF Draft LMRP at 135.) In this case, the impact would be to a little over or 7% of the EMA. within the Nogales Ranger District, which is 352,221 acres,

In addition, this amendment will almost certainly "affect land and resources throughout a large portion of the planning area." In fact, it is likely to have widespread impacts across the forest; at a minimum impacting large portions of the Santa Rita EMA and beyond. It is therefore simply unjustifiable for the USFS to considering the significance of the amendment in the context of the entire Forest, without considering the scope of these impacts.

This Forest Plan weakens at least 29 standards and guidelines that are in place to protect resources, and weakening these standards will have impact resources and management activities far beyond the boundary of the management area. The FEIS itself states in places too numerous to mention here that the environmental damage caused by this mine will extend far beyond the 10,531 acres encompassed by the Management Area 16 (as identified on Figure 27 in the ROD), impacting far more forest resources than what is represented in that acreage. In fact, the FEIS uses far larger analysis areas when assessing impacts for virtually all resources, including:

- **Air quality:** "The near field air quality analysis area is an approximately 691-square-mile area centered on the project site that includes the mine operations, residential areas, and public land within Pima and Santa Cruz Counties." (FEIS at 220.)

- **Groundwater quantity and quality:** "The analysis area … was selected to encompass all areas within which groundwater could be affected by either the mining water supply well field near Sahuarita or the mine pit; the analysis area encompasses the areas included in the groundwater models conducted for the analysis (approximately 1060 square miles)." (FEIS at 293; emphasis added.)
- **Surface water quantity:** "The watershed area considered in this modeling totals 8,960 acres. (FEIS at 401.)
- **Biological resources:** "The analysis area for biological resources is defined as the project area..., including roads that would be decommissioned and constructed, plus a larger surrounding area that may experience direct or indirect temporal and spatial impacts from the proposed project. … The analysis area, which was delineated to consider the impacts of vibration and noise, dust and air pollutants, artificial night lighting, increased traffic on SR83 and other roads, groundwater drawdown, and surface water alteration, totals approximately 146,163 acres. (FEIS at 573.)
- **Visual resources:** "The spatial analysis area is defined as all areas in which the proposed project would potentially be visible, or areas where visual resources would change as a result of the project. This includes the following: 1) the immediate project site; 2) the Santa Rita Ecosystem Management Area of the CNF; and 3) areas from which the project would be visible (including eastern Pima County, Santa Cruz County, and western Cochise County)." (FEIS at 768.)
- **Recreation and Wilderness:** "The analysis area for assessing direct, indirect, and cumulative impacts to recreation and wilderness is defined as follows: the project area; the forest unit encompassing the Santa Rita Mountains of the CNF, including Mount Wrightson Wilderness and the Las Colinas section of the Arizona National Scenic Trail; the BLM administered LCNCA east of the forest unit; Santa Cruz County; and eastern Pima County. The forest unit encompassing the Santa Rita Mountains, referred to as the Santa Rita Ecosystem Management Area, was chosen based on the assumption that recreational users affected by mining activity would move to forest lands nearby that would provide similar recreation opportunities." (FEIS at 836-37.)

For many forest resources, the analysis area is drawn far too narrowly to meaningfully assess all the impacts, which we discuss elsewhere. However, even with the analysis areas being drawn too narrowly, virtually all of them extend beyond the 10,000+ acres identified as Management Area 16. And, while we certainly disagree with the USFS over the extent of impacts to many of the resources considered in the Rosemont FEIS, even the USFS admits that direct, indirect, and cumulative impacts of the mine will be significant (by virtue of preparing this EIS) and will extend far beyond this overly narrow bounds of analysis used to determine "significance" of the plan amendment.

The Forest Supervisor states, "…these activities are restricted to the Rosemont area and will not have wide-ranging effects across the Coronado National Forest. While environmental effects could extend beyond the Rosemont area, as disclosed in chapter 3 of the FEIS, they are not expected to significantly alter the multiple-use goals and objectives of the forest plan <u>as a whole.</u>" (Draft ROD at 58.) This is not only not true, it is a misstatement of the standard by which significance is judge. First, the Forest Service Manual states that an amendment is significant if it "<u>affect[s] land and resources throughout a large portion of the planning area during the planning period.</u>" (Forest Service Manual (FSM) 1926.52; Draft ROD at

57;emphasis added.) Nowhere is it required to show that an amendment must "alter the multiple-use goals and objectives of the forest plan as a whole" in order to find it significant.

Additionally, considering that impacts to forest resources will extend far beyond the boundaries of Management Area 16 by the agency's own admission, it is simply illogical for the agency to base its determination of whether the amendment is significant by only looking at this exceptionally small area. It is also illogical to assume that management of the impacted resources beyond Management Area 16 will somehow not be affected when at least 29 standards and guidelines have been weakened in order weakening to allow a project like this to move forward.

For example, the USFS acknowledges that the impacts to recreation will likely extend far beyond the area identified as proposed Management Area 16, and will almost certainly impact other forest resources. "Since the project area is currently used by a variety of individuals and recreationist groups, closure of the land to the public could result in these recreationists using other recreational areas that support the activity. For example, off-highway-vehicle use is prevalent in the region within and surrounding the project area; should access be restricted in the project area, off-highway-vehicle users would likely be displaced to other areas that support a similar recreational opportunity, such as Gardner Canyon, Louisiana and Ophir Gulches, Las Cienegas, or Greaterville. … increased off-road vehicle use in these areas due to the loss of access to the project area would likely result in increased use in other areas within the region." (FEIS at 833-34.)

The FEIS also states, "As a result of displaced recreation use, other recreation sites in the Santa Rita EMA, including Kentucky Camp Historic Site and Elephant Head Mountain Bike Trail, are expected to receive increased visitation. Displaced motorized recreation use from the project area may result in increased motorized activity in locations less suitable for motorized recreation, such as Gardner Canyon, the Louisiana and Ophir Gulches, the LCNCA, and the Greaterville area, as well as increased conflicts between user groups (especially motorized and non-motorized recreation user groups)." (FEIS at p. 858.)

This has obvious management implications for other areas of the CNF. At a minimum, these impacts will extend across the Santa Rita EMA, and potentially across the entire Nogales Ranger District.

The Draft LMRP admits in several places that the mine's impacts will extend beyond the project area and footprint of the mine, well beyond the 10,000+ acres used to determine significance of the amendment, and may management actions beyond Management Area 16:

- "…the proposed Rosemont Mine, if approved, would eliminate public recreation access to as many as 7,194 acres in the northern Santa Rita Mountains. The mine would also permanently change the recreation setting from a natural area to an industrial landscape, eliminate one of two optimum OHV recreation opportunities on the Coronado, and displace current users who would have to drive farther to find similar alternate opportunities. Displaced users may then move into other areas on the Coronado, which could result in visitor conflicts. (Draft Programmatic EIS for Revision of the Coronado National Forest Land and Resource Management Plan (CNF LRMP Revision EIS) at 348; emphasis added.)
- "…the proposed Rosemont Mine, if approved, would have direct, large-scale, long-term negative impacts on scenic resources. This project would convert a natural appearing

landscape into industrial landforms having markedly different vegetation than what is there at present. The project would also displace visitors to other areas on the Coronado, some of which may be less able to assimilate increased use. It would also degrade scenic quality further by effects on roads south of the mine, where terrain is more gentle, lending itself to off-road travel, which negatively affects vegetation, soils, and scenic integrity." (CNF LRMP Revision EIS at 362; emphasis added.)

- "The proposed Rosemont Copper Mine in the Santa Rita Ecosystem Management Area would alter about 7,000 acres of habitat and affect a much larger area indirectly from light, noise, and traffic. This project would amend the forest plan to allow for disturbance associated with the mining that could contribute to the trend toward listing for Coleman's coral-root and Beardless chinch weed (USDA FS 2011b)." (CNF LRMP Revision EIS at 338; emphasis added.)

According to the draft LMRP, the mine will eliminate a full 50% optimum OHV recreation opportunities and displace users to other areas of the Coronado. As noted in our previous comments, displacing both motorized and non-motorized recreation users from this area "will have dramatic, negative effects on other parts of the CNF and the Las Cienegas Conservation Area, as these areas outside the Rosemont are predominantly fragile grasslands savannahs less capable of bearing the added pressure of OHV displacement because of a proposed Rosemont closure," and "(m)ost of the dispersed campsites in the Rosemont are in the Wasp and Barrel drainages along gravel washes and away from sensitive and volatile grasslands. Campers will move into areas less capable of bearing the added pressure of displacement because of a Rosemont closure.. (SSSR et al. at 77.)

The proposed amendment, if approved, will inarguably impact forest resources – and planning and management actions – far beyond the proposed Management Area 16; thus using this proposed area as the spatial bounds of analysis for determining significance of the amendment is farcical at best. Considering the amendment's significance in the context of the entire, geographically isolated CNF is similarly nonsensical, and only serves to greatly downplay the impacts of amending the Forest Plan and weakening the Forest's standards and guidelines in order to allow this environmentally damaging project to proceed.

Suggested Remedies: In light of the discussion herein, the USFS cannot amend the Forest Plan as proposed and should reconsider its flawed analysis of the significance of this amendment to the forest plan and prepare a separate draft and final EIS on the proposed amendment, including analysis of all the indirect and cumulative effects the proposed action alternatives will have upon surrounding CNF, LCNCA and other public and private lands.

AIR QUALITY

As noted herein, under the Clean Air Act, Organic Act, and the Part 228 regulations, among other laws, the USFS cannot approve any PoO that could result in a violation of any air quality standard or protective requirement. As noted in the January 27, 2012 comments, and herein, the FEIS and Draft ROD do not demonstrate with these requirements (in addition to violating the procedural requirements of NEPA). Based on the failure to adequately review all air quality issues, the USFS's determination that the Project will comply with all air quality standards and requirements lacks proper evidentiary support and cannot stand.

As such, a revised/supplemental Draft EIS is required and the Regional Forester should remand the FEIS and Draft ROD back to the Coronado National Forest to correct all errors noted herein. Additional air quality errors and emissions follow that must be similarly corrected.

1. The FEIS fails to show that all lead emissions and the toxic elements in fugitive dust will protect the public health.

In comments we previously submitted on the DEIS, it was noted that there was a lack of analysis of toxic contaminants contained in fugitive dust. (*See* SSSR et al. at 29.) In response to these comments, the FEIS indicates that the USFS conducted an evaluation of toxic contaminants through modeling. (FEIS at 218.) The FEIS states, "For the purposes of this analysis, it is presumed that if compliance with the NAAQS is achieved for lead, particulate matter less than or equal to 2.5 microns in diameter (PM2.5), and particulate matter less than or equal to 10 microns in diameter (PM10), public health would be protected from any toxic components within the particulate emissions as well." (*Id.*)

There are several objections to the quoted FEIS statement:

First, the presumption that lead emissions are all contained in the criteria pollutant particulate matter emissions is incorrect. Lead can be emitted from the materials in the dry stack disposal pile attached to and concentrated in sulfate aerosols, and lead can be emitted as methyl lead, a gaseous compound, because of photochemical activation and reaction with methane, a blast product, which remains and disperses throughout the entire project site following blasting with AMFO.

Second, it is unclear how control of particulate matter for lead will provide the needed protection from other toxic components in the particulate matter. Different toxic elements in the particulate matter have different rates of absorption and transport in the body once the particulate matter has been inhaled. To assume that all these toxic materials behave identically because they are in particulate matter is incorrect.

Third, the FEIS has not performed a statistical analysis to show how lead correlates chemically with the other toxic elements in the particulate matter. Therefore, there is no scientific basis to assume lead levels predict how other toxic elements in the particulate matter behave nor that control of lead in the particulates will provide the control needed for the other elements.

Fourth, the assumption ignores special attention required to the concentration and adsorption of lead compounds on aerosols. The inhalation toxicology behavior of aerosols is not identical to the inhalation toxicology of simple particulate matter. This will also apply to selenium, arsenic, sometimes cadmium and sometimes manganese, and even an occasional uranium compound that may be aerosol-bound in a manner similar to lead.

Fifth, there is no indication in the FEIS that requested measurements of the toxic element content of fugitive dusts will be measured as part of the monitoring plan.

Suggested Remedies: The USFS must provide a revised analysis that includes supportable assumptions and include that information in a revised DEIS that is made available for public review and comment.

2. The FEIS fails to adequately evaluate the presence of asbest os-containing material (ACM).

In our previously submitted comments, we noted the failure of the DEIS to address issues related to the potential presence of asbestos-containing materials (ACM) in particulate matter. (SSSR et al. at 35.) In response, the USFS has indicated in the FEIS that it "investigated the potential for asbestos containing minerals to occur within the project area." (FEIS at 27.) The FEIS discusses the presence of actinolite-tremolite and asbestiform materials, and cites submissions by Rosemont's geologist and research conducted by AGS as "[P]rimary references by those who have studied in detail the geology and ore deposits of these areas note the presence of actinolite-tremolite but none indicate that it is asbestiform (Harris 2003:9)." (FEIS at 227.)

There are several objections regarding the evaluation of the presence of asbestos -containing materials provided in the FEIS.

First, the Clean Air Act, Section 112(b) lists asbestos with a specific CAS number and then asbestiform minerals and mineral fibers. The CAS number applies to all forms of asbestos, whether fibrous or not. That legally means that any form of asbestos shall be considered under the law. The asbestiform minerals and other mineral fibers in this section of the Clean Air Act are not chemically asbestos. Thus, the effect of "the presence of actinolite-tremolite" must be evaluated.

Second, the possible asbestiform minerals include erionite. We raised the issue of erionite in our previous comments on the DEIS. (*See* SSSR et al. at 17.) The FEIS does not show that the presence of erionite was even evaluated, although it is present in geological strata of the Southwest United States and areas near the Mexican border. The evaluation of erionite is not always achieved by a visual inspection of drill core geological samples, but often requires x-ray diffraction or other micro-analytical methods. The presence of erionite must be determined, and, if present, its effects must be evaluated.

Third, neither the background geochemistry documents nor the FEIS indicate that a complete mineralogical characterization was performed using x-ray or similar methods. Thus, the mineralogical analyses of asbestos and asbestiform minerals are deficient because they apparently rely on macroscopic methods only, rather than a combination of macroscopic and microscopic methods. "Best available science" requires a mineralogical characterization based on all available scientific methods.

Fourth, the FEIS states, "While asbestiform minerals may occur in many geological settings, including those of the project area, research by the AGS and by observations made directly by Rosemont geologists logging the drill cores give no indication that asbestiform minerals are present in the Rosemont deposit itself. For the purposes of the air quality analysis, the potential for the presence of airborne asbestos from mining activities is handled through analysis of all particulate matter and the ability for the project to meet air quality standards for particulate matter." (FEIS at 227.) The FEIS handling of asbestos through an analysis limited to particulate matter is incomplete and misleading, as the presence of ACM can occur through other than particulate matter emissions.

Fifth, the air quality permit issued by ADEQ references asbestos rules which emphasize toxicological properties of asbestos and human exposure to this substance. To meet the NEPA regulatory requirements, a microscopic examination of the particulate matter is needed to check for asbestos particles and fibers. The relevant toxicological parameters are number of particles, number of fibers, aerodynamic diameter of particles, length of fibers, all per cubic meter of air, and mineralogical form. These parameters do not always correlate with the gravimetric measurement of the weight of particulate matter collected or the weight of the asbestos content of that particulate matter. Asbestos and asbestiform materials tend to be present in the particulate matter as nanoparticles with sizes in the 0.5 to 1 micron range for aerodynamic radius, and it is routinely possible to exceed the limits on number of particles per cubic meter of air without violating a gravimetric limit.

Sixth, the inadequate monitoring plan cannot assure that asbestos emissions and releases do not produce a toxicology problem because the FEIS does not show that monitoring programs for asbestos and asbestiform minerals require a microscopic examination of the particulate matter, a mineralogical analysis of particulate matter, and particle counts. Further, even the gravimetric analysis of asbestos in the particulate matter is not a required analysis for the ADEQ air permit or monitoring.

Suggested Remedies: The USFS must provide an adequate analysis of the presence of asbestos-containing materials that includes microscopic examination of asbestos particles and fibers and thus emphasizes the toxicological parameters listed above; the USFS must also report complete mineral analysis of the particulate matter to determine whether asbestos and related asbestiform materials, notably erionite, are or are not present. The USFS must provide this information in a revised DEIS that is made available for public review and comment.

3. The FEIS fails to evaluate radioactivity in particulate matter or radon gas.

The FEIS states, "Potential impacts related to radioactivity and asbestos have been added to the FEIS. Potential impacts to air quality, soils, and ground and surface water from pollutants associated with the mine are disclosed in Chapter 3 of the FEIS. Specifically, the potential for Technological Enhancement of Naturally Occurring Radioactive Materials (TENORM) is addressed in the Groundwater Quality section of Chapter 3, and asbestos is addressed in the Air Quality section of Chapter 3. The revised analysis indicates that air quality standards (NAAQS) are met at the perimeter fence line and are therefore protective of public health outside of the mine site, and that all applicable water quality standards, and other laws, regulations, policies, and plans would be met by the preferred alternative." (FEIS Appendix G at G-25.)

First, we previously commented on the DEIS that the CNF failed to require monitoring of radioactivity in particulate matter or radon gas. The FEIS has failed to respond to this comment and still does not cover air quality monitoring with respect to the monitoring of radioactivity in particulate matter or radon gas. (SSSR et al. at 32.)

Second, TENORM is also an air quality issue. Failure to monitor radioactivity emissions in air quality creates a TENORM problem because the radioactivity levels in the air at the Rosemont site will mistakenly be assumed to be natural background rather than the combination of natural background and radioactivity emissions. The FEIS treats TENORM issues as new materials not previously subject to public review. Further, the background geochemical characterization reports submitted by Rosemont raised the issue with respect to any kinds of analyses in view of EPA studies on the subject at the instigation of the ADEQ. A deficiency of

the air quality permit currently under appeal includes a failure to consider TENORM or radon emissions and other aspects of radioactivity.

Third, what will be the human health risk exposure to radioactivity, as opposed simply to the NAAQS, at the fence line? How will the USFS determine this? The FEIS contains no information or analysis of this problem and demonstrates that the statement that air quality analyses with respect to the protection of human health as evidenced by levels of pollutants at the "fence line" are incomplete and faulty.

Fourth, ADEQ policy does not set specific air quality emissions requirements on radionuclides because EPA has not provided emission limits. Thus, the air quality permit did not require inclusion of such analyses to obtain a permit. This specific administrative agency policy of ADEQ has no applicability and no relationship to requirements under the NEPA rules, because EPA has declared all emissions of radionuclides to be toxic substances under Section 112 of the Clean Air Act. Thus, for purposes of the NEPA analysis, the issue is the health and safety impact of radionuclides emissions as toxic substances, not merely conformity with regulatory emissions limits.

Suggested Remedies: The USFS must fully address air quality monitoring and health and safety impacts with respect to radioactivity in particulate matter or radon gas and provide this information in a revised DEIS that is made available for public review and comment.

4. The FEIS fails to adequately describe, or address issues related to, hazardous air pollutants (HAPs) in particulate matter and gaseous emissions.

We provided multiple comments regarding the deficiencies in the DEIS related to the CNF's assessment of particulate matter emissions and toxic air contaminants. (SSSR et al. at 26, 29, 32, 34.) The following objections concern this passage in the FEIS regarding that investigation and the revised analysis used by the CNF:

> "The EPA defines particulate matter (PM) as a co mplex mixture of extremely small particles and liquid droplets. Particle matter is made up of a number of components, including acids (such as nitrates and sulfates), organic chemicals, metals, and soil or dust particles. The size of the particles is direc tly linked to their potential for causing health problems. EPA is concerned about particles that are 10 micrometers in aerodynamic diameter or smaller because these particles can affect the throat and nose and enter the lungs. Once inhaled, these particles can affect the heart and lungs and cause serious health effects. EPA groups particle pollution into two categories: PM10 – Inhalable coarse particles, such as those found near roadways and dusty industries, are larger than 2.5 micrometers and smaller than 10 micrometers in diameter. PM2.5 – Fine particles, such as those found in smoke and haze, are 2.5 micrometers in diameter and smaller. These particles can be directly emitted from sources such as forest fires, or they can form when gases emitted from power plants, industries and automobiles, react in the air. The federal air quality standards, (i.e., NAAQS) established maximum concentrations in ambient air for suspended PM10 and PM2.5. These standards were adopted by

> the U.S. Environmental Protection Agency to protect public health (primary standards) and public welfare against decreased visibility as well as damage to animals crops, vegetation and buildings (secondary standards). These primary standards provide public health protection, including protecti ng the health of "sensitive" populations such as asthmatics, children, and the elderly. The Forest Service has reviewed the revised modeling analysis, which included a number of additional mitigated measures. These additional mitigated measures would furth er control PM10 emissions (which presumptively contain such compounds as lead, arsenic, chromium, cadmium and nickel). The revised analysis indicates that the preferred alternative would meet all federal air quality standards. Determination of the constitu ents of particulates is not a standard analysis conducted when evaluating particulate emissions. For the purposes of this analysis, it is presumed that if compliance with PM10 and PM2.5 NAAQS is achieved, public health would be protected from toxic metal c ompounds within the particulate emissions as well. Please refer to the Air Quality and Climate Change section Chapter 3 of the FEIS for further detail."

(FEIS Appendix G at G-29.)

First, the EPA definition does not cover all the liquid and particulate matter. Specifically, it does not consider aerosols. These are a multiphase system consisting of a suspension of particles or droplets in a gas, the properties of which go beyond those of the particulate components of dust particles and liquid droplets to include physical and thermodynamic properties of a complex suspension; nor does it cover droplets larger than a specific aerodynamic diameter. Because of the nature of the physical properties of liquid droplets relative to those of solid dust particles, the inhalation exposure dynamics of aerosols, especially those which are mists, are different.

Second, the FEIS has not provided any analysis for gaseous emissions except for vehicles and fixed equipment. It has totally ignored gaseous emissions emanating from the ore processing at various steps from blasting through dry stack disposal, except for noting that there is specified controls in the air quality permit for sulfuric acid mist which is produced during the electrowinning process.

Third, the aerosols not covered by the EPA definition will contain adsorbed compounds of arsenic, cadmium, lead and selenium, and could also contain adsorbed compounds of uranium and sometimes manganese. These hazardous air pollutants will not be included in the estimates of potential to emit which are presently based on particulate matter in the emission inventory. Thus, the potential to emit calculations pursuant to Section 112(b) of the Clean Air Act will severely underestimate these components.

Fourth, because the FEIS fails to consider gaseous pollutants in emissions, the following information is considered new information based on issues raised by the FEIS: The USFS has not considered these specific gaseous compounds or substances listed in the Clean Air Act Section 112(b) list of hazardous air pollutants: Arsene, phosphene, nickel carbonyl, carbon disulfide, carbonyl sulfide, hydrogen selenide, methyl lead, methyl mercury, selenium sulfide,

elemental phosphorus, which can all be released from the blast stage and/or the dry stack disposal site.

Fifth, the USFS has not quantified the possible formation and emissions of these compounds from either blast stages or dry stack disposal, nor modeled their dispersal, and therefore cannot say that the project will not release toxic air pollutants beyond the fence line. The models used to estimate particulate matter emissions based on EPA Manual AP-42 and the other manuals listed in FEIS do not work well here.

Sixth, the USFS has relied incautiously on Rosemont's use of formulas from EPA manual AP-42 which are used to provide default analysis positions in the absence of data from a specific project. These formulas were developed from statistical studies of Western coal mines, and do not necessarily apply to the copper ore source material which Rosemont seeks to exploit. The chemical composition differences between Western coal and copper ore mainly relate to the greater number, concentration and variety of toxic elements in copper ore compared to coal. This greater variety of toxic elements directly leads to underestimates of the amount of particulate matter released during the blast stage. All users of AP-42 are encouraged to provide data more specific to their mining or quarrying interests. Rosemont has simply used the formulas in lieu of data from relevant mining-specific studies.

Seventh, the AP-42 formulas do not consider gaseous emissions except for categorical sources, which mining is not. Therefore, in order to perform potential to emit calculations of hazardous and toxic air pollutants, other methods regarding HAPs emissions not found in either Rosemont reports or referenced in the FEIS must be used.

Eighth, the FEIS does not protect against health end points such as cancer, mutagenic, neurotoxic and teratogenic effects because the USFS incorrectly assumes that the pollutants that cause these effects in humans and livestock which graze on USFS leased plots are controlled by exposure to particulates only. Many selenium and arsenic compounds are volatile. Selenium compounds can be absorbed directly from a gaseous state into plants through stomata, and volatile arsenic compounds can crystallize on plant surfaces or ground and be deposited in waters, and then be washed into soil and absorbed. (*See* SSSR et al. at 60 and 89.)

Ninth, the FEIS statements about background cancer rates in the Southern Arizona areas which might be affected by the emissions from the project are not provided in proper context and therefore are irrelevant. The FEIS has provided no commentary, data or assessments on the specific cancer, neurotoxic, teratogenic and mutagenic risks of the pollutants in the source material known to cause these impacts. USFS shows in the FEIS no obvious interest in performing epidemiological studies. The need for risk assessments was raised by us and has still not been addressed by the USFS. (SSSR et al. at 15.)

Tenth, the determination of the constituents of particulates might not be a standard analysis conducted when evaluating particulate emissions, but it is essential to quantify the potential to emit toxic and hazardous air pollutants, a requirement of the Clean Air Act Section 112. Therefore, the FEIS statement otherwise is irrelevant to the USFS requirement to show that the emissions from the mine will not violate the Clean Air Act, Section 112.

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Eleventh, the USFS discussion section totally ignores the radioactivity content of the air particulate emissions following the blast stage to release ore for processing of uranium and thorium. We submitted previous comments on this issue but the response comments do not appear to address this issue at all. (*See* SSSR et al. at 15.) Uranium and thorium will be present in the particulate matter.

Twelfth, the risk assessment concerns discussed in item ten of this section raise issues of cumulative effects under NEPA which need to be evaluated. The risk assessment analysis of exposure will be primarily based on the predicted levels of emission, dispersion and transport of these toxic substances to receptors increasing the risk and number of possible disease cases above the background level. This increase in both risk and number of cases are readily foreseeable possibilities, and the costs associated with these increases on various economic sectors then must be quantified.

Suggested Remedies: The USFS must adequately address issues related to particulate matter emissions and other forms of emission of toxic air contaminants, as set forth above, and provide this information in a revised DEIS that is made available for public review and comment.

5. The FEIS statement on Table 29 regarding NESHAPS applicability is wrong because it fails to consider HAPs emissions from sources other than as particulate emissions.

Table 29 of the FEIS addresses regulations and laws related to air quality. (FEIS at 233-235.) The FEIS refers to NESHAP rules: "Based on the estimated, maximum potential emissions for the proposed mine operation, the Rosemont Copper Project would not be a "major HAP source." However, applicable NESHAPs pertaining to the boiler, emergency engine, and storage tanks would apply." This statement is erroneous because the Rosemont Copper Project can become a major source of HAPs as indicated by the FEIS's failure to consider HAPs emissions through routes other than particulate matter, and the failure to address effectively the problems of asbestos and radioactive materials.

Table 29 also states in the section on General Conformity Analysis, "The project site is in attainment for all criteria pollutants, but the greater Tucson area contains a PM10 non-attainment area and a CO maintenance area. Under ADEQ requirements, the project also does not exceed major source thresholds. The Coronado has analyzed the project for effects on NFS surface resources, not conformity. The Coronado has used meeting of NAAQS at the perimeter fence line as an indicator that NFS surface resources would not be unduly impacted by project emissions." What is unduly impacted? How does "meeting at the perimeter fence line" act as an indicator? There seems to be several unstated or implied assumptions which are not obvious to the reader, rendering the statement unresponsive to the Federal regulation being discussed.

Suggested Remedies: The USFS must correct and clarify potential errors and misleading or vague statements in entries of Table 29 as well as the General Conformity Analysis on laws related to air quality, and provide this information in a revised DEIS that is made available for public comment and review.

6. The air quality monitoring is inadequate because it makes no provision for monitoring PM2.5 and because the commencement of certain monitoring requirements will not occur until after certain air emissions activities have begun.

We previously commented that all air quality monitoring is inadequate. (SSSR et al. at 32.) Therefore, any air quality protocols proposed for any aspect of the proposed mine operations are subject to comment, and specifics included in the FEIS represent new information.

When discussing the coarse ore stockpile dome as a mitigation measure, the FEIS states: "The air quality permit requires the installation and operation of continuous ambient monitors of PM10 and on site meteorological data beginning at least 90 days prior to the start of mine operations. A protocol and monitoring plan would be required to be submitted within 180 days of the issuance of the air quality permit." (FEIS at 287.)

First, why are there no monitoring protocols for PM2.5? The air quality permit and required monitoring plan needs to require both measurements. The idea that any monitoring of PM2.5 is subsumed under monitoring PM10 is erroneous because the presence of the debris of larger size than PM2.5 can cause the masking of any observed PM2.5 materials in the PM10.

Second, the calendar of required activities under the air quality permit may conflict with respect to installation of particulate monitors and the required monitoring and therefore is a problem with respect to mine start-up activities.

Third, the monitoring protocol should be provided in the FEIS and should not come after the final decision on this project. The ADEQ air quality permit was issued in January 2013, and despite the fact that it is under appeal, a full year has passed, and the FEIS should have made these protocols part of the document and available for public review and comment.

Suggested Remedies: The air quality monitoring protocols, particularly for PM2.5, must be made available in a revised DEIS for public review and comment.

7. The monitoring and mitigation measures described in Appendix B are entirely new; thus, the FS must allow for public review and comment through a revised DEIS. The FEIS also fails to establish an enforceable mechanism to assure that the array of mitigation and monitoring measures will be adequate, without relying solely on the limited measures proposed by ADEQ.

We previously commented that all air quality monitoring is inadequate. (*See* SSSR et al. at 32.) Therefore any aspect of monitoring is available. Further, the materials in Appendix B with respect to monitoring and mitigating measures are new information which have been not previously been subject to public review and comment.

All monitoring for mitigating measures with respect to emissions of air pollutants in the FEIS, and listed in Appendix B (B-76 to B-83), depend almost entirely on the air quality permit issued by ADEQ. USFS seems to have abnegated all responsibility for monitoring and determination of mitigating measures of air quality to ADEQ except for opacity. What does the USFS do other than receive monitoring reports? The FEIS fails to show that the USFS has knowledge, experience, or managerial skills to meet NEPA requirements with respect to air quality monitoring and impacts, and to act on the information in a timely or effective manner.

The FEIS shows that the USFS assumes that because ADEQ has responsibility to enforce air

quality requirements under the Clean Air Act, it will do so. But that assumption was challenged in the air quality permit appeal hearings. ADEQ resources are very limited, and ADEQ has been forced in the permit to extend the required response times for reports and actions to reflect its resource shortages. The time frames in the ADEQ air quality permit are not consistent with effective enforcement of the Clean Air Act.

Suggested Remedies: The USFS must provide additional mitigating and monitoring requirements to address the deficiencies in air quality described in this objections document to augment and reinforce the effectiveness of ADEQ permit requirements. Any Mining Plan of Operations approval should contain enforceable mitigation/monitoring requirements specifically applicable to NEPA issues, rather than merely deferring to the ADEQ permit. The USFS must show explicitly what action and by what deadline it is prepared to take such action that demonstrates it does more than just passively receive monitoring reports from Rosemont and ADEQ, and that it has the access to technical expertise and managerial talent to perform these additional functions for air quality. The USFS must provide this information in a revised DEIS that is made available for public review and comment.

8. Mere voluntary measures to reduce emissions is unacceptable because there is no oversight or assurance of compliance and actual emissio ns reductions; there must be specific enforceable emissions-reduction requirements.

According to the FEIS, "The voluntary carpooling plan is estimated to offset or reduce NOx emissions by approximately 1,200 pounds per year." (FEIS at 287.) The USFS basis for this statement comes from the USFS's reading of the air quality permit issued by ADEQ. Thus, this statement represents new information not previously subject to public comment.

We previously commented on the ineffectiveness of possible carpooling efforts with respect to traffic issues at the site, but the relationship of carpooling to air quality stated by the USFS is new information. CNF cannot rely on voluntary measures to reduce NOx emissions. This reference which implies that the voluntary carpooling plan, which is virtually impossible to enforce and is unlikely to be implemented, offers some mitigation must be removed from the FEIS. In addition, the reduction of NOx emissions estimated in the FEIS is unsupported by defensible calculations, optimistic, and probably represents an upper limit. The actual reduced emissions are more likely to be considerably less, possibly only 50% of the amount estimated.

Suggested Remedies: The USFS must prepare a revised DEIS that reflects that the agency is not relying solely on voluntary measures as mitigation, and provide this information in a revised DEIS that is made available for public comment and review. The revised DEIS must also provide a detailed calculation justifying the estimated NOx offset or reduction by voluntary carpooling.

9. The FEIS wrongly assumes that the ADEQ permit will ensure that the project will meet all regulatory requirements; it does not meet all regulatory requirements because it was approved for a different project configuration th an the Barrel Alternative and because ADEQ's technical review was inadequate.

The FEIS states, "On January 31, 2013, ADEQ issued the "Air Quality Class II Synthetic Minor Permit for the Rosemont Project" (Permit No. 55223) (Arizona Department of Environmental Quality 2013a). According to ADEQ, the air quality permit will ensure that Rosemont Copper meets all Federal, State, and local requirements by operating with enhanced

emissions controls." (FEIS at 219.) The FEIS discussion of the issuance of the ADEQ air quality permit is new information not previously subject to public comment.

First, the concept and definition of a "class II synthetic minor permit" raises problems. According to ADEQ officials, a "class II synthetic minor permit" involves negotiated voluntary conditions with the permit applicant where the proposed project can violate air quality standards but administrative restrictions or policy may prevent ADEQ officials from denying a permit up front. The applicant is not required to accept any negotiations. Testimony in the air quality permit appeal hearings indicated a strong likelihood that this negotiated status was illegal, a finding that could lead to revocation of the permit.

Second, ADEQ has not ensured that Rosemont Copper meets "all Federal, State and local requirements" because it has not effectively considered the potential to emit toxic and hazardous materials under Section 112(b) of the Clean Air Act, especially gaseous hazardous pollutants following blasting and from the dry disposal pile. The FEIS has not addressed this issue.

Third, ADEQ has mandated and relied on technology which it claims works well elsewhere, but in the air quality permit appeal hearings, this assumption was challenged. Testimony showed that ADEQ relied mainly on manufacturers' technical literature about their specific products and not independent testing results, and also on some limited other situations where this technology was applied. The testimony revealed serious misinterpretation and mistaken views on the efficiency of the equipment, and ADEQ cannot be assured that equipment will always work as assumed. The FEIS assumption that the technology required by ADEQ will provide the necessary protection is thus incorrect.

Fourth, the FEIS also states that, "the modeling conducted by ADEQ to demonstrate compliance with NAAQS is not the same as that considered in the FEIS. The air permitting process typically only includes stationary emission sources, whereas the modeling conducted for the FEIS included both stationary and mobile emission sources in order to provide a full analysis of potential emissions." (FEIS at 219.) The FEIS modeling did not include potential to emit toxic and hazardous substances which requires that fugitive sources, regardless of whether stationary or mobile, be included, and resulting in the USFS relying on an incomplete analysis.

Fifth, the FEIS states that, "Fugitive emissions are not included in the determination of potential to emit unless a source is listed in 1 of 28 source categories enumerated under 40 CFR 52.21 (b)(1)(iii). ADEQ issued a minor source air construction permit on January 31, 2013, because the majority of emissions from the Rosemont Copper Mine operation would be classified as fugitive.

Under AAC, Title 18, Chapter 2, Section 319, review of increments is not explicitly required for minor source air construction permits." (FEIS at 245.) However, the fugitive emissions must be counted in any potential to emit hazardous air pollutant calculations under Section 112 of the Clean Air Act, which the FEIS has not acknowledged, and can transform a source which is not categorical source, such as mining, into a major pollution source which requires a Class I rather than a Class II permit.

Suggested Remedies: The USFS must prepare its own assessment of this project's compliance with Federal, state and local requirements, in accordance with the comments herein, and

include this information in a revised DEIS that is made available for public comment and review.

10. The FEIS inadequately characterized the blast process for ore release; a complete characterization will result in a different analysis for greenhouses gases/climate change and the impact of HAPs released by the blasting.

The FEIS states that, "The potential for the presence of residue from the use of nitrogen-based explosives has been well documented in the literature (Ferguson and Leask 1988; Forsyth et al. n.d. [1995]; Morin and Hutt 2009; Pommen 1983; Revey 1996). The explosive reaction that occurs involving ammonium nitrate and fuel oil ideally generates only water, carbon dioxide gas, nitrogen gas, and heat. It is the rapid release and expansion of these gases that creates the explosive power of the mixture. However, the reaction is seldom completely efficient, and nitrogen can remain as a residue in waste rock and in the blast zone." (FEIS at 384.) This is new information in the FEIS not previously subject to public comment.

First, because the reaction is not "ideal" and is not "completely efficient" the blast products include carbon monoxide, methane and ammonia, three products not mentioned in the FEIS. The emissions inventory submitted by Rosemont to ADEQ as part of its documentation for the air quality permit listed the carbon monoxide and methane, but did not mention ammonia.

Second, the FEIS does not address the consequences of the "efficiency" of the blast process with respect to the production by chemical reaction in the blast of toxic and hazardous air pollutants. The Second Law of Thermodynamics limits the efficiencies of the blast process, often to a range of 30-60% because of the temperatures at which the blast occurs. Because of this inefficiency, the blast products include carbon monoxide and methane which can further react with ore constituents to generate toxic and hazardous air pollutants. Among them are the previously mentioned gaseous pollutants phosphene and arsene. The heat produced by the blast provides energy to overcome any chemical kinetic and energy barriers to these reactions. The amounts of carbon monoxide and methane released that can react with ore constituents in the blast far exceed the stoichiometric amounts needed to generate exceedances of the toxic substances air pollutant emissions produced from chemical reactions under Section 112 of the Clean Air Act of 10tpy of a single hazardous air pollutants and 25tpy of a combination of them.

Third, carbon dioxide, methane and nitrous oxide are greenhouse gases. While the amounts of carbon dioxide generated overwhelm mass-wise the other two, the FEIS should have acknowledged that their small amounts are not unimportant in spite of the order of magnitude argument being made in the FEIS.

Fourth, production of neutral nitrogen gas is the product least favored thermodynamically in the blast reactions. In fact, it is almost safe to assume that so little nitrogen gas is produced by the use of AMFO that the formation of this product is negligible, and thus <u>all</u> nitrogen products are compounds like nitrous oxide, ammonia, nitrogen dioxide, and are technically "residues" as used in the FEIS. The release of ammonia is also significant with respect to stream chemistry and toxicity to plants and aquatic organisms.

Fifth, several of the cited references refer to coal mines; copper ore and coal are not comparable chemical materials. The discussions of calculations based on EPA manual AP-42 must be evaluated in the context of the actual materials being exploited (copper) rather than depending on the reference exclusively for default positions.

Suggested Remedies: The USFS must prepare a revised DEIS that assesses the blast process for ore release and its implications for climate change, as well as the release of toxic and hazardous air pollutants resulting from the blast, and provide this information in a revised DEIS that is made available for public review and comment.

11. The FEIS air quality modeling continues to be flawed significantly because of inappropriate protocols, wrong input data, and improper analyses; the problems identified in comments to the DEIS have not been adequately corrected.

In our previous comments on the DEIS, we provided many comments on the inadequacies, flaws, errors in technique and execution, deficiencies in analyses with respect to the quality of the air data collected, the meteorological data collected, the site characterization, the nature of the models being used to determine air quality impacts and dispersion and transport of air pollutants, and the protocols governing all of this work. (*See* SSSR et al. at pages 69-71, 125-134.) The USFS has indicated that it has revised extensively the air quality analyses and modeling. Yet so many of the original deficiencies remain and have not been corrected in the new work that most if not all of the modeling results upon which the USFS has based its decisions are flawed, defective, erroneous, and not scientifically supportable. These revisions in the FEIS are new information not previously subject to public comment. (*See* FEIS at 217.) **Please Note**: Objections numbered 13 and 18-20 below makes additional criticisms of the modeling deficiencies.

First, the USFS continues to rely on defective modeling to determine air quality impacts. The revised protocols for AERMOD and CALPUFF which Rosemont's consultants submitted in 2012 to the USFS to handle the new air dispersion calculations did not correct or show significant improvements nor major changes in quality assurance, management, data handling and computational elements over the very poorly developed original protocols. The new protocols nonetheless represent new information that must be made available in a revised DEIS for public review and comment.

Second, the USFS cannot depend on the outcomes of the revised modeling. The revised materials of January 2013 appear only to have tweaked the previously discredited calculations arithmetically to fit revised levels of contaminants as input data. This approach neglects the non-linear aspects of these models, which can contra-indicate such adjustments.

Third, the FEIS states that "Revised modeling indicated that the Barrel Alternative would meet NAAQS at the perimeter fence. There has been a reduction in emissions of coarse dust particles by approximately 47 tons and of fine particulates by 43 tons, compared with the original Pima County air quality permit application submitted by Rosemont Copper." (FEIS at 287.) However, the reduced levels of particulates, both coarse and fine do not assure that the Barrel Alternative will meet NAAQS at the perimeter fence. The revised modeling suffers from the same flaws as the original discredited modeling, even with new input parameters.

Fourth, the technology which ADEQ has required in the air quality permit to achieve the reductions of emissions of coarse dust particles by approximately 47 tons and of fine particulates by 43 tons, compared with the original Pima County air quality has been challenged in the air quality permit appeal hearings. Testimony in the air quality permit appeal hearings showed that ADEQ, while emphasizing the efficiencies and performances of the

indicated technology often erroneously interpreted these numbers based on manufacturers' catalogs, although ADEQ cited some experience with these technologies in other situations.

Fifth, the improper simulations show that the conditions found in all of the alternatives except the Barrel Canyon are so flawed that this may reflect a situation that any model, including poor ones, will show flawed results. That suggests that model results allowing for the Barrel Canyon alternative may be an artifact or marginal in any statistical significance. Accordingly, the USFS cannot support the use of these models as justification for the Barrel Canyon alternative.

Suggested Remedies: The USFS must correct problems of modeling and statistical analyses in its revised modeling of air quality transport, dispersion and impacts, and prepare a revised DEIS that is made available for public review and comment.

12. The FEIS fails to use the appropriate in -stack NO2/NOx ratio; use of the proper conservative ratio shows NAAQS exceedances.

In its explanation of revised modeling protocols, the FEIS states, "the Coronado has determined that several key assumptions selected by Rosemont Copper to model air quality impacts are appropriate and has based conclusions in the FEIS on these values." Specifically, an NO_2 to NOx ratio of 0.05 was considered appropriate, and a background PM10 concentration of 47.7 µg/m3 was considered appropriate. This is new information since the DEIS was released and not available for previous public review and comment. Modeling using variations of these assumptions was also conducted for comparison, specifically an NO_2 to NOx ratio of 0.1 and a background PM10 concentration of 37.4 µg/m3. These alternative modeling results are provided for comparison (shown by the shaded cells in table 45) but are not considered the most appropriate assumptions and therefore are not used to draw conclusions about compliance with NAAQS for this analysis. As shown in table 45, these alternative assumptions result in the inability to meet NAAQS at the perimeter fence for any of the alternatives." (FEIS at 260; emphasis added.)

First, the decision based on an analysis using the NO_2/NO_x ratio in the modeling to determine compliance with NAAQS standards is not justified. The FEIS assumes that the ratio of 0.05 appropriate for haul trucks and mobile sources applies here because the mobile sources are the major source of nitrogen oxides. But the FEIS continues in the same section by noting that the ratio from blast studies goes as high as 0.5, ten times greater. Blast processes for the mine produce a significant portion of the NO_2/NO_x ratio, and consequently, the USFS should have chosen a higher possible value ratio (and more conservative, as required by the EPA regulations) for the blast studies, rather than the 0.05 value. At the least, the 0.1 ratio is a more prudent and authorized worst case limit in this situation, and it should be used as the basis for the analysis.

Second, the USFS analysis should have included a sensitivity analysis which quantifies the threshold value of the NO_2/NO_x ratio which triggers noncompliance. That information would have allowed USFS to require additional NOx control needed to achieve its regulatory requirements with respect to nitrate deposition in Class I areas.

Third, the preceding comments open the USFS to valid criticisms that the modeling is inadequate, and the results may have been manipulated to show compliance with NAAQS standards, when in fact compliance still remains in serious question.

Suggested Remedies: The USFS must revise its analysis to show appropriate worst case simulation conditions in its air quality modeling, and prepare a revised DEIS that is made available for public comment and review.

13. The FEIS revised AERMOD analysis continues to use inappropriate, incomplete, and inadequate input data so that its results showing NAAQS compliance are not reliable; furthermore, the FEIS fail s to use the current AERMOD guidance in its analysis.

Our previously submitted comments on the DEIS detailed comments the deficiencies in the use of AERMOD. (*See* SSSR et al. at 20-36.) In response, the FEIS states that Rosemont Copper's consultants ran modeling scenarios and calculations in 2012 to address these and other public comments. (FEIS at 226.) The FEIS further indicates that "the Forest Service provided direction to Rosemont Copper concerning the assumptions and methodologies to be used in the AERMOD modeling (Rosemont Copper Company 2012d)" (FEIS at 226.) There are several objections to the materials which the USFS has provided.

First, the revised AERMOD analyses remain dangerously flawed and cannot be relied upon for any purpose of the EIS. The modeling protocol materials submitted in revised reports of 2012 did not correct many errors and problems of the original model protocol used in 2009 report, errors that were pointed out in previous comments. (*See* SSSR et al. at 125-134.)

Second, the revised modeling continues to use inaccurate albedo and Bowen Ratio numbers, which have not been corrected in spite of photographic evidence by an outside party that the numbers chosen are clearly erroneous. The use of incorrect albedo and Bowen Ratio numbers renders all meteorological estimates with these models worthless and not reflective of known real world conditions at the site.

Third, although new model runs use a data run from 2007 to 2010 in lieu of the original compromised data run from 2006 to 2009, which we criticized in its comments on the DEIS. It is not clear from the referenced report if the data run used by JBR had any missing data, and how that was handled other than to note the existence of data imputation and missing data procedures of Appendix W, the guideline document for AERMOD. Thus, problems of possible improper data imputation procedures for missing data characterizing the original data run potentially remain.

Fourth, we noted in our previous comments that the entire characterization of the site from a meteorological and climatological standpoint was deficient and non-representative because a single monitoring site was used to represent the entire project site. (SSSR et al. at 125-134.) Earlier modeling used data from this single site which was at ground level, and did not consider that the dry stack disposal pile would have erosion-based emissions at higher elevations, nor various complexities in the terrain and geography of the project site. The current run of data suggests use of the same site with no indication in the FEIS that revised modeling required consideration of more than one sampling site. Therefore, serious doubts remain as to whether the revised data run uses data representative of the site, and thus there are doubts of the scientific credibility of any data runs used in the revised AERMOD simulations.

Fifth, the modeling continues to use inappropriate reference sites for the selection of background data on NAAQS and meteorological parameters for the Rosemont site because Rosemont's consultants only measured one NAAQS parameter, PM10, and restricted its

meteorological measurements to wind speed and temperature, and only later added humidity. The modelers then had to use data from reference sites. The number of such sites which might provide background data which would parallel the data situation expected of the background at the Rosemont site were few and at great distances from the Rosemont site. The comments in the FEIS that updated background data where available were used has little credibility in view of failure to correct these past deficiencies.

Sixth, AERMOD as a platform cannot handle extreme value statistical situations. Thus, the modeling cannot address the several recent events in Pima County related to severe wind induced dust storms, nor the fact that erosion of the dry stack at the altitudes associated with the project typically show much higher wind velocities as noted in adjacent federal lands, than are used in the analyses.

Seventh, AERMOD as a modeling platform cannot handle either chemical reactions or aerosols. However, since the USFS must assure that modeling does not result in a problem of pollutant exceedances at the property fence line and receptors like national parks and forest lands of a Class I area, modeling of aerosols is needed. The chemical reaction situation applies mainly to ozone reactions and generation at specific receptors. This would be important in understanding how Rosemont emissions affect ozone levels at Tucson air quality monitoring locations in addressing possible violations of the NAAQS standard for ozone.

Eighth, the protocol on air quality dispersion, transport and effects modeling should have required considerable expansion because AERMOD can only handle one data run at a time. If more than one site had been studied for its meteorological and climatological behavior, as is appropriate given the terrain complexity, among other factors, the protocol would have required an analysis scheme to evaluate the findings of all of the AERMOD runs for the different sampling locations in order to address the dispersion, transport and effects modeling outcomes and their interpretations.

Ninth, there was no clear evidence that USFS was even aware that the USEPA released a new version of AERMOD in December 2012, nor that the release carried a warning that users of AERMOD engaged in current modeling may have to reevaluate all the meteorological data and rerun all of their modeling in the light of this new release. This would affect any modeling which was required and submitted at the end of year 2012 and into year 2013.

Suggested Remedies: The USFS must provide a new analysis that measures the background of all NAAQS parameters at the site and that addresses deficiencies in establishing the representativeness of the climatological and meteorological characterization of the Rosemont site. The USFS must use other models to examine the aerosol and chemical reaction possibilities of these pollutants. The USFS must present this information in a revised DEIS that is made available for public review and comment.

14. The FEIS explanation for the revised CALPUFF modeling fails to correct problems that were identified previously, including inappropriate input data; additionally, the deposition analysis was not sufficiently thorough.

Our previous comments on the DEIS detailed problems in using CALPUFF in the DEIS. (*See* SSSR et al. at 21-36.) In the FEIS, the USFS made comments about revising protocols for CALPUFF and directing new studies with this modeling platform in a manner similar to that for AERMOD. (*See* FEIS at 217.) With respect to the specific modeling with CALPUFF, the

FEIS indicated: "After receipt of additional modeling submitted to the Coronado, it was determined that the restart options in the CALPUFF modeling had not been set to the preferred settings. At the request of the Coronado, a sensitivity analysis was developed cooperatively with Rosemont Copper's consultant to determine the relative impact of revising the restart option in CALPUFF. The sensitivity analysis consisted of examining one of the months that is likely to have the greatest impact from the potential restart issue. Ultimately, the annual Barrel Alternative emissions scenario was remodeled for that month (August) of the 2001 meteorological year. While the results of the sensitivity analysis indicated a slight increase in the modeled criteria pollutant concentrations as well as the deposition and visibility impacts, it was determined by the Coronado that the results did not warrant a full rerun of the modeling for the Barrel Alternative (see the "Projected Effects on Deposition of Sulfur and Nitrogen on Class I Areas" part of this resource section, as well as table 51)." (*Id.*) **Please Note**: Objection numbered 21 below makes additional criticisms of the CALPUFF modeling.

First, does the FEIS mean year 2001 or 2010 or 2011 or what were the forecast "observations" from MM5?

Second, the comment in the last line of the quoted material makes no sense. It is unclear from what was described by the EIS what the implications would be for a full rerun of the modeling for Barrel Alternative except for the time involved or monies spent on the simulation.

Third, the Rosemont simulations with CALPUFF suffered from several problems including data management and handling, inappropriate choices of data sources for background meteorological data – especially not using precipitation data from the RAWS network, incorrect choices of data on albedo and cloud cover. The revised CALPUFF modeling still has not corrected basic problems cited with the original modeling, although the data situations are different.

Fourth, the FEIS uses several descriptor terms for deposition of chemicals on Class I area lands in conjunction with CALPUFF modeling to characterize the numerical levels of specific deposition parameters. These were: the "deposition analysis threshold," the "critical loads," and the "incremental deposition." These descriptors are new information not previously subject to public comment or discussion. (FEIS at 276.) Yet even here the CALPUFF modeling showed that the favored Barrel Alternative of the EIS did not prevent the nitrate levels deposited in Class I protected areas of National Parks and Forests from exceeding these "deposition analysis thresholds" for nitrate deposition.

Fifth, a problem with "deposition analysis levels," or what EPA groups have equivalently called "pollution alert levels," which the FEIS fails to discuss, is that they have no regulatory status. They simply become points for continued observation, and are used in <u>the absence of</u> regulation. This means that even if environmental levels occur that are known to cause adverse effects, the regulatory scenario is very limited, and only limited management and administrative remedies <u>might</u> be available.

Sixth, the CALPUFF modeling was used to assess incremental deposition values. The basis for this application is unclear. The FEIS lacks statistical, chemical or biological arguments and analyses to show that this parameter has predictive value or warning value as to exceeding depositional analysis thresholds or critical loads, nor is it clear that the parameter and

measurements can support scientifically management decisions or conclusions about deposition problems.

Suggested Remedies: The USFS must fix the continuing problems with CALPUFF and present this information in a revised DEIS that is made available for public review and comment.

15. The new VISISCREEN information is likely flawed because the analysis is based on the flawed AERMOD and CALPUFF analyses; in addition, the VISISCREEN analysis is new information, which requires public review and comment in a revised DEIS.

The FEIS discussion of simulations using the Visiscreen modeling represent new information not previously available for public commentary since the earlier release of the DEIS. The FEIS cites new work with the Visiscreen model to relate opacity and visual reduction at a receptor to specific air contaminant levels at that receptor. Since the modeling depends on and correlates outputs from previously discredited applications of AERMOD and CALPUFF, there is no confidence that the Visiscreen applications will not reflect the problems related to the other models. Nevertheless, this modeling also shows that even under the conditions associated with poor modeling, opacity and visual reduction levels are serious in Class I areas.

Suggested Remedies: The USFS must present the new information regarding Visiscreen in a revised DEIS that is made available for public review and comment.

16. The FEIS fails to properly and adequately model PM10 concentrations at points relevant to determining whether Pima County will be in non-attainment and to evaluate the reasonably foreseeable consequences of non-attainment; additionally, the FEIS fails to outline mitigation measures to ameliorate the consequences of PM10 NAAQS exceedances in Pima County.

In our previous comments we noted problems with respect to events and considerations which have caused parts of Pima County to show air pollution exceedances of particulate matter and carbon monoxide, and which have led Pima County to its initial decision to deny the air quality permit, which was later issued by ADEQ after ousting the County from jurisdiction over the permit. (*See* SSSR et al. at 27, 30.) In response, the FEIS notes:

> "Comments from cooperating agencies suggested that the potential for the mine to contribute to non-attainment for PM10 status should be analyzed in some manner. Current maximum PM10 concentrations observed in the Tucson area are summarized in table 34 and range from 79 to 146 $\mu g/m^3$. Concentrations of PM10 resulting from the mine have not been modeled at these specific points. However, concentrations modeled at the boundary of Saguaro National Park East have been and can be used as a rough approximation of concentrations some distance from the mine. PM10 concentrations at the boundary of Saguaro National Park East range from 1.9 to 3.7 $\mu g/m^3$, depending on the alternative (table 46). For the Barrel Alternative, which is the only alternative that meets NAAQS at the fence line, the modeled PM10 concentrations at Saguaro National Park East range from 2.2 to 2.8 $\mu g/m^3$. The NAAQS for PM10 is 150 $\mu g/m^3$.

> "A simple calculation suggests that the contribution from the Rosemont Copper Mine would not trigger non -attainment status. Like any emission source large or small, the Rosemont Copper Project would contribute to regional air quality, and emissions from the Rosemont Copper Mine would slightly increase the risk for nonattainment. It would not be appropriate to state, however, that Ro semont Copper would be responsible for or cause non-attainment should it happen, as current levels observed in at least one monitoring station are already close to the NAAQS."

(FEIS at 264.)

First, why were concentrations not modeled at specific Tucson points which have previously shown elevated PM10 levels? Data from these specific locations can trigger the non -attainment status.

Second, The use of the surrogate distance to Saguaro National Park does not have any credibility with respect to approximating impacts at the locations not chosen in the previous item because of the different kinds and larger number of sources of air pollutant emissions that impact the locations where modeling should have been included.

Third, the highest value of 146 $\mu g/m^3$ has an inherent statistical uncertainty of nearly an order of magnitude, because the formulas used to make this estimate have a logarithmic basis. Thus, a reasonable <u>minimum</u> uncertainty range is ± 10 $\mu g/m^3$, and that value creates a real likelihood that particulate emissions from the Rosemont site would carry the numbers over the 150 $\mu g/m^3$ standard in the NAAQS. Statistically, this could happen with as high as an 80% probability. However, neither ADEQ, nor Rosemont, nor the FEIS has looked at the uncertainties associated with any of the estimated numbers.

Fourth, if Rosemont emissions are followed by a determination of a non-attainment status in Pima County, then USFS has permitted a violation of the Clean Air Act. While the FEIS makes the statement, "It would not be appropriate to state, however, that Rosemont Copper would be responsible for or cause non-attainment should it happen ...," the USFS will be hard pressed to defend it.

Fifth, when non-attainment occurs, the State Implementation Plan for air pollution is invoked. The FEIS does not consider the impact of this change of regulatory environment on its decision to support the proposed mine project.

Sixth, the modeling of particulate levels at Saguaro National Park East do not appear to consider dust storms that have occurred in recent years produced by winds with speeds of up to 40-60 mph. While these may be unusual or extreme conditions, if they occur more than ten days of the year, they become of concern as recurring rare events. If they occur over 36 days of the year, they are no longer statistically extreme events but part of the regular data statistical distribution for those data.

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Seventh, based on the previous five items, the second paragraph of the quoted material from the EIS is incorrect. Rosemont Copper can create the non-attainment status, and the FEIS must acknowledge this.

Eighth, the FEIS has indicated that, with the ADEQ class II permit having been issued, its analysis with respect to air quality permit issues and controls are not relevant in the FEIS. However, given the likelihood of the Rosemont project causing a non-attainment situation, as noted above, the USFS must now specify mitigating measures to reduce air pollution emissions further, including augmenting proposed mitigating measures in the air quality permit, as a condition of its approval of the Rosemont project.

Suggested remedies: The USFS must rerun the modeling using higher levels of wind speeds and a frequency analysis of the high wind events to determine whether the project will cause NAAQS exceedances or trigger non-attainment for any criteria pollutant. If the rerun results confirm the likelihood of the Rosemont project causing a non-attainment situation, the USFS must provide mitigating measures in the project approval to prevent this; otherwise the project will be in violation of the Clean Air Act.

17. The FEIS fail s to evaluate the issue of non -attainment of air quality areas in its cumulative effects analysis.

The possibility of triggering non-attainment areas is a readily foreseeable event and subject to cumulative analysis evaluation under NEPA. Non-attainment will trigger in turn the enforcement actions under the State Implementation Plan, which will have major economic consequences for all air pollution sources in Pima County. All sources of the non-attainment pollutant would have to modify their current control procedures to reduce even further their emissions.

Suggested Remedies: The USFS must evaluate the issue of non-attainment of air quality areas in its cumulative effects analysis and present this information in a revised DEIS that is made available for public review and comment.

18. The FEIS fails to address the inability of the single meteorological station to provide complete met data and the poor quality of the observed data.

a. Previous comments pointed out that the instrument packages for an on-site meteorological station were partially protected by current geological features which are destroyed during operations and not adequate to quantify the met conditions over the complex terrain of the large project area. The data sampled from this station are not representative of the meteorology of its location The southern and eastern portions of the project area were not monitored, and it is likely that the wind speeds and gusts across these portions of the site are higher than those used to drive AERMOD. (SSSR et al. at 127.)

The FEIS merely commented that the foregoing statement was a public concern and that the CNF should revise the air quality analysis to include project-area-specific wind data that incorporates the impacts of canyon topography as well as any prevailing winds. The FEIS stated that the air quality analysis has been revised by Rosemont revising the modeling protocol. (FEIS Appendix G at 27.)

The FEIS fails to respond to the specific criticism regarding the inability of the single on-site met station to provide complete and adequate data. Referring to air quality modeling protocols

is an inadequate response that entirely misses the point.

Suggested Remedies: (1) Install separate weather stations at key locations and various elevations to fully and accurately document the meteorology of the 5,888-acre site (total acres to be disturbed per Draft ROD at 2) ranging in elevation from 4800 ft. to 6500 ft.; (2) install and operate on-site a wind-profiler, or tether sonde, in order to completely categorize the project area meteorology. The data gathered from the additional weather stations and the wind profiler should be made available for public review and comment in a revised DEIS.

b. The air quality modeling program allows the user to partition complex sites, such as the Rosemont project area, into sectors to allow more precise specification of the surface characteristics. Rosemont's consultants did NOT do this. Air quality modeling did not determine more accurate, site-specific conditions, a serious flaw within the modeling effort given the very complex character of the Rosemont project area. (SSSR et al. at 129-130.)

The FEIS provided only generalized comments regarding revisions to the air quality analysis and a revised modeling protocol. (FEIS Appendix G at 27). The FEIS fails to address the sheltered nature of the Rosemont weather station and its impacts on air quality modeling.

The Objection is that wrong AERMOD parameter settings were unchanged in the additional new modeling to support the FEIS. The terrain elevation changes dramatically between the Rosemont met station and the Santa Rita Mountains ridgeline, which is less than 1 km to the west of the met station and is the direction from which some prevailing winds blow. Surface roughness should have been determined for at least two sectors. Since the AERMOD results are strongly impacted by the values defined for surface roughness, the failure to account for varying surface roughness makes the AERMOD results unreliable, useless, and irrelevant.

Suggested Remedies: The invalid modeling results must be rejected, and the AERMOD model runs should be redone incorporating the correct parameters for surface roughness. Install weather stations at key locations and at various elevations to properly and fully document the surface winds that occur over the project area. The new data developed as a result of collecting observations from the additional weather stations, including documentation of the surface winds over the entire project, should be made available for public review and comment in a revised DEIS.

c. The meteorological parameters observed at the Rosemont site were inadequate to support air quality modeling. On-site relative humidity, station pressure, solar radiation, and pan evaporation were estimated using distant observational data that were not likely representative of the Rosemont site. There was no explanation or reference for determining how the later-added pan evaporation data was determined.

Suggested Remedies: The project site should be properly monitored for at least a year with upgraded sensors and new data used within corrected AERMOD forecasts. The new data developed in response to this issue should be made available to the public for review and comment in a revised DEIS.

d. The quality assurance plan (prepared by Rosemont's consultants) for the on -site weather station and its data collection was not followed consistently.

Additionally, the six -month audits were done by Rosemont consultants, rather than by an "independent" entity, as required by EPA guidelines.

The site logs for the met station indicates that the required checks were not made for periods of three weeks, up to two months, during 2011. The May 23, 2011, entry, the final entry, indicates that the met station had been vandalized.

Suggested Remedy: The FS should require a new round of on-site met observations, consistent with the Quality Assurance Plan, and the audits should be conducted by an independent entity, as required by EPA guidelines. Both the new data and the independent audits should be made available for public review and comment in a revised DEIS.

e. Comments on the DEIS note deficiencies in the meteorological data used by Rosemont and accepted by the USFS to support air quality modeling. Rosemont blended actual meteorological observations with the three years of model forecasts. The used for the actual data from distant sites likely not representative of the Rosemont site. (SSSR et al. at 23.)

The FEIS does not respond to these Issues. The Objection is that the FEIS failsto respond to the foregoing issues.

Suggested Remedies: The project site should be properly monitored for at least a year with upgraded sensors and new data used within corrected AERMOD forecasts. The new data developed in response to this issue should be made available to the public for review and comment in a revised DEIS.

f. The perimeter buttress around the waste rock tailings facility to be used to break up air flow, reduce exposure of the tailing facility, and minimize particulate emissions from wind erosion was not mentioned in the DEIS. (FEIS at 225)

The FEIS references provided no technical information. A proposed buttress to reduce wind speeds across the entire extent of the proposed dry stack tailings would have to be 150 ft. tall. A buttress of lesser height would increase turbulence and particle scouring from tailings at distances on the stack beyond ten times its height.

Suggested Remedies: (1) Provide technical data to explain and justify the need and effectiveness of this new mitigation proposal; (2) redesign the buttress. Either the technical data or the re-designed plan for the buttress, or both if applicable, must be made available for public review and comment in a revised DEIS.

g. Wind data completeness is not clearly and consistently stated within the FEIS and newly updated modeling protocol documents. Site logs for the met station indicate data logger failure on 9/7/07, but no indication how much data was lost.

The FEIS and the Rosemont consultant (JBR) reports are inconsistent regarding what surface data was actually used in the FEIS and what the data completeness was. Figure 39 on page 237 of the FEIS, showing a wind rose, indicates that 23 hours of data were lost in 2008, but the December 2012 JBR report indicates that only nine hours of data were lost during the three-year period of AERMOD modeling work. There is no explanation for this inconsistency of data relevant to the evaluation of the project.

Suggested Remedies: Explain and resolve the data accounting inconsistency in a revised DEIS to allow for public review and comment on this issue.

19. In describing sources of dat a for the evaluation, the FEIS is inaccurate and incomplete.

a. Comments made on the DEIS pointed out inappropriate use of other existing meteorological sites outside that are not representative of the Rosemont site. (SSSR et al. at 127-128.) The FEIS did not respond directly to these concerns, particularly concerns about the ASOS limitations described below or the concerns about the relevance of the off-site observational data used by Rosemont's consultants.

The following sites were used:

Santa Rita Expe rimental Range: eight miles southwest of the project area and at a lower elevation than the Rosemont site (4,350 ft. vs. 4,800-6,500 ft.).

Nogales: 30 miles south -southwest of the project area and at a substantially lower elevation (3,560 ft.).

University of Arizona: 30 miles north -northwest of the project area and at a substantially lower elevation (2,440 ft.).

Helvetia: three miles west of the project area and at a lower elevation (4,300 ft.); also, data is completely unreliable and irrelevant beca use the site has been out of operation for more than 60 years.

Canelo 1 NW: 24 miles south-southeast of the project area.

Tucson Airport, National Weather Station (NWS) automated surface observing system (ASO2: 25 miles north -northwest of the project a rea and at a substantially lower elevation (2,641 ft.).

NWS site, University of Arizona campus: 30 miles north -northwest of the project area and at a substantially lower elevation (2,464 ft.).

These sites are mostly west of the Santa Rita Mountains and in the large-mesoscale, meteorological regime of the Santa Cruz River watershed. Canelo, located 24 miles south-southeast of the project area, is in the western foothills of the Huachuca Mountains and is not in the mesoscale wind circulation regime of the Cienega watershed; Canelo is located in the upper watershed of the San Pedro River.

The Tucson Airport ASOS equipment is located near the runways of Tucson Airport and in a much drier climate regime than the Rosemont project site. Cloud cover, which is an important variable for the AERMOD and CALPUFF modeling, is significantly different than that at the Rosemont project area because the Tucson Airport site has a lower annual rainfall and is significantly distant from the Rosemont site. The cloud-cover data from the Tucson Airport site used in the modeling is not representative of the Rosemont site. Furthermore, since there were no solar radiation data taken at the Rosemont site, the model results contain unestimated

uncertainties, which make the modeling results unreliable. Given the complex terrain of the Rosemont site compared to the relatively level terrain at the Tucson Airport, the significant difference in elevations, and the distance between the Tucson Airport and the Rosemont site, the upper-air data used in the modeling is likely not representative of the Rosemont site.

In the middle of data collection for the modeling, the NWS upper-air balloon launch site was moved from the Tucson Airport (desert environment) to the University of Arizona campus (urban environment), but the changed base data was not incorporated into the AERMOD and CALPUFF modeling, resulting in flawed, heterogeneous upper-air data sets. Further increasing the inherent unreliability of the model forecasts set forth in the FEIS.

Suggested Remedies: (1) Incorporate regional weather data observations from all available and relevant surface observation sites within southeastern Arizona, include Regional Automated Weather Stations (RAWS), other NWS stations, and the Pima County ALERT network; (2) collect appropriate on-site observational data, outlined above, to compare against off-site observational data. The revised analysis must be made available for public review and comment in a revised DEIS.

b. Comments on the DEIS noted that the interagency, RAWS observation program and the nearby RAWS stations actually provide the closest and most comprehensive surface observations available. Rosemont incorporated none of the RAWS data into CALMET. The RAWS data should have been used in the visibility modeling because several RAWS stations have locations in or near Class I areas. (SSSR et al. at 23.)

The RAWS sensor suite, particularly including the RAWS stations near the Rosemont site, contains all relevant, appropriate, and necessary equipment to determine conditions near the Rosemont site. The Empire RAWS station is the closest surface observing site, located seven miles east-southeast of the Rosemont site, and is the only RAWS station in the critical Cienega watershed; it is also located at an elevation of 4,650 ft., which is the nearest elevation to the Rosemont site. The Hopkins RAWS station (7,120 ft. MSL), 13 miles south-southwest of the Rosemont site, and the Rincon RAWS station (8,240 ft. MSL), 28 miles north-northeast of the Rosemont site, provide the only surface-based meteorological observations near the Rosemont site that are at a higher elevation than the Rosemont met station (5,350 ft. MSL), and, because of the complex terrain at the Rosemont site, provide better and more relevant data than observations from distant sites at a significantly lower elevation.

The FEIS only peripherally referred to these comments, and they were stated as a public concern only in context of not being input into the CALPUFF modeling procedures. The FEIS and Rosemont reports completely fail to address the critical omission of the RAWS data relative to the modeling and air quality analysis.

The Objection is that the surface observations from both the nearby and regional RAWS stations were not included in the air quality and visibility (CALPUFF) modeling in the FEIS.

Suggested Remedies: Incorporate regional RAWS weather data observations from all available observation sites within southeastern Arizona into corrected runs of the AERMOD and CALPUFF model. AERMOD must be run for each separate set of observation from the multiple observing sites. The revised AERMOD and CALPUFF modeling analysis must be made available for public review and comment in a revised DEIS.

20. The FEIS used inappropriate value s for key parameters in the AERMOD model analysis.

a. Before running the AERMOD model, the user must specify the surface and precipitation character of the project site near the met station. Rosemont used the EPA AERSURFACE User's Guide, but the parameter settings were inappropriate.

The FEIS wrongly implied that the concerns were addressed by protocol revisions in the final Rosemont modeling.

The Objection is that the inputs used by Rosemont were incorrectly done and show that the Rosemont consultants were inexperienced with AERSURFACE and likely had not visited the Rosemont site. The choices made to set up the key parameters were completely inappropriate for the Rosemont site. The botched AERMOD parameter settings remained unchanged in all additional modeling done to support the FEIS, resulting in completely unreliable, usefless, and irrelevant modeling results.

Suggested Remedy: The invalid modeling results must be rejected, and the AERMOD model runs should be redone correctly. The revised modeling must be made available for public review and comment in a revised DEIS.

b. The surface character of the site was incorrectly set at shrub land-arid for all seasons.

The FEIS wrongly stated that this concern was addressed by protocol revisions in the final Rosemont modeling.

The land surface character data linked to AERSURFACE are NLCD92 and indicate that the site is both shrub land and interspersed evergreen forest. The simple default settings used by Rosemont indicate that the site is low-elevation arid desert, which is absolutely not the case, as any competent individual who has visited the site would know immediately. Recent information indicates that Rosemont will harvest 300,000 juniper and oak trees from the site, which is not possible on desert shrubland. The botched AERMOD parameter settings were unchanged in all subsequent modeling done to support the FEIS, resulting in completely unreliable, useless, and irrelevant modeling results.

Suggested Remedy: The invalid modeling results must be rejected, and the AERMOD model runs should be done incorporating the correct settings for land surface. The revised modeling analysis must be made available for public review and comment in a revised DEIS.

c. DEIS comments pointed out that Rosemont that generalized, U.S. seasons were used in air quality modeling. (SSSR et al. at 131.) The FEIS wrongly implied that these criticisms were addressed in the protocol revisions for the final Rosemont modeling.

The summer monsoon (July-September) and the pre-monsoon hot and very dry period (April-June) are not standard U.S. seasons pursuant to the U.S. season definitions in AERSURFACE. Rosemont should have run AERMOD for each month in the data set or defined appropriate seasons for the site, which options are allowed by AERMOD. Nonetheless, the wrong AERMOD parameter settings remained unchanged in the new modeling done to support the FEIS, resulting in unreliable, useless, and irrelevant modeling analyses.

Suggested Remedy: The invalid modeling results must be rejected, and the AERMOD model runs should be done incorporating the correct seasonal settings. The revised modeling analysis must be made available for public review and comment in a revised DEIS.

d. The FEIS indicates that the entire year at the Rosemont site was incorrec tly and improperly defined to be arid.

e. The FEIS incorrectly implies that this concern was addressed by protocol revisions for the final modeling.

The Objection is that the incorrect parameter settings for the entire year as arid were unchanged in all additional new modeling. Rainfall data presented in the FEIS (Table 10 on p. 325) indicate that the site experiences one wet period each in the summer and in the winter, with arid conditions the other months. The summer monsoon is very wet, and rapid greening occurs as grasses on the site grow rapidly.

Suggested Remedies: The invalid modeling results must be rejected, and the AERMOD model runs should be done incorporating the correct parameters for surface roughness. The revised modeling analysis must be made available for public review and comment in a revised DEIS.

f. Rosemont failed, in utilizing AERSURFACE, to define sectors to determine the surface roughness accurately within 1 km of the observing site.

The FEIS incorrectly implies that this concern was addressed by protocol revisions for the final modeling.

Suggested Remedies: The invalid modeling results must be rejected, and the AERMOD model runs must be re-done incorporating the correct parameters for surface roughness. The revised modeling analysis must be made available for public review and comment in a revised DEIS.

Overall, the modeling results are not valid for the Rosemont site and must be rejected. Because of the non-linear character of AERMOD, the impact of the bad parameter settings (i.e., those related to seasons, landscape type, surface moisture, Albedo, Bowen Ratio and Surface Roughness) cannot be evaluated piecemeal. The parameters must **all** be set properly before any new AERMOD forecasts can be done. The most desirable remedy would be new air quality forecasts from a more advanced model.

g. In DEIS comments, it was noted that the actual Bowen Ratios used by Rosemont appear to be seriously flawed. (SSSR et al. at 134.) The FEIS incorrectly implies that this concern was addressed by protocol revisions for the final modeling.

The Objection is that the wrong Bowen Ratios were unchanged in the additional new modeling to support the FEIS. Neither Bowen Ratio used by Rosemont is appropriate for the Rosemont site. The lowest Bowen Ratio should occur during the summer monsoon, and the highest Bowen Ration (approaching a value of 10) should occur during the hot and dry pre-monsoon months. Table 1 in the Maddox DEIS comments indicates that Rosemont chose a Bowen Ratio of 2.88 for the hot and dry spring months when the actual Bowen Ratio should be close to 10. As noted, the final modeling left unchanged the incorrect Bowen Ratios. Since the AERMOD results are strongly impacted by the values defined for the Bowen Ratios, the modeling results

are unreliable, useless, and irrelevant.

Suggested Remedy: The invalid modeling results must be rejected, and the AERMOD model runs must be redone incorporating the correct Bowen Ratios for the different seasons. The revised modeling analysis must be made available for public review and comment in a revised DEIS.

h. In DEIS comments, it was noted that the albedo has been set to a constant 0.25 throughout the year – implying that the surface character does not change during the year. This is certainly not accurate. (SSSR et al. at 131.) The FEIS incorrectly implied that this concern was addressed in the protocol revisions for the new additional modeling.

The Objection is that the FEIS wrongly accepted a constant albedo throughout the year. The albedo is not constant at the site through the course of the year. The monsoonal greening that occurs regionally over southeastern Arizona (distinct changes in surface albedo) is well-documented in the scientific literature. AERMOD results are strongly impacted by the values defined for albedo. The FEIS acceptance of incorrect albedo settings resulted in unreliable, useless, and irrelevant modeling analyses.

Suggested Remedies: The invalid modeling results must be rejected, and the AERMOD model runs must be done incorporating correct albedo data for the various seasons. The revised modeling analysis must be made available for public review and comment in a revised DEIS.

i. The AERMOD modeling was redone to support the FEIS; this re-working of information presented in the DEIS means that a revised DEIS must be prepared for public review and comment on the new modeling analyses. The AERSURFACE User's Guide indicates that surface moisture conditions at the site must be determined relative to climatological norms. If the surface conditions vary during the data period to be processed, AERSURFACE should be applied multiple times.

The FEIS indicates that Rosemont ran AERMOD with the rainfall for all months of the three-year data period set to "average" (plus or minus 30% relative to long-term climatological value for the appropriate standard U.S. seasons). As noted above, the Rosemont site can not be compared to "standard U.S. seasons." Thus, the surface moisture conditions that are used must reflect actual conditions, not a theoretical norm based upon inapplicable assumptions.

Suggested Remedies: The invalid modeling results must be rejected, and the AERMOD model runs must be done using appropriate surface moisture conditions. The revised modeling analysis should be made available for public review and comment in a revised DEIS.

21. The FEIS wrongly accepted CALPUFF modeling using incorrect and inappropriate modeling procedures.

a. Comments on the DEIS noted that Rosemont consultants began with easily available model forecast data for the years 2001, 2002, and 2003, but these forecasts were all made using a computer routine in *sufficiently slightly different* configurations for each year to question whether these data can be used as a continuous homogeneous time series. The forecasts for 2001 and 2003 were made on a 36-km grid; whereas, the 2002 forecasts were made on a 12-km grid. Thus, the model "observations" used as air quality modeling input for were an *inhomogeneous data* set. The 12 km MM5 forecasts were evaluated and it was noted that the

forecasts were better for winter than summer; over the Southwest the amplitude of the summer, diurnal temperature cycle was consistently underestimated by the model forecasts; in the Southwest the humidity was "greatly overestimated" in summer; and finally, the model forecasted excessive amounts of summertime rainfall over the Southwest. It was pointed out that the over-forecast of rainfall can have "serious repercussions" for air-quality modeling, due to excessive "wash out" of pollutants. (SSSR et al. at 134.)

Although this comment was noted in the FEIS, the FEIS failed to respond and address the concern. The FEIS wrongly implied that it had addressed this issue, but it had not.

Although EPA prefers that CALPUFF modeling be done using data from the most recent five-year period, EPA will accept a shorter three-year period when mesoscale models are used. The acceptability of three years of MM5 prognostic data must be established through a demonstration of statistical comparisons with observations of winds aloft and surface observations. There is no indication within the final CALPUFF report that such comparisons of the MM5 predictive, pseudo-observations were made with observations from southeastern Arizona.

Suggested Remedies The USFS should require Rosemont to do statistical comparisons between the MM5 forecast observations and actual observations (including RAWS and other sites within the CALPUFF domain) for 2001-2003, and the analysis should be provided in a revised DEIS for public review and comment.

b. As noted in the previous objection, DEIS comment noted that are quality modeling utilized old version of the MM5 (PSU/NCAR) model at coarse resolution. The 2001 and 2003 forecasts were made on a 36-km grid, whereas the 2002 forecast were made on a 12-km grid. All of the problems with modeling increase at the coarser model grid spacing used in 2001 and 2003 model forecasts. (SSSR et al. at 23.)

The FEIS wrongly stated that this concern was addressed in the revised model protocols. Although th is issue was listed as a "concern," the FEIS did not address and respond to the comment.

The forecasts produced by CALMET/CALPUFF were for a completely different three-year period than were the AERMOD forecasts. The resolutions of these forecasts were too coarse to resolve the complex terrain of the project site. The model "forecasts" used as input for CALMET were from an inhomogeneous, low-resolution data set. The result is that the air quality model evaluations contained additional uncertainty, rendering them unreliable.

Suggested Remedies: The USFS should require Rosemont to use high-resolution, mesoscale model forecasts from April 2007 through March 2010 to provide proper input "observations" for CALMET/CALPUFF, and the revised model evaluations should be included in a revised DEIS for public review and comment.

c. As noted in a previous objection, Rosemont began with easily available model forecast data for the years 2001, 2002, and 2003, but these forecasts were all made using a computer routine in *sufficiently slightly different* configurations for each year to question whether these data can be used as a continuous homogeneous time series. The forecasts for 2001 and 2003 were made on a 36-km grid; whereas, the 2002 forecasts were made on a 12-km grid. Three

years of model forecasted winds used in CALMET were too coarse in resolution to represent the Rosemont site. (SSSR et al. at 22.)

The FEIS briefly noted this issue as a public concern and wrongly implied that it had been addressed in modeling protocol revisions. This issue was not addressed in the FEIS.

The Objection states that the coarse resolution of the wind forecasts inadequately characterized the Rosemont site. At the 12-km resolution, the forecasted low-level winds were not particularly good due to small-scale terrain effects. The coarser 36-km grid spacing used for 2001 and 2003 likely worsened the problem. Statistical evaluation against actual wind observations should have been, but were not, done by Rosemont. The FEIS failed to identify this problem and require its correction in order to provide accurate and relevant data.

Suggested Remedies: The USFS should require Rosemont to use accurate MM5 forecasts for rainfall. The revised analyses should be provided in a revised DEIS for public review and comment.

d. As noted in a previous objection, the air quality modeling Rosemont used over-forecast of rainfall that can have "serious repercussions" for air-quality modeling, due to excessive "wash out" of pollutants. (SSSR et al. at 22.) This issue was noted briefly in the FEIS as a "public concern," but this specific issue was not addressed by the FEIS.

The Objection is that the MM5 forecasts for rainfall were inaccurate. The forecasts were better for winter than for summer, where the model forecasts produced excessive amounts of summertime rainfall over the Southwest. Over-casting rainfall can cause significant errors in air quality modeling due to excessive "wash-out" of airborne pollution.

Suggested Remedies: The USFS should require Rosemont to use high-resolution mesoscale model forecasts from April 2007 through March 2010 to provide consistent input "observations" for CALMET/CALPUFF. The revised modeling analysis should be made available for public review and comment in a revised DEIS.

e. As noted in DEIS comments, Rosemont used a combination of model-produced psuedo-observations blended with actual, real-world observations for data inputs into its air quality modeling. EPA guidance shows a preference for modeling using data from the most recent 5 year period, but the consultants used a different approach. They used only 3 yrs of data – 2001, 2002 and 2003. (SSSR et al. at 22.)

As with other criticisms, the FEIS briefly alluded to this issue as a public concern, but the FEIS, although it assumed that the issue was addressed in revisions to the model protocols, did not specifically address this issue, as required.

This Objection restates the 2003 EPA guidance and potential cautions for potential users of air quality forecast models. EPA identified several specific cautions, including the meteorological and topographic complexities of the source area and the detail and accuracy of the data base, particularly the meteorological data. If appropriate, detailed, and precise data is not available, the model should not be used. The extensive problems identified above regarding the input data, the settings, and the modeling process demonstrate that the modeling analyses were not properly done, and, because of this failure, the results of the modeling are unreliable, if not

useless and irrelevant.

Within the large CALMET domain, surface meteorological observations from only four stations and precipitation data from only seven stations were blended with the model forecast data. This is an insufficient data set. None of the RAWS data were incorporated into CALMET, and it should have been. The CALPUFF report provides information on the weighting-function settings used to blend actual observations with the MM5 model predicted observations, both aloft and at the surface; this indicates that large portions of the CALMET domain were dominated by the crude-resolution MM5 model forecasts (*see* Objection #4,b, *supra*), which is inadequate.

Suggested Remedies: The USFS should require Rosemont to use high-resolution mesoscale model forecasts from April 2007 through March 2010 to provide consistent input "observations" for CALMET/CALPUFF. Additionally, all available meteorological observations, including all RAWS sites, should be blended with the model forecast "observations." The revised analysis must be made available for public comment in a revised DEIS.

g. The anlaysis in the DEIS blended too limited surface meteorological data with the model "observations" for 2001-2003.

As with other criticisms, the FEIS briefly alluded to this issue as a public concern, but the FEIS, although it assumed that the issue was addressed in revisions to the model protocols, did not specifically address this issue, as required.

Within the large CALMET domain, surface meteorological observations from only four situations and precipitation data from only seven stations were blended with the model forecast data. This is an insufficient data set. None of the RAWS data were incorporated into CALMET, and it should have been. The CALPUFF report provides information on the weighting-function settings used to blend actual observations with the MM5 model predicted observations, both aloft and at the surface; this indicates that the large portions of the CALMET domain were dominated by the crude-resolution MM5 model forecasts (*see* Objection #4,b, *supra*), which is inadequate.

Suggested Remedies: The FS should require Rosemont to use high-resolution mesoscale model forecasts from April 2007 through March 2010 to provide consistent input "observations" for CALMET/CALPUFF. Additionally, all available meteorological observations, including all RAWS sites, should be blended with the model forecast "observations." The revised analysis must be made available for public review and comment in a revised DEIS.

h. EPA guidelines and cautions regarding modeling were not adequately considered or addressed in Rosemont's air quality modeling efforts, as evidenced by the inadequate modeling analyses included in the DEIS.

The FEIS failed to respond to or address this concern.

The Objection restates the 2003 EPA guidance and potential cautions for potential users of air quality forecast models. EPA identified several specific cautions, including the meteorological

and topographic complexities of the source area and the detail and accuracy of the data base, particularly the meteorological data. If appropriate, detailed, and precise data is not available, the model should not be used. The extensive problems identified above regarding the input data, the settings, and the modeling process demonstrate that the modeling analyses were not properly done, and, because of this failure, the results of the modeling are unreliable, if not useless and irrelevant.

Suggested Remedies: Rosemont's air quality modeling should be rejected and not relied upon by the FS, which should require Rosemont to redo the modeling analyses completely, consistent with the remedies outlined herein, for a consistent period, April 2007 through March 2010. The revised modeling analyses should be made available for public review and comment in a revised DEIS.

h. In the FEIS, at App. G, pp. 25 & 26, the USFS defends the protocol used for the modeling as representing "the best available science." The FEIS contains no evidence or explanation justifying this statement or even how "the best available science" was determined. The Objections detailed above indicate that "the best available science" in fact was not used. The result is that the modeling analyses are flawed and unreliable, if not useless and irrelevant.

Suggested Remedies: As repeatedly noted above, the USFS should reject the Rosemont modeling analyses and require Rosemont to redo completely the modeling consistent with the Objections described above. If the USFS believes that a revised modeling protocol consistent with the Objections previously stated, or consistent with any other revisions, represents "the best available science," the USFS needs to justify and explain this reliance in a revised DEIS available for public review and comment. Alternatively, if the USFS believes that Rosemont's protocol and modeling analyses represent "the best available science," the FS needs to justify and explain this reliance in a revised DEIS available for public review and comment.

22. The FEIS fails to analyze the significant Air Quality Related Values (AQRV) impacts from nitrogen deposition and visibility degradation in Saguaro National Park, a Class I area.

The USFS has not ensured that all critical air quality requirements will be met. For example, immediate visibility and air quality impacts may cease once mine operations end after 25 years, but the effect of these daily impacts during the quarter century of mine operations will extend for generations.

a. Daily mine operations will significantly contribute to adverse nitrogen deposition effects in the Saguaro National Park. The effects of such deposition are cumulative and additive. Once harmful changes begin to occur in an ecosystem, a cascade of negative impacts can follow, and the effects are irreversible and will continue well beyond the life span of the mine. Increases in fire frequency may lead to local extinction of the saguaro cactus. Inadequate or unsuccessful reclamation efforts could result in ongoing wind-blown dust issues in the region. The FEIS does not address the context, severity, and intensity of incremental deposition impacts. There is no analysis that , given the current levels of total nitrogen deposition, which are near the estimated "critical load," and the magnitude of modeled "deposition analysis threshold exceedances from mine operations for all alternatives, the project is predicted to significantly contribute to adverse environmental effects from cumulative nitrogen deposition. Elevated nitrogen deposition favors invasion of exotic and non-native buffelgrass, which will over-run native grasses and increase fuel loading in arid

areas, ultimately increasing fire frequency beyond historic levels. Fire frequency increases risk to cultural resources.

Suggested Remedies: The FEIS, in the cumulative effects, irreversible impacts, and environmental consequences sections, needs to highlight the foregoing increased nitrogen deposition adverse effects in a revised DEIS that must be made available for public review and comment.

b. Mining operations each year will ***cause*** visibility impairment, not just "contribute" to it. The FEIS fails to quantify the extent of such "contribution," leading to the conclusion of "causation," not just "contribution." This visibility impairment will be felt in Saguaro NP based on maximum modeled values.

Suggested Remedies: The FS must quantify visibility impairment in a revised DEIS that must be made available for public review and comment.

23. The FEIS should require additional and enforceable NOx mitigation measures in the Mining Plan of Operations.

a. The ADEQ air permit requires Tier 4 engines on only four haul-trucks purchased after 2014.

Suggested Remedies: ***All*** haul-trucks should be required to have Tier 4 engines.

b. Blasting is the second largest source of NOx emissions, but the FEIS requires no specific mitigation for these emissions. "Best management practices" are required, but these are not described. NOx emissions from blasting could be reduced by the addition of calcium compounds, silicon, and urea to the blasting agent.

Suggested Remedy: The FS should require mitigation for NOx emissions from the blasting process.

24. The Project would not comply with all air quality protection requirements.

As noted herein, the Project would not ensure compliance with all air quality requirements and thus cannot be approved via a Final ROD. In addition to the other examples noted herein of air quality violations, PSD Class II increment values are exceeded under certain scenarios (page 43, Table 45 summarizes modeling results). The PM2.5 increment is predicted to be exceeded for all alternatives for the 24-hour averaging time. In light of the data indicating that PM2.5 increments for the 24-hour averaging time will be exceeded under all alternatives, additional mitigation measures must be reviewed and required for reducing emissions of this criteria pollutant. As noted herein, failure to at least minimize these emissions, let alone prevent their exceedence, is required under federal law.

Table 45 summarizes the air quality modeled impact. There are exceedances of the NAAQS and PSD class II increments for several scenarios, including the Barrel Alternative proposed to be approved (albeit illegally) in the Draft ROD. However, as noted herein, for any scenario chosen, the project should demonstrate that emission reductions and mitigation measures have been taken and shown by modeling to result in predicted values less than the applicable NAAQS or PSD Class II increments.

In the Coronado National Forest's Draft Programmatic EIS for the Revision of the Forest Plan, the agency committed to fully protecting all air quality values. "Regardless of which alternative is implemented, large-scale mining actions on the Coronado, such as **the proposed Rosemont Copper Mine**, **will be managed to mitigate and/or avoid adverse impacts to air quality and to maintain target loads for pollutants that impair visibility and adversely affect ecosystem resources by acid deposition**." Draft Programmatic EIS at 201-02 (emphasis added). http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5440356.pdf. That has not occurred in this case.

The National Park Service Intermountain Region notified the USFS that the Project will violate applicable air quality requirements:

> The Air Resources Division (ARD) of the National Park Service conducted a thorough analysis of potential impacts to the Air Quality Related Values (AQRV's) of the park to which the proposed mine operations would pose a threat. Their findings are that air quality would be measurably degraded at both the east and west districts of the park, both of which are designated Class I airsheds. Specifically, visibility would be further impaired, impacting the experience of more than 650,000 visitors who come to the park and spend approximately $22m annually in the Tucson area. Nitrogen deposition from the mine operation would exceed the ecological critical load threshold, potentially leading to even further alterations of the vegetation communities that the park was established to protect.

August 15, 2013 letter from NPS to Coronado National Forest, at 1 (Cooperating agency comments on Preliminary Administrative Draft Final EIS). http://www.rosemonteis.us/files/cooperator-review/agency-comments/nps-intermountain-region-comments-to-administrative-draft-feis.pdf.

The National Park Service Air Resources Division further stated that:

> Based on the air quality modeling results, the NPS has concluded that the proposed mine operations could result in significant adverse AQRV effects in Saguaro NP from nitrogen deposition and visibility degradation.
> …
> We believe additional NOx mitigation measures should be required prior to approving the Rosemont Mine Plan of Operations (MPO).

http://www.rosemonteis.us/files/cooperator-review/agency-comments/nps-air-division-comments-to-administrative-draft-feis.pdf. NPS July 1, 2013 comments on Preliminary Administrative Draft Final EIS, at 1.

Thus, for the various emissions, effects, and pollutants noted herein, the USFS has not shown that the Rosemont Project, alone and in conjunction with present and reasonably foreseeable future activities/actions, does not have the potential to violate air quality standards and requirements. As such, the FEIS and Draft ROD must be remanded back to the Coronado National Forest and no PoO can be approved until such a showing can be made (with full evidentiary support).

25. Without an adequate, quantifiable cumulative impacts analysis, the FEIS and Draft ROD cannot conclude that the Project would not contribute to air quality violations.

As noted herein, the FEIS admits that neither Rosemont nor the USFS conducted the required analysis of cumulative impacts to air emissions. For example, the FEIS admits that:

> **Sufficient data are not currently available to quantify potential air pollutant emission sources from the foreseeable actions listed above**. Therefore, cumulative impacts from the proposed Rosemont Copper Project and the foreseeable actions are addressed qualitatively. These reasonably foreseeable actions could further degrade air quality in ways similar to the action alternatives, through emissions from surface disturbance, tailpipe and fugitive dust emissions from mobile sources, and point-source emissions from industrial activities.

FEIS at 282 (emphasis added). However, simply stating that the agency did not quantify the potential emissions from these other sources does not excuse compliance with NEPA's mandate to provide "quantified assessment" of these impacts. This error is compounded by the admission that:

> Cumulatively, these foreseeable actions could combine with predicted impacts from the Rosemont Copper Project action alternatives to potentially result in the following:
> • Further additions to the total emissions within Pima County, **which cumulativelycould lead to an exceedance of the PM10 and O3 NAAQS in the Tucson and Saguaro National Park East areas and to the risk of "nonattainment"designation of these areas for PM10 and/or O3**;
> • Further increases to concentrations of other air pollutants in the Tucson and Saguaro National Park areas; and
> • Further degradation of visibility in the Saguaro National Park area.

FEIS at 282.

As noted herein, and in the January 27, 2012 comments, the USFS cannot approve any PoO without assurance that all air quality standards and requirements will be met at all times. Yet, the FEIS here admits that some of these requirements may be violated by the Project's cumulative emissions with other reasonably foreseeable sources. Not only does this violate the agency's substantive environmental protection requirements, it highlights the procedural violations of NEPA. In other words, without knowing the extent of these combined emissions, the agency's statement that the Project will not cause any violation of air quality standards/requirements lacks the requisite evidentiary support and cannot stand.

ADDITIONAL MITIGATION AND MONITORING ISSUES

NEPA requires that mitigation measures be fully reviewed in the FEIS, not in the future. "[O]mission of a reasonably complete discussion of possible mitigation measures would undermine the 'action-forcing' function of NEPA. Without such a discussion, neither the agency nor other interested groups and individuals can properly evaluate the severity of the adverse

effects." Robertson, 490 U.S. at 353. NEPA requires that documents: (1) "include appropriate mitigation measures not already included in the proposed action or alternatives," and (2) "include discussion of . . . Means to mitigate adverse environmental impacts (if not already covered under 1502.14(f))." 40 C.F.R. § 1502.14(f); 40 C.F.R. § 1502.16(h). "Mitigation" is defined as a way to avoid, minimize, rectify, or compensate for the impact of a potentially harmful action. 40 C.F.R. §§ 1508.20 (a)-(e).

Mitigation measures must be discussed with "sufficient detail to ensure that environmental consequences have been fairly evaluated." Robertson, 490 U.S. at 352. The discussion of mitigation measures must also assess their effectiveness. "An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective." South Fork Band Council v. Dept. of Interior, 588 F.3d 718, 726 (9th Cir. 2009). Here, the FEIS failed to provide the required mitigation analysis during the NEPA public review process (including the required effectiveness analysis) for a number of critical resources.

At the outset, the Draft ROD erroneously refused to review an entire category of mitigation measures in violation of NEPA:

> All mitigation and monitoring in the "Forest Service" and "Other Regulatory Agency" categories in appendix B of the FEIS are within the jurisdiction of the Forest Service or other regulatory agency, are nondiscretionary, and are required to be implemented. Rosemont Copper has committed to implementing the mitigation and monitoring in the Rosemont Copper category; however, these items are not within the jurisdiction of the Forest Service or other regulatory agency.

Draft ROD at 30. The FEIS commits the same violation:

> Rosemont Copper Company (Rosemont Copper) has publicly agreed to implement the mitigation and monitoring items under this heading. These include contractual, financial, and other agreements over which the Forest Service and other regulatory agencies have no jurisdiction. The Forest Service and regulatory agencies have no authority, obligation, or expertise to determine or enforce compliance the measures included in this category. They are presented here to facilitate disclosure of currently known mitigation and monitoring and their consideration in impacts analyses. Since the Forest Service and regulatory permitting agencies cannot require implementation of the mitigation and monitoring measures in this category, their implementation is not assured.

FEIS at B-4. The FEIS then goes on to list these mitigation measures, but little, if any details are provided. *See* FEIS at B-91 to B-101. No discussion as to the effectiveness of these mitigation measures is provided at all.

The USFS' position is based on the fundamental error noted herein, that the agency believes it has little to no authority to prevent or mitigate impacts on USFS lands, and no authority at all off of USFS lands. "In order for the Forest Service to require implementation of mitigation, the mitigation must have a direct connection to avoiding, mitigating, or minimizing effects on NFS surface resources. The Forest Service has no authority, obligation, or expertise to determine or enforce compliance with other agencies' laws or regulations." FEIS at Appendix

B-3. "Due to the Forest Service's jurisdictional limitation that mitigation measures can be required only on NFS surface resources, no mitigation measures are proposed that would directly offset the impacts predicted to occur along Empire Gulch (see the "Mitigation and Monitoring" part of chapter 2, and appendix B for further detail)." FEIS at 546.

The agency does not, nor can it legally, explain why it does not have authority to impose these mitigation measures. As noted herein, references to the 1872 Mining Law to override the agency's duty to mitigate adverse impacts are unfounded. The USFS offers no legal support for its determination that it does not have any authority over the offsite impacts from the Mine, as they are related to the agency's duties to manage and protect public land under the Property Clause of the U.S. Constitution and the Organic Act, among other authorities. This is true both for the review and approval of the PoO as well as for any ROW/SUP. "Congress may regulate conduct occurring on or off federal land which affects federal land. *See, e.g.,* Kleppe v. New Mexico, 426 U.S. 529, 539 (1976); Minnesota v. Block, 660 F.2d 1240, 1249 (8th Cir.1981)." Duncan Energy Co. v. U.S. Forest Service, 50 F.3d 584, 589 (8th Cir. 1995) (upholding Forest Service authority over private property interests). **"It is well established that [the Property Clause of the U.S. Constitution] grants to the United States power to regulate conduct on non-federal land when reasonably necessary to protect adjacent federal property or navigable waters."** U.S. v. Lindsey, 595 F.2d 5, 6 (9th Cir. 1979)(emphasis added).

The Supreme Court has recognized for over a century that Congress may regulate activity on private lands as a means of protecting public property. *See* Camfield v. United States, 167 U.S. 518 (1897); United States v. Alford, 274 U.S. 264, 267 (1927) ("Congress may prohibit the doing of acts upon privately owned lands that imperil the publicly owned forests."). "[T]he power granted by the Property Clause is broad enough to reach beyond territorial limits." Kleppe v. New Mexico, 426 U.S. 529, 538 (1976).

Although it is true that the USFS does not *directly* "enforce compliance with other agencies' laws or regulations," FEIS at B-3, that does not mean that the USFS can avoid reviewing mitigation measures subject to other agency authorities. Nor is the USFS's mitigation authority limited to only when "the mitigation must have a *direct* connection to avoiding, mitigating, or minimizing effects on NFS surface resources." FEIS at B-3 (emphasis added).

As noted herein, under federal law, the USFS has the authority and the obligation to reject any proposal that threatens to violate any federal or state environmental, wildlife, or other law or regulation. The fact that the adverse impact may occur off of federal land is not determinative. The issue is whether, but for the USFS approval of the project, the impact would not occur. In this case, since there is no dispute that the Rosemont Project and its adverse impacts, both on and off federal land, would not occur unless the USFS approved the PoO, the USFS has the authority to regulate all impacts – both direct and indirect. The agency's failure to implement, let alone recognize, this authority fundamentally flaws the FEIS and any ROD authorizing approval of any of the action alternatives, including the Barrel Alternative.

Also, at a minimum, these additional mitigation measures are "reasonably foreseeable future actions" under NEPA and must be fully reviewed. In addition to the mitigation discussion herein, below are additional issues that must be resolved by the USFS before any legally-valid FEIS can be accepted.

Additional Objection issues regarding mitigation and monitoring follows (in addition to those already stated herein).

1. The monitoring plan in the FEIS continues to be inadequate to ensure compliance.
In our previous comments we noted the numerous inadequacies of the mitigation plan outlined in the DEIS, including a woefully inadequate monitoring plan, and heavy reliance on self-monitoring and after-the-fact reporting to be conducted by Augusta Resources, which has zero experience actually operating a mine. (SSSR et al. at 136-137.) We pointed out that monitoring should be more often and also unannounced, including spot operational audits and verification testing of required periodic sampling, in advance. (*Id.*)

In response the USFS states that monitoring and oversight has been updated in the FEIS and that refinements are expected to occur after the ROD is approved. (FEIS Appendix G #687.)The agency also states, "monitoring oversight responsibilities lie with the Forest Service as well as other permitting and oversight agencies. Rosemont will conduct much of the monitoring under the oversight of FS and other regulatory agencies. A multiagency monitoring group will be convened which will have the responsibility to review monitoring results and determine if modifications are necessary to comply with the NEPA decisions or comply with applicable permits, laws and regulations. Specific monitoring items have been identified to ensure compliance with NEPA decision, impacts are within those specified in the NEPA analysis, permits and applicable laws and regulations are being met." (*Id.*)

The USFS has not adequately addressed the initial concerns we expressed in our previous DEIS comments, and the mitigation measures outlined in the FEIS, although expanded, remains inadequate for several reasons. First, of the 72 USFS mitigation measures listed in Appendix B, only three reference any sort of on-site USFS involvement or presence. In our estimation, over 40 of the 72 mitigation actions listed easily warrant or should involve on-site USFS monitoring and confirmation.

Second, nowhere in the current FEIS is there any reference to the possibility and/or conductance of unannounced on-site USFS spot audits to confirm adherence to the mitigation measures noted. As indicated in the DEIS comments and as we hear in the news almost daily as to ethics violations, prudence would indicate the possibility of such audit actions are warranted. Rosemont should understand such unannounced visits are possible.

Third, given the passage of the Arizona Environmental Privilege Law, AZ HB 2199, on April 12, 2012, which was after the DEIS and shields companies from disclosing the results of internal environmentally related audits, the ramifications and disclosures in regard to Rosemont's self-monitoring should be addressed. It is known information obtained by observation, sampling, or monitoring by a regulatory agency itself (i.e., the Forest Service) is not shielded.

Fourth, issuing the Record Of Decision without an updated and approved Mine Plan Of Operations and associated permits is like a city issuing a building permit when all the plans are not complete and/or determined to be appropriate. Only then can the full significance and ramifications of the proposed Rosemont project be understood in accordance with the intent of the National Environmental Policy Act.

Suggested Remedies: Clearly, a more detailed and comprehensive monitoring plan is required that includes requirements for unannounced, spot audits and on-site verification testing. The USFS must provide the following information in a revised DEIS and make it available for public review and comment:

- Review the currently proposed mitigation measures and any new mitigation measures and incorporate everywhere possible on-site visits as a standing means of compliance confirmation with a specific frequency of occurrence. For example, the Draft ROD states that "the Coronado will evaluate the results of project implementation monitoring, including field verification, on a regular basis." (Draft ROD at 64.) However, the FEIS offers no definition of "on a regular basis", which could be defined as once a decade or longer for field verification. There is no better means than "presence" when it comes to knowing what is happening;
- Incorporate unannounced spot audits, including possible Forest Service confirmation testing and/or sampling, into the final mitigation listing where viable. If Rosemont is the company they say they are as to integrity, such spot audits should not endanger or materially interfere with their mining operations or incidental uses;
- Add information regarding the significance, applicability, and consequences of AZ HB 2199, the Arizona Environmental Privilege Law;
- Include language requiring that the Mine Plan Of Operations and all associated plans and permits requiring update or completion be done ahead of the formal issuance of the Record Of Decision.

2. The FEIS fails to provide for adequate public disclosure regarding the status of implementing mitigation measures and their effectiveness.

In our previous comments we noted that public has no way of commenting on whether and how the USFS, other involved public agencies, and the affected communities could determine whether any mitigation measures are actually implemented and what the effectiveness of those measures are over the lifetime of the proposed mine and beyond. (FEIS at 137.) We also noted that if the project is approved, the Record of Decision needs to require that the construction schedule is included on the Rosemont Copper Mine web postings (*Id.*). We asked the USFS to address these public transparency issues in a supplemental or revised DEIS.

Regarding public disclosure, the Draft ROD requires Rosemont to provide an annual report summarizing mining, reclamation, and monitoring activities as well as proposed activities and to conduct an annual review with the Coronado to determine whether activities are in accordance with the approved MPO and whether any changes to the approved MPO or financial assurance are needed. (Draft ROD at 31.) The Draft ROD also requires Rosemont "to compile monitoring results into a monitoring report that will be provided to the Coronado on a quarterly basis. Any monitoring result that is not in compliance with the effectiveness criteria will be reported to the Coronado within 72 hours. After reviewing the results of these reporting requirements, the Coronado will notify members of the multi-agency monitoring group should conditions warrant interim or emergency meetings." (Draft ROD at 32.)

In addition to requiring self-reporting, the Draft ROD also establishes an "interagency task group" to "assist the Coronado to administer the approved MPO. The Coronado, ADEQ, Arizona State Mine Inspector, Arizona Game and Fish Department (AGFD) Bureau of Land Management (BLM), and other regulatory and permitting agencies will be invited to participate in the task group." (Draft ROD at 32.) According to the FEIS, "The task group would meet at

least annually to review and evaluate monitoring results and make recommendations to the Forest Supervisor." (FEIS at 96.) However, there is no indication in the FEIS as to whether there is any avenue for public participation or any requirements for public disclosure.

Finally, in response to our comments regarding disclosure of the construction schedule on Rosemont's website, the FEIS states, "the Record of Decision will include some detail of the project development as allowed by the Coronado. Once the proponent provides and receives approval on their Final Mine Plan of Operations, further details of the approved operations will be available. The Coronado will explore and implement what is decided to be the best venue for public communication of this and other project information going forward." (Response No. 713:)

The USFS response to our comments is completely inadequate. First, and of extreme significance, is the fact the USFS does not indicate the annual task group meetings will be open to the public, which they need to be in order to provide transparency regarding the implementation of mitigation measures. Second, the FEIS fails to provide information about how the public can obtain information from the task group and/or sit-in on sessions related to the required reporting. Third, it appears that the requirement for Rosemont to establish a public website and to post all required monitoring reports has been eliminated; we were unable to find the requirement in any reporting categories within the FEIS. (*See* FEIS Executive Summary at xxvii; FEIS at 321.) Despite its flaws, the web site was the only type of public disclosure requirement in the DEIS; without it, our concerns have not only not been adequately addressed, they have been exacerbated.

Suggested Remedies: The USFS should require that all multi-agency task group meetings are open to the public and that reasonable public notice will be provided in advance of such meetings, including any special meetings outside of regularly scheduled meetings. The USFS should also require that quarterly and annually required reports are made available to the public, and the agency should also reinstate the requirement that Rosemont create and maintain a publicly accessible website and post its required monitoring and reporting activity. These requirements should be included in a revised DEIS that is made available for public review and comment.

3. The FEIS fails to adequately address concerns related to impacts resulting from increases in groundwater pumping above what is permitted, which is allowed under Arizona law.

In our previous comments we noted that the DEIS failed to analyze the impacts resulting from the fact that Rosemont can apply for a modification to their Ground Water Withdrawal Permit and approval is essentially rubber-stamped, and there is no upper limit for groundwater pumping with the approval process. We noted that the DEIS failed to meaningfully consider the implication of Arizona Law on the water consumption of the proposed Rosemont mine. We pointed out that it is the obligation of the USFS to consider potential impacts of the project that would arise from the implementation of Arizona law. Considering the significance of those potential impacts – that Rosemont can pump as much water as they want at any point in the future – the USFS must consider this in its impacts analysis.

The USFS responded by stating, "Regardless of the ability of Rosemont to apply for and receive rights from the Arizona Department of Water Resources to pump water above and beyond what their permit currently allows, any substantial change in water use could trigger a

review of the applicability of the current NEPA analysis by the Forest Service." (FEIS Appendix G #916.) However, the USFS failed to provide any analysis of the potential impacts.

This response is inadequate as there is no guarantee that an increase in Rosemont's groundwater use would require additional NEPA analysis, and is overly vague as to how the determination would be made.

Suggested Remedies: The USFS should require additional NEPA analysis should Rosemont propose to increase its groundwater pumping anytime during the life of the mine, or if makes any other changes to any other Federal, state or local permits, and include this requirement in a revised DEIS that is made available for public review and comment.

4. The FEIS fails to require adequate monitoring of affected resources.

We provided multiple previous comments regarding the inadequacies of the monitoring plan presented in the DEIS, and noted that there was little to no discussion of monitoring for most affected resources in the DEIS, and no description of how it would be determined whether the mitigation measures were implemented or if they were effective. (SSSR et al. 137.) We have the following objections regarding USFS responses to this comment as they relate to certain affected resources:

- ***Surface water quantity and sediment monitoring:*** Regarding surface water quantity and sediment monitoring, the USFS states that "The regulatory framework under which Rosemont will have to comply with floodplain regulations has been identified to the extent considered appropriate by the Forest." (FEIS Appendix G at G-38.) The USFS also stated, "baseline conditions would be established prior to mine construction (before pre-mining phase), and periodic comparison monitoring would be conducted every 5 years." (FEIS Appendix B at B-16.) Given the importance of sediment monitoring as a verification of the degree of storm/surface water control and effectiveness, and as a general indicator of the degree of sediment impairment or reduction, monitoring once every five years is grossly insufficient. This would require monitoring only approximately four times during the expected mine life. As such, the ability to recognize and deal with any unanticipated sediment run-off and/or storm water control consequences in a timely manner is greatly diminished.
    - **Suggested Remedies**: The USFS must require that sediment monitoring occurs at least annually and that the testing should occur after or near the end of the typical monsoon season for the Rosemont/Tucson area to best access the impact or degree of annual differences. The agency should also require a trend analysis for this mitigation plan with an appropriate explanation as part of the annual Rosemont multi-agency task group reporting requirements. This information should be presented in a revised DEIS that is made available for public review and comment.
- ***Groundwater quality and waste rock seepage:*** Regarding groundwater quality and waste rock seepage, The FEIS states, "Monitoring would include at least two monitoring locations within the waste rock buttresses surrounding the tailings facility and at least two monitoring locations within the waste rock facility itself." (FEIS Appendix B at B-17.) With approximately eight linear miles of waste rock buttresses surrounding the perimeter of the project, having a minimum of four monitoring locations is grossly inadequate and in no way represents appropriate coverage for statistical sampling purposes. The FEIS fails to provide any support for this number, and nowhere in the FEIS can a value be found for the linear length of the waste rock perimeter. The estimated value of eight miles referenced is

an extrapolation from a map of the Preferred Barrel Alternative as shown on page 26 of the Draft ROD.

- **Suggested Remedies**: The USFS should re-evaluate the number of monitoring stations required for the linear length of the ultimate waste rock buttresses involved, in conjunction with input from the manufacturer of the monitoring equipment, other similar sites and applications using these monitors, and registered hydrologists, to determine what the maximum appropriate linear coverage length or area would be per monitoring station at a 99% or greater confidence level of detection. The USFS should use this information to revise the number of required monitoring stations, and provide this information in a revised DEIS that is made available for public comment and review.

- ***Groundwater quality and pit lake geochemistry:*** Regarding groundwater quality and geochemistry, the USFS states that "Every 5 years, Rosemont Copper would use collected geochemical data from waste rock characterization efforts, and any other pertinent hydrologic, geological, or geochemical data to provide revised predictions of mine pit lake water quality after closure. The pit lake model would be run for a period of 200 years to match the duration of the current model. At closure, Rosemont Copper would produce a best and final pit lake model and would coordinate with the Coronado to develop management plans to protect wildlife, if impacts from pit lake water quality are likely to occur." (FEIS Appendix B-22.) This is not an adequate response to our previous comments. If the subject monitoring and modeling were done only every five years, this would require only four updates during the projected active life of the mine. As such, there is not a lot of opportunity to respond or to recognize the pit lake may in fact present a more significant issue than expected. Other than initial modeling results, only two data points per decade will be considered, which is grossly inadequate considering the potential environmental consequences that would last in perpetuity.
    - **Suggested Remedies:** At a minimum, the USFS must require that pit lake monitoring occur annually for at least the first seven years, depending on conditions as compared to those projected in the FEIS. Requiring more frequent testing for seven years takes into consideration that it will be at least three to five years before reliable samples of pit water, which should be the primary criteria for this mitigation, can regularly be drawn following the commencement of operations. The USFS must include this information in a revised DEIS that is made available for public review and comment.

It must also be stressed that, as noted herein, the agency's approval of the creation of the pit lake, which is predicted to be severely contaminated, violates federal law and no ROD can be issued approving any of the action alternatives. Any discussion of mitigation and monitoring of the pit lake noted herein assumes that the eventual USFS review and approval of any PoO is based on a pit lake that would not result in any contamination.

5. The FEIS fails to adequately analyze partial backfill as a reasonable mitigation measure.

In our previous comments, we stated that a partial backfill alternative was identified for further study by one of USFS's technical consultants and the USFS claimed to be "investigating" it, yet the agency failed to include an analysis of this alternative in the DEIS. (SSSR et al. at 8.) We pointed out that "such an alternative would entail changing plans for locations and shapes of waste and tailing piles and should include an analysis of the possibility of using tailings to bring the fill up to a particular level of backfill." (*Id.*)

In response the FEIS states, "the Forest Service took a hard look at the feasibility of pit backfill. After reviewing pertinent information, the Forest Service determined that pit backfill is not feasible for technical, economic, and environmental reasons." (FEIS Appendix G #557.) As a part of its FEIS analysis, the agency evaluated the partial backfill of one of the waste dumps:

> "The eastern waste rock dump would be lowered in elevation by about 200 feet; however, no change in the overall operations footprint would occur. Partial pit backfill would require rehandling approximately 84 million tons of material. At a rate of 28 million to 29 million tons per year being moved, this would require approximately 3 year to complete, assuming 24 hours per day, 365 days per year of operations. The cost of such an operation is estimated to be $84 million to $112 million. … All other reclamation activities would be postponed until completion of backfill operations, likely further delaying final closure. "

(FEIS at 105.)

The USFS provides inadequate justification for its determination that partial waste rock pit packfill "is not technically, economically, or environmentally feasible." (*Id.*) The 84 million tons of material that would need to be rehandled is approximately 6.5% of the 1.3 billion tons of waste rock that this project will generate. Rather than partially backfill a waste dump, the Forest Service should have analyzed the backfill of potentially acid generating waste into the pit. Backfill into the pit with submergence in water would be the best way to prevent or minimize acid drainage. The 'likely' and 'uncertain' acid generating waste rock comprises approximately 10 percent of the material (2 percent and 8 percent respectively). (*See* FEIS at 383). All of the likely acid generating material and about half of the uncertain acid generating waste could be backfilled and submerged. This would be the most environmentally sound and economically protective approach to partial backfill. Yet, by failing to fully analyze this alternative, the USFS failed to give this any consideration.

Suggested Remedies: The USFS must fully analyze the alternative of partial backfill of the likely and uncertain acid generating waste rock, rather than just the partial backfill of random waste rock as was presented in the FEIS. The agency must include this analysis in a revised DEIS that is released for public review and comment.

6. The FEIS fails to consider adequate mitigation to address the impacts of invasive species.

In our previous comments we stated, "The DEIS provides virtually no information about the probable nature of the invasive vegetation that will become established in the area. Reference is made to an "invasive species control plan" that will be developed (DEIS, p. 414). The actual plan should be provided in a revised or supplemental DEIS for public review and comment." (SSSR et al. at 75.)

In response to these concerns, the FEIS states, "Disturbed and revegetated areas would be surveyed for invasive species twice a year following winter and summer rains; and such locations would be mapped and actions taken to prevent, eliminate, or control invasive plants should they occur, in accordance with the final MPO." (FEIS Appendix B at B-12.)

The FEIS also states, "Rosemont Copper has prepared a preliminary invasive species

management plan (Rosemont Copper 2012b). This is a brief report that outlines some invasive species and general management plans." It states that the plan 'will be updated to address aquatic invasive species, including bullfrogs and northern crayfish, in wetland and riparian habitats, as well as selected stock tanks once Section 7 consultation is complete.' Methods for implementation of this program would be outlined in the final invasive species management plan." (FEIS Appendix B at B-38.) Regarding implementation the FEIS states, "Commencing in the first year copper is produced, annual monitoring of disturbed areas within perimeter fence would be conducted to determine occurrence of invasive plant species and implement best management practices to prevent introduction and spread." (*Id.*)

We agree only that the preliminary invasive species management plan referenced above is "brief". The agency fails to provide a plan for invasive species management that shows these impacts will be adequately mitigated. This should have been prepared and presented to the public in a revised or supplementary DEIS, with the opportunity for peer and public review. The brief preliminary plan of less than 10 pages, accessed from the web, does expand the geographic scope of the to include access roads (Rosemont Copper 2012b, page 2, accessed 10 January 2014), but is not clear if it includes access through the Forest from the west side of Santa Rita Mountains and from the Gardner Canyon and LCNCA areas to areas that are close to the mine. This also does not take into account the potential vectors of invasive species from off-site to on-site or from on-site to off-site areas via traffic in and out of the mine site, including deliveries from other parts of the region, country, and beyond; transport of equipment from other parts of the region, country, and beyond, or daily trucking of ore between the mine sites to other areas where non-native invasive species are common, such as the situation with buffelgrass (*Pennisetum ciliare*) in Nogales, Arizona.

In addition, the FEIS provides conflicting information regarding the frequency of monitoring. It states, "Disturbed and revegetated areas would be surveyed for invasive species <u>twice a year</u> following winter and summer rains..." (FEIS Appendix B at B-12; emphasis added.) But it later it states, "Commencing in the first year copper is produced, <u>annual</u> monitoring of disturbed areas within perimeter fence would be conducted to determine occurrence of invasive plant species…" (FEIS Appendix B at B-38; emphasis added.) These types of inconsistencies highlight the gross inadequacies of this plan. Overall, information regarding mitigation, monitoring, and management planning is wholly inadequate, especially in regards to non-native aquatic species (NNAS) and also in the invasive plants section.

Suggested Remedies: The USFS must develop a robust mitigation, monitoring, and management plan for invasive plants and non-native aquatic species. Both invasive plant and NNAS monitoring must take place in the entire analysis area which should include potential travel corridors for all goods and services originating from or ending up at the mine site. This information must be peer-reviewed and published in a revised DEIS and made available for public review and comment.

<u>BIOLOGICAL RESOURCES</u>

As noted in the January 27, 2012 comments, and herein, the Project will result in severe and permanent adverse impacts to wildlife. These impacts are not adequately prevented or mitigated, in violation of the ESA (for the Threatened and Endangered Species and their habitat that will be adversely affected), NFMA (for ESA-listed and Sensitive and Indicator

Species), Organic Act and 36 CFR Part 228 (failure to protect wildlife and fisheries), MBTA and BGEPA (see especially pit lake contamination issues), and other laws, regulations, and policies noted herein. In addition to the other Objection issues noted herein, the following are additional Objection issues that must be satisfactorily resolved before the USFS can legally approve a PoO for any action alternative, or issue a FEIS (due to the NEPA inadequacies noted herein).

1. The FEIS fails to consider reasonably foreseeable actions and cumulative impacts in its analysis of effects on jaguar critical habitat.

In our previous comments we noted the importance of movement corridors to the jaguar: "Animals move both north and south along the mountain ranges of the region and east and west across wide valleys depending on life-history characteristics and needs. Animals such as…jaguars can have home ranges and/or dispersal distance that can cover multiple mountain ranges and intervening valleys. These animals are known to move north from the Patagonia Mountains through the Santa Rita Mountains and from the Tumacacori Mountains east across the Santa Rita Mountains and into the Sonoita Valley and Whetstone Mountains and vice-a-versa….In fact, the Rosemont area is considered an anchor area for three wildlife linkages identified in the AGFD Arizona Wildlife Linkages Assessment and impacts to the anchor will render the three linkages unsuitable." (SSSR et al. Appendix A at 26.)

We commented further on this project's likely impacts to jaguar: "The Proposed Action and the Preferred Alternative will destroy jaguar habitat and will destroy vital movement corridors for the endangered cat….Jaguars will be impacted by habitat loss, loss of prey and cover, groundwater drawdown, loss of surface water, noise, vibrations, light, pollution, and bioaccumulation of contaminants that will enter the food web due to mining. The DEIS should identify the No Action Alternative as the only decision that would not hinder the long-term survival and recovery of the jaguar in the United States." (SSSR et al. Appendix A at 30.)

We also commented on relevant reasonably foreseeable actions and cumulative effects of the potential development of Rosemont Copper's other holdings and numerous other mining claims in the region, particularly in the Santa Rita and Patagonia Mountains. (SSSR et al. at 117-126.)

The FEIS discusses the constriction of the movement corridor in the northern Santa Rita Mountains to 1.5 km between the Imerys Quarry and the Rosemont project, and concludes that jaguar movement between critical habitat units 3 and 4b will become "somewhat restricted" but would not be precluded and that only a total of 6,304 acres of jaguar critical habitat would be compromised by the proposed action. (FEIS Appendix F at F-132-3, F-148-9.) The FEIS concludes that "implementation of the proposed action will not likely destroy or adversely modify proposed critical habitat." (*Id.* at F-147).

The analysis of the proposed action's impacts on critical habitat for the jaguar in the U.S. ignores important reasonably foreseeable actions and cumulative effects of further mining development in the region, and consequently vastly undercounts the amount of acreage in which functionality would be lost due to land disturbance, noise, light, and severance of connectivity, including to Mexico, due to the cumulative impacts of other potential mining projects.

Suggested Remedies: The USFS must re-consult with USFWS and a new Biological Opinion

should be issued that includes all reasonably foreseeable actions and cumulative impacts, including potential development of Rosemont's holdings adjacent to the project area and other mining projects in the region. This new analysis must be included in a revised DEIS that is made available for public review and comment.

Due to the herein noted failure to have an adequate cumulative impacts analysis in the Draft or Final EIS, the USFS's violation of the ESA and related requirements noted herein (including the required remedies) applies to **all listed species**, including the jaguar.

2. The FEIS analysis fails to adequately quantify species baselines and impacts.

In our previous comments we stated, "In the Analysis, Methods, Assumptions section it is stated that for many species surveys were not conducted. Failure to make species surveys is not justified, especially in the light of the findings for each species." (SSSR et al. at 74.)

The FEIS states, "This mitigation includes predisturbance surveys for a subset of Forest Service sensitive species, and cooperative development and implementation of a survey plan. Rosemont would conduct a complete habitat-specific inventory of the NFS land disturbance footprint within suitable habitat as outlined in an approved plan for the following Forest Service sensitive species (10 plants and 1 invertebrate) at least 30 days prior to ground disturbance. Refer to appendix B for a list of applicable species. Rosemont would work cooperatively with the Coronado, Arizona Game and Fish Department, U.S. Fish and Wildlife Service (for species proposed for Federal listing), and other conservation partners to develop a survey plan that will include survey protocols for the 11 species, as well as an overall plan or strategy for addressing species that are found in disturbance areas such as, but not limited to, documentation, collection, translocation, seed collection, etc. The survey plan would address surveys which have already been conducted within the Rosemont project area. Survey will be conducted within suitable habitat and during appropriate season for each species at least 30 days prior to ground disturbance. The written plan will be included with the plan of operations. This would avoid or reduce impacts to Forest Service sensitive plant species and one invertebrate species." (FEIS at 718.)

Conducting surveys for only a small subset of special status and listed species is inadequate. Under NEPA, the USFS must "describe the environment of the areas to be affected or created by the alternatives under consideration." 40 C.F.R. § 1502.15. "Without establishing the baseline conditions . . . there is simply no way to determine what effect the [action] will have on the environment, and consequently, no way to comply with NEPA." Half Moon Bay Fisherman's Mktg. Ass'n v. Carlucci, 857 F.2d 505, 510 (9th Cir. 1988). "In analyzing the affected environment, NEPA requires the agency to set forth the baseline conditions." Western Watersheds Project v. BLM, 552 F. Supp. 2d 1113, 1126 (D. Nev. 2008). The lack of an adequate baseline analysis fatally flaws an EIS. "[O]nce a project begins, the pre-project environment becomes a thing of the past and evaluation of the project's effect becomes simply impossible." Northern Plains, 668 F.3d at 1083. "[W]ithout [baseline] data, an agency cannot carefully consider information about significant environment impacts. Thus, the agency fail[s] to consider an important aspect of the problem, resulting in an arbitrary and capricious decision." Id. at 1085.

The lack of an adequate baseline analysis fatally flaws the FEIS. This applies to all resources lacking an adequate analysis of current conditions, as noted herein. For wildlife, all 43 of the special status species listed on page 673 of the FEIS and the 10 affected species listed under

the Endangered Species Act should have been surveyed prior to, and included in the publication of the FEIS, so the USFS and USFWS can adequately analyze and quantify impacts to these species.

Suggested Remedies: In addition to preparing an adequate baseline analysis for all affected resources, all 43 of the special status species listed on page 673 of the FEIS and the 10 affected species listed under the Endangered Species Act should be surveyed and the results published in a revised DEIS that is released for public review and comment.

3. The FEIS fails to adequately minimize impacts to and adequately mitigate for Coleman's coralroot.

In our previous comments we stated, "Contaminants from several sources threaten the orchid and its host fungi. Airborne contaminants from mining, waste rock, and tailings piles include uranium, sulfate, fluoride, antimony, and other toxic substances. Herbicides used in conjunction with mining activities and road maintenance could be washed into the orchid's habitat. Herbicide runoff and drift and direct herbicide application are serious threats to *Hexalectris* orchids due to their absolute dependence on symbiotic fungi. Chemicals used during the mining process could damage the orchids or the fungi upon which it relies, particularly in the event of accidental spills. Fencing off areas to protect the orchid from mining would not be sufficient mitigation to ensure the species' survival." (SSSR et al. Appendix A at 28.)

The FEIS states, "Even with these mitigation measures in place, the proximity of all clusters to active mining activities, combined with the complex life history requirements of this orchid, suggests that these clusters may still be at risk from the numerous potential threats from the proposed project. Admittedly, we cannot be certain of the outcome until the project has been implemented or after closure, but there are too many potential threats to think there would be no effects, so the Coronado is erring on the side of caution for conservation of the species. This explains why the effects determinations were the same for all action alternatives; the Barrel Alternative has the least direct impact, and mitigations will hopefully offset some negative effects." (FEIS 677.)

The FEIS goes on to state, "Of the known number of inflorescences (138) detected during the most intensive surveys undertaken for this species, the actions of this proposed project could affect 37 percent of all known individuals. Because this rare species (as currently known) has such a limited distribution globally, being restricted to a small area in southeastern Arizona, all action alternatives could result in a downward trend toward Federal listing as threatened or endangered (SWCA Environmental Consultants 2013b)." (FEIS at 678.) Elsewhere the FEIS states that "the largest population is that in the immediate vicinity of the proposed copper mine (WestLand Resources Inc. 2012k)." (FEIS at 676.)

It is unacceptable that the core population and 37% of all known individuals of this extremely rare species will be directly and indirectly impacted and that impacts could very well lead to listing as an endangered species. It is also unacceptable that USFS and USFWS say that "…mitigations will hopefully offset some negative effects." The impacts of water diversion and retention features, chemicals used in the mining process, and other factors have not been adequately analyzed, quantified, or mitigated.

Suggested Remedies: The MPO and site plan must be re-configured to avoid all impacts to

Coleman's coralroot present in the vicinity of the mine, and the new plan published in a revised DEIS and made available for public review and comment.

4. Authorized take for the Chiricahua leopard frog is unjustified, and the mitigation offered is inadequate and not located within the affected watershed.

In our previous comments we stated "The Proposed Action and the Preferred Alternative will both have negative direct and indirect effects on threatened Chiricahua leopard frogs." (SSSR at 29.)

The FEIS states, "We anticipate that take of Chiricahua leopard frogs in the form of harm and harassment will occur at up to 6 known sites where the species is currently or formerly known, as a result of groundwater drawdown as reported in the Biological Assessment: Lower Stock Tank, Empire Gulch, Box Canyon Dam, Ophir Gulch Well, South Sycamore Canyon, Cienega Creek. We anticipate and authorize the take of up to and including 50 Chiricahua leopard frogs and 2 egg masses in the form of harm or harassment from adverse effects associated with the mine construction and continued operations at the active mine site and access roads, including frogs' occurrence in aquatic sites subject to groundwater drawdowns and stormwater detention ponds." (FEIS at 222.)

The FEIS also states, "All action alternatives may affect and are likely to adversely affect the Chiricahua leopard frog and designated critical habitat for the Chiricahua leopard frog (SWCA Environmental Consultants 2012b, 2012g, 2013b; U.S. Forest Service and SWCA Environmental Consultants 2013)." (FEIS at 681.)

The FEIS also states, "Key conservation measures and terms and conditions from the biological opinion are included in the mitigation and monitoring measures in appendix B. Key measures related to Chiricahua leopard frogs include: measure FS-BR-03, which requires actions to erect frog barriers if needed for exclusion from process areas; measure FS-BR-05, which requires the construction, management, and maintenance of up to 30 new water features; the purchase of Sonoita Creek Ranch (measure FS-BR-08), which includes management of the property to benefit Chiricahua leopard frogs; measure FS-BR-11, which requires monitoring and control of actions to reduce or prevent impacts to Chiricahua leopard frog from invasive aquatic species; measure FS-BR-12, which allows for relocation of Chiricahua leopard frogs; measure FS-BR-26, which requires annual monitoring of Chiricahua leopard frogs; and measure FS-BR-28, which requires monitoring of water quality in some potential Chiricahua leopard frog habitat." (FEIS at 682.)

The suggested mitigation measures are inadequate and the incidental take permitted is not justified by the documented status of the species in the area. The frog is just starting to make a comeback in the area. No take should be authorized for the species and loss of habitat should be mitigated at a 20:1 ratio in the watershed. No mitigation that is outside of the meta-population bounds of the local frogs should be accepted (e.g., Sonoita Creek Ranch). In addition, the effectiveness of this and other wildlife mitigation measures has not been shown, in violation of NEPA (and the ESA, NFMA, and Organic Act) as shown herein.

Suggested Remedies: The USFS should re-consult with USFWS on the status of the Chiricahua leopard frog, the authorized take permit should be reassessed, and the inadequate suggested mitigation should be greatly augmented with habitat that is within the affected watershed. A new biological opinion on the Chiricahua leopard frog should be issued as part of

a revised DEIS made available for public review and comment.

5. The FEIS analysis of cumulative impacts under "Seeps Springs and Riparian Areas" and "Biological Resources" is inadequate.

As noted herein for a number of issues (e.g., air quality, water quality and quantity), the FEIS fails to provide the requisite cumulative impacts analysis. The same is true for wildlife and biological resources and seeps/springs.

In our previous comments, we stated, "Throughout this comment letter, deficiencies in cumulative effects analysis are noted. Broadly speaking, the problems with cumulative effects analysis in this DEIS fall into two categories. First, there is insufficient identification of past, present and reasonably foreseeable actions that continue to have, are having, or likely will have an impact on the same resources that would be affected by the proposed Rosemont mine. There is also an inadequate temporal scope of inquiry and analysis. Second, in several sections of the DEIS, some listing of actions is provided for purposes of cumulative effects analysis, but there is a failure to provide the actual analysis. The identification of other actions affecting the resources that would be affected by the proposed action is not the end of the analysis, but rather the beginning. There is very little in the text that provides actual analysis of such effects. In many places, the analysis is missing all together; in other places, it is very scant." (SSSR et al. at 116.)

We also commented, "Cumulative Impacts that must be addressed in this section include climate change, the potential for new mines on the three Rosemont Copper identified sites, continued residential need for groundwater in the Sonoita Valley and increased need for groundwater due to climate change." (SSSR et al. Appendix A at 24.)

> The FEIS lists reasonably foreseeable actions that were considered in the analysis:
> "This cumulative effects discussion addresses the cumulative impacts of the action alternatives and any applicable reasonably foreseeable actions as identified on the Coronado ID team's list of reasonably foreseeable future actions, provided in the introduction to chapter 3. The following reasonably foreseeable actions from that list were determined to contribute to a cumulative impact to biological resources within the analysis area:
> - A hazardous fuels reduction project is planned on more than 2,500 acres in Hog and Gardner Canyons….
> - The BLM proposes to approve a decision for programmatic aquatic special status species reintroductions at Las Cienegas National Conservation Area….
> - The AGFD and BLM are planning to reintroduce beavers into Cienega Creek at Las Cienegas National Conservation Area….
> - The Forest Service proposes to add, decommission, close, or change the designation of roads in the NFSR database and prohibit off-road motorized travel for dispersed camping in certain areas on the Nogales Ranger District….

- The Coronado proposes to reauthorize the Grazing Permit Reauthorization for the Gardner allotment….
- Expansion of the Andrada Mine limestone quarry in the Davidson Canyon drainage….
- Southline Transmission, LLC, proposes constructing, operating, and maintaining a high voltage power line….

When considered together, these foreseeable actions, when combined with the expected impacts from the proposed project (no matter which action alternative is selected), and with climate change and human population growth and associated development, would cumulatively contribute to impacts such as loss or fragmentation of habitat, vibration, noise, dust and air pollutants, and artificial night lighting. The overall result would be a continuation of the long-occurring trend of reduced habitat quantity and quality; distribution of movement and genetic flow; and continued increase in risk and threats to sensitive species."

(Vol. 3 at 711-713).

The FEIS discusses climate change, and concludes, "Overall, the project would exacerbate the effects of climate change, which would add to the cumulative impacts to the biological resources. As such, the stressor effects of the project could shorten the time intervals to modeled effects or increase groundwater drawdown and decrease surface water perenniality." (FEIS at 713.)

BLM, in its comments on the Preliminary Administrative FEIS, specifically found that the USFS failed to conduct the proper cumulative impacts analysis for numerous resources, including wildlife:

> Cumulative effects do not adequately explain possible additive, countervailing, or synergistic effects to Empire Gulch or Cienega Creek.
>
> …
>
> There is no analysis of cumulative, interacting or synergistic effects at Empire Gulch and Cienega Creek of drawdown, reduction in flow, and lost stream length (see above comments) and potential effects this would have to water quality (e.g. from concentration) of what water would still be available to listed species (e.g. lesser long-nosed bat, southwestern willow flycatcher, Chiricahua leopard frog, Gila chub, Gila topminnow, Huachuca water umbel), critical habitat (e.g. Gila chub and Chiricahua leopard from and proposed for southwestern willow flycatcher), and primary constituent elements of critical habitat.
>
> The Cumulative Effects section in the PAFEIS does not appear to meet the minimum requirements of NEPA and CEQ. For example, the effects for the following subjects are not analyzed: temporal scope, reasonably foreseeable actions (e.g. additional pit mines), resource issues, condition of the environment, thresholds, residual effects after mitigation.

August 15, 2013 Letter from David Baker, Field Manager, BLM Tucson Field Office to USFS Supervisor Jim Upchurch, "BLM Comments on the Rosemont Copper Project," Attachment at

p. 5 of 9. http://www.rosemonteis.us/files/cooperator-review/agency-comments/blm-comments-to-administrative-draft-feis.pdf

The analysis is inadequate for the public and the USFS to analyze cumulative impacts to seeps, springs and riparian areas and biological resources, including all listed, special status, sensitive, indicator, and otherwise protected species and their habitat. Two reasonably foreseeable actions were not analyzed –climate change and potential new mines, including three Rosemont Copper identified sites.

Suggested Remedies: Prepare a comprehensive cumulative impacts analysis that includes potential new mines, including those on the three Rosemont Copper identified sites, as well as climate change, and include it in a revised DEIS made available for public review and comment.

6. The FEIS analysis of climate change impacts under "Seeps Springs and Riparian Areas" and "Biological Resources" is inadequate.

In our previous comments we stated, "The DEIS needs to analyze the effects of climate change on the project for all alternatives. This is a reasonably foreseeable issue that should be analyzed in an integral way and included in the DEIS when assessing potential impacts to Soils, Surface Water Quality, Surface Water Quantity, Ground Water Quantity, Ground Water Quality, and Biological Resources." (SSSR, et al. at 19.)

We also stated, "The DEIS must analyze the interacting factors of increasing temperatures particularly including increasing daytime high temperatures, changes in timing and intensity of precipitation and increasing soil aridity due to climate change when analyzing the impacts of lost soil and lost soil productivity on reclamation and revegetation activities." (SSSR et al. Appendix A at 8.)

We further stated, "The DEIS should also address the impacts of climate change on the project including increased flooding, extreme weather events, greater temperature variations, water shortages and activities needed to adapt to climate change." (SSSR et al. Appendix A at 10.)

The FEIS states, "The patterns seen in southern Arizona in the past few decades, and particularly on Cienega Creek, provide a template for what long-term climate change could look like. Prolonged droughts brought on by climate change could result in similar shifts from perennial to intermittent flow along upper Cienega Creek and Empire Gulch. This would increase the sensitivity of these areas to any drawdown in groundwater due to the mine pit, increasing the overall impact to stream flow, wetland complexes, and hydroriparian habitat." (FEIS at 566.)

The FEIS also states, "Overall, the project would exacerbate the effects of climate change, which would add to the cumulative impacts to the biological resources. As such, the stressor effects of the project could shorten the time intervals to modeled effects or increase groundwater drawdown and decrease surface water perenniality." (FEIS at 713.)

The FEIS does not address climate change impacts to seeps, springs and riparian areas and biological resources of such as increased flooding, extreme weather events, greater temperature variations, water shortages and activities needed to adapt to climate change.

Suggested Remedies: The FEIS should address the climate change impacts to seeps, springs and riparian areas and biological resources of such as increased flooding, extreme weather events, greater temperature variations, water shortages and activities needed to adapt to climate change. This can be accomplished with various tools available, including the U.S. Global Change Research Program at http://www.globalchange.gov/, and scenario planning through the University of Arizona's Climate Assessment for the Southwest Climate Change Projections and Scenarios for the Southwest at http://www.climas.arizona.edu/projects/climate-change-projections-scenarios-southwest, and others. The results of this analysis should be included in a revised DEIS made available for public review and comment.

7. The FEIS fails to consider adequate mitigation to address the impacts of invasive species.

In our previous comments we stated, "The DEIS provides virtually no information about the probable nature of the invasive vegetation that will become established in the area. Reference is made to an "invasive species control plan" that will be developed (DEIS, p. 414). The actual plan should be provided in a revised or supplemental DEIS for public review and comment." (SSSR et al. at 75.)

In response to these concerns, the FEIS states, "Disturbed and revegetated areas would be surveyed for invasive species twice a year following winter and summer rains; and such locations would be mapped and actions taken to prevent, eliminate, or control invasive plants should they occur, in accordance with the final MPO." (FEIS Appendix B at B-12.)

The FEIS also states, "Rosemont Copper has prepared a preliminary invasive species management plan (Rosemont Copper 2012b). This is a brief report that outlines some invasive species and general management plans." It states that the plan 'will be updated to address aquatic invasive species, including bullfrogs and northern crayfish, in wetland and riparian habitats, as well as selected stock tanks once Section 7 consultation is complete.' Methods for implementation of this program would be outlined in the final invasive species management plan." (FEIS Appendix B at B-38.) Regarding implementation the FEIS states, "Commencing in the first year copper is produced, annual monitoring of disturbed areas within perimeter fence would be conducted to determine occurrence of invasive plant species and implement best management practices to prevent introduction and spread." (*Id.*)

We agree only that the preliminary invasive species management plan referenced above is "brief". The agency fails to provide a plan for invasive species management that shows these impacts will be adequately mitigated. This should have been prepared and presented to the public in a revised or supplementary DEIS, with the opportunity for peer and public review. The brief preliminary plan of less than 10 pages, accessed from the web, does expand the geographic scope of the to include access roads (Rosemont Copper 2012b, page 2, accessed 10 January 2014), but is not clear if it includes access through the Forest from the west side of Santa Rita Mountains and from the Gardner Canyon and LCNCA areas to areas that are close to the mine. This also does not take into account the potential vectors of invasive species from off-site to on-site or from on-site to off-site areas via traffic in and out of the mine site, including deliveries from other parts of the region, country, and beyond; transport of equipment from other parts of the region, country, and beyond, or daily trucking of ore between the mine sites to other areas where non-native invasive species are common, such as the situation with buffelgrass (*Pennisetum ciliare*) in Nogales, Arizona.

In addition, the FEIS provides conflicting information regarding the frequency of monitoring. It states, "Disturbed and revegetated areas would be surveyed for invasive species twice a year following winter and summer rains..." (FEIS Appendix B at B-12; emphasis added.) But it later it states, "Commencing in the first year copper is produced, annual monitoring of disturbed areas within perimeter fence would be conducted to determine occurrence of invasive plant species…" (FEIS Appendix B at B-38; emphasis added.) These types of inconsistencies highlight the gross inadequacies of this plan. Overall, information regarding mitigation, monitoring, and management planning is wholly inadequate, especially in regards to non-native aquatic species (NNAS) and also in the invasive plants section.

Suggested Remedies: The USFS must develop a robust mitigation, monitoring, and management plan for invasive plants and non-native aquatic species. Both invasive plant and NNAS monitoring must take place in the entire analysis area which should include potential travel corridors for all goods and services originating from or ending up at the mine site. This information must be peer-reviewed and published in a revised DEIS and made available for public review and comment.

8. The FEIS fails to consider adequate mitigation for impacts to wildlife corridors and habitat connectivity.

In our previous comments we stated, "The DEIS is totally inadequate in its assumptions, such as that impacts to corridors and connectivity will be temporary and it is missing some important analyses such as impacts through road mortality in the face of a 356% increase in traffic on SR 83. In addition there are no mitigation measures proposed for these impacts." (SSSR et al. at 87.)

We further discussed impacts to wildlife and landscape connectivity, and stated, "The Rosemont mine is located in a recognized wildlife migration area. Page 359 of the DEIS states wildlife road kills will double by year 20 of mine operations. The DEIS does not contain mitigation measures to reduce this impact on both wildlife safety and traffic safety. It is silent on the advisability of wildlife crossing tunnels and bridges which should be considered in conjunction with other SR83 roadway improvements. This issue needs to be addressed prior to the construction of the mine." (SSSR et al. Appendix A at 24.)

In response, the FEIS states that monitoring will involve "regular field surveys to determine motor vehicle caused mortality of jaguar or ocelot or their prey base. … This would be conducted weekly for 4 years, commencing with mine construction and continuing through second year of mine operations; it would then be reevaluated to determine whether additional monitoring needed to be conducted." (FEIS Appendix B at B-50-51.)

This proposed measure is not adequate mitigation for the likely impacts to wildlife due to projected increases of traffic on SR83, especially at night. Rosemont Copper should provide sufficient funding for wildlife crossing structures, both below and above-grade, if such measures are shown by monitoring efforts to be necessary. The agency has failed to provide adequate information regarding this and other mitigation and management actions that would reduce these impacts.

Suggested Remedies:

The USFS must develop a robust mitigation, monitoring, and management plan for reducing road mortality of wildlife. This plan must be peer-reviewed and published in a revised DEIS and made available for public review and comment.

9. The FEIS fails to consider adequate mitigation for the impacts to wildlife from the pit lake.

In our previous comments we stated, "No mitigation appears to be stated or established for the fact that the resulting water in the pit lake will exceed the limits for Agriculture Livestock Watering and Aquatic Wildlife. Such conditions present a danger, especially to migrating birds and water fowl. Appropriate mitigation needs to be determined and presented in a revised or supplemental DEIS." (SSSR et al. Appendix A at 21.) We also stated, "The pit lake will be, at 213 acres, much larger than the other two nearby lakes on Forest Service lands (Parker Canyon Lake at 130 acres and Pena Blanca Lake at 49 acres). Both of these lakes attract wildlife from miles around and provide important habitat for waterfowl, bald eagles, osprey, native amphibians and aquatic insects. The potential for the pit lake to attract wildlife is high, and nowhere in the DEIS or MPO is there any mention of wildlife exclusion to prevent exposure to lake water that will exceed aquifer and surface water standards for wildlife on silver, cadmium, lead, copper, mercury, selenium, and zinc. In addition these contaminants are known to bioaccumulate in animals and will have impacts to any animal that eats aquatic insects originating from the pit lake such as birds and amphibians. These impacts are on-going for the life of the mine and thousands of years after. Other mines in the area have on-going problems with bird-kill at their water storage areas so it is surprising that this is not addressed." (*Id.*)

In response, the USFS proposes the following measures in the FEIS: "Specific ponds, basins, and other facilities would be enclosed, fenced, or otherwise managed to exclude wildlife, livestock, and the public. Includes construction of barriers to exclude Chiricahua leopard frogs, if needed."; "Daily visual inspection would be performed to ensure enclosures, fences, covers, and/or devices are functioning properly to exclude wildlife, livestock, and the public. Inspection results that find measures ineffective at exclusion would be reported to the Coronado and rectified within 72 hours." (FEIS Appendix B at B-29.)

This is the extent of the mitigation offered for these significant impacts. Other than a fence, no meaningful mitigation measures are even considered to protect wildlife from the impacts from the pit lake after mine closure.

Suggested Remedies: The FEIS must consider adequate mitigation for the likely impacts to wildlife from exposure to the mine pit include not only fencing, but bird deterrents, insect traps, continual monitoring for the life of the impacts, among many others. The USFS must present this information in a revised DEIS that is made available for public review and comment.

Also, as noted herein, the USFS cannot authorize any alternative that would create the contaminated pit lake. Thus, any discussion of mitigation and monitoring for the pit lake assumes that the eventual pit lake that could form would not be predicted to be contaminated (which is not the case under the current action alternatives).

10. The FEIS fails to consider adequate mitigation for impacts to riparian habitat, particularly to habitat in Cienega Creek and Davidson Canyon.

As we noted in our previous comments, "The DEIS's identification [and] discussion of mitigation measures for the many severe adverse impacts identified in the document is woefully inadequate." (SSSR et al. at 136.) We also pointed out that impacts to Ciénega Creek and Davidson Canyon will be expecially severe, noting that the DEIS identified "a total of

1362 acres of riparian habitat that will be directly impacted by changes in ground and surface water," and also noting that this was very likely understating the amount of acreage impacted, as "the riparian habitat along Ciénega Creek downstream of its confluence with Davidson Canyon through Pima County's Natural Preserve is not quantified nor are impacts discussed." (SSSR et al. Appendix A at 24.)

Regarding riparian mitigation for these impacts to Ciénega Creek and Davidson Canyon, we noted that no meaningful measures were considered in the DEIS, and we further noted that it was likely these impacts could not be mitigated. (*See* SSSR et al. Appendix A at 12-13, 20.)

In response to these concerns, the FEIS outlines a number of different mitigation measures, including the establishment of the Cienega Creek Watershed Conservation Fund, to which Rosemont would initially provide $2 million. (FEIS Appendix B at B-43.) The purpose of the fund is described in the FEIS:

> [The fund] would essentially be established as: (1) a resource to help restore the watershed to a functioning ecosystem; and (2) a mechanism to promote adaptive management and allow flexibility in mitigation to achieve desired outcomes in light of future uncertainties. Funds would be used to increase water flows and enhance wetlands in the Ciénega Creek watershed and to implement future mitigations and management strategies to offset unanticipated effects resulting from groundwater drawdown from the mine, if necessary. Administrative costs for the fund would not be included in the $2,000,000 and would be provided separately as specified in the biological opinion. Monies would be spent for on-the-ground restoration, rather than inventory, monitoring, and research. The conservation fund would be managed by a to-be-designated third party. The location and design of projects would be determined by the BLM, with input from other key stakeholders in the watershed, including the Coronado and USFWS. Projects would be designed to preserve and enhance aquatic and riparian ecosystems, protect and maintain habitat for federally listed aquatic and riparian species, and increase water flows and enhance wetlands in the Cienega Creek watershed."

(*Id.*) The FEIS further states, "Rosemont Copper would be responsible for funding the conservation fund at the rate of $200,000/year for 10 years beginning on April 1 of the year following the year in which copper concentrates are initially produced, in addition to funding administrative costs as required in the biological opinion. The Forest Service is responsible for determining whether the fund has been established as required by the biological opinion. The BLM other stakeholders would be responsible for identifying potential mitigation actions; coordinating those actions with the Forest Service, USFWS, and other key stakeholders; overseeing expenditures of the fund; and all monitoring and reporting." (*Id.*)

Elsewhere in the FEIS, the agency discusses the potential mitigation effects resulting from this fund and notes, "The exact effects of projects conducted under the conservation fund cannot be known at this time, but these projects would be presumed to be beneficial to riparian resources

in some manner, as this is the purpose of the conservation funds." (FEIS at 569.)

Regarding actual, on the ground mitigation, the FEIS provides information on a number of proposed measures:

- "Rosemont Copper has committed to replacement of water features (WestLand Resources Inc. 2012h) and has identified improvements to existing stock tanks and the establishment of new stock tanks with surface water sources for livestock and wildlife. … <u>However, none would be located in the area of analysis for surface waters, and therefore they would be ineffective at mitigating the loss of surface water quantity within the analysis area.</u>" (FEIS at 442; emphasis added.)
- "The lands proposed for conservation within Davidson Canyon would be effective at avoiding future impacts to xeroriparian resources located along Davidson Canyon by establishing conservation easements limiting certain types of land use. The lands proposed for conservation at Sonoita Creek Ranch would be at least partially effective at mitigating riparian resources by preserving and possibly creating new riparian habitat; <u>however, it should be noted that these lands are not located within the analysis area or within the Davidson Canyon/Cienega Creek watershed. It should also be noted that sufficiency of the mitigation on the Davidson Canyon parcels or Sonoita Creek Ranch to offset impacts to jurisdictional WUS has yet to be determined by the USACE.</u>" (FEIS at 568; emphasis added.)
- "The severance and transfer of water rights on Cienega Creek would not necessarily provide any new or "wet" water in either Lower or Upper Cienega Creek; however, by creating a senior instream flow right where none currently exists, this mitigation measure would provide significant legal protection against future water use that might take water from Cienega Creek, and it would remove legal obstacles to conducting restoration or management activities along Cienega Creek. … <u>If the water right transfer were not approved, this mitigation would not be protective of Cienega Creek.</u> … <u>It should also be noted that sufficiency of the mitigation activities on Cienega Creek to offset impacts to jurisdictional WUS, either from transfer of water rights or implementation of conservation funds, has yet to be determined by the USACE.</u>" (FEIS at 569; emphasis added.)
- "If successful, the new riparian habitat that would be created downstream of Pantano Dam would replace hydroriparian habitat if any is lost, <u>although these lands are located just outside the analysis area.</u> However there is uncertainty associated with the hydrogeologic characteristics of the stream channel downstream of Pantano Dam. While release of water to the stream channel or uplands would certainly help create and maintain riparian habitat, <u>the recharge of water to the aquifer may not cause the water table to rise shallow enough to support hydroriparian habitat</u>. … <u>It should also be noted that sufficiency of the mitigation proposed at Pantano Dam and in the stream channel downstream to offset impacts to jurisdictional WUS has yet to be determined by the USACE.</u>" (*Id;* emphasis added.)
- "The creation, enhancement, or replacement of water sources is likely to support additional riparian habitat. <u>The exact location and nature of the habitat that would be supported is not known at this time. These measures generally would not be effective as mitigation but rather would provide a means for monitoring potential changes to surface waters and riparian resources within the analysis area.</u>" (*Id;* emphasis added.)

According to the FEIS, the mitigation measures proposed are uncertain to occur and are only vaguely described. Even if most were to occur, by the agency's own admission they will be ineffective at mitigating the actual impacts to Cienega Creek and Davidson Canyon.

Additionally, as the agency correctly points out, the adequacy of these measures under the Clean Water Act have not yet been determined by the USACE. In fact, the EPA has made the determination that the mitigation measures offered in the FEIS are completely inadequate, stating: "currently proposed activities would be insufficient to avoid "significant degradation" of the aquatic ecosystem. Such degradation would be a substantial and unacceptable impact to aquatic resources of national importance, including the "Outstanding Waters" of Davidson Canyon and Cienega Creek." (Ltr. to Colonel Kim Colloton, Los Angeles District Engineer, US Army Corps of Engineers, from Jane Diamond, Water Division Director, Environmental Protection Agency, Nov. 7, 2013.) According to the EPA, "Based on the information currently available, the permit application does not appear to comply with The Guidelines at 40 CFR 230.10(b), (c) and (d) and should not be permitted as proposed." (*Id.*)

Like the other measures, the Ciénega Creek Watershed Conservation Fund is wholly inadequate to mitigate these severe impacts. The agency's wholly unsupported presumption that projects conducted under the conservation fund "will be beneficial to riparian resources in some manner, as this is the purpose of the conservation funds" is simply ridiculous. (FEIS at 569.) The agency admits that "The exact effects of projects conducted under the conservation fund cannot be known at this time." (*Id.*) Simply because the fund's purpose is to provide effective conservation efforts, this does not magically make it so. This statement is disingenuous at best and must be deleted from the FEIS.

Despite our disagreements with the agency's analysis of impacts to Cienega Creek and Davidson Canyon in the FEIS which we discuss elsewhere, it is inarguable that all available information demonstrates devastating impacts to the Ciénega Creek Watershed. However, the only mitigation considered in the FEIS is ineffective, vaguely described, uncertain to occur, and according to the EPA, inadequate under the law.

Suggested Remedies: We agree with the EPA that the measures considered in the FEIS to mitigate impacts to riparian and other water resources are inadequate under the law. In fact, the impacts to these resources are so significant that they simply cannot be mitigated.

GROUNDWATER QUALITY AND GEOCHEMISTRY

As noted herein, the USFS cannot approve any PoO that threatens to violate any federal or state environmental law, regulation, or policy. This includes the water quality resources noted below and herein.

1. The FEIS fails to adequately demonstrate that discharges from the Rosemont Copper Project will not cause violations of Arizona water quality standards.

In our previous comments, we stated that the geochemical testing used by the Rosemont Copper Project to predict impacts to groundwater quality due to leaching and seepage from the tailings facility was fundamentally flawed and grossly underestimated the concentrations of pollutants discharged from the tailings facility. (*See* SSSR et. al. at 50-51.) The Coalition argued that even conservative use of the geochemical testing data indicated that seepage would exceed aquifer water quality standards. (*Id.*) The Coalition also raised technical concerns about the geochemical tests that were used, including the particle size of the test materials, the duration of the tests, the failure to consider biological processes in the tests, the representativeness of the rock samples that were tested, and concerns about misinterpretation

of test data. Despite the short duration and questionable applicability of the geochemical tests, the testing results still indicated that seepage of several pollutants, including arsenic and thallium, was above aquifer water quality standards. (*Id.*)

The USFS summarized impacts to groundwater quality from the proposed action and the action alternatives (with the exception of the Barrel Alternative) as follows:

> "Modeled water quality for potential seepage from tailings and waste rock meets standards. Modeled water quality from lined heap leach exceeds standards for cadmium, fluoride, and selenium but would not be discharged; treatment of heap leach with an engineered biological system meets standards; modeled water quality in mine pit lake exceeds the aquifer water quality standard for thallium and potentially ammonia, but the standard is not applicable to pit lakes."

(*See* FEIS at 124.)

The USFS assessed several mine processes to determine whether discharges from facilities would comply with aquifer water quality standards. These included assessments of expected water quality of: 1) drainage from heap leach facilities, 2) seepage of precipitation through waste rock, 3)seepage from tailings, 4) the mine pit lake (including acidity) and 5) the expected fate and transport of any contaminants reaching groundwater.

The USFS methodology for determining impacts groundwater quality consists of both geochemical and groundwater predictive flow modeling. (*Id.*) The USFS acknowledged public concerns regarding the types and number of geochemical tests conducted by the Rosemont Copper Company. (*See* FEIS at 374.)

The USFS response to public concerns over the adequacy of geochemical testing conducted for the DEIS was to undertake "additional investigations" to determine whether the basic geochemical modeling used by the USFS to predict impacts on groundwater quality was appropriate and acceptable. (*Id.* at 363-364.) The FEIS states that:

> "Several additional technical reports consider the resulting geochemistry and potential fate and transport of contaminants. Seepage from waste rock, tailings, and heap leach facilities is described in "Infiltration, Seepage, Fate and Transport Modeling Report: Revision 2" (Tetra Tech 2012a) with additional documentation provided in "Rosemont Facility Fate and Transport Modeling Response to Comments: Technical Memorandum" (Hudson and Williamson 2011). Predictions of the geochemistry of the mine pit lake are described in "Geochemcial Pit Lake Predictive Model: Revision I (Tetra Tech 2010c)."

(*See* FEIS at 367.)

The USFS states that the two additional geochemical modeling reports cited above were peer-reviewed and that revised reports based on the peer reviews were completed. (*Id.*) The USFS also states that: "Following public comment on the DEIS, the Coronado also commissioned several reports to address various topics concerning geochemistry (Hoag, Bird et al. 2012; Hoag, Sieber et al. 2012; Kline et al. 2012)." (*See* FEIS at 367) These additional technical reports appeared to have been done by Rosemont Copper or its consultants (Tetra Tech).

The USFS acknowledges in the FEIS that scientific uncertainty and professional disagreements

exist regarding the modeling used to support the geochemical impact analysis in the FEIS. (*See* FEIS at p. 368.) The USFS states that there was a split in expert opinion over the adequacy of the mineralogical laboratory testing used to support the predictive geochemical models. (Id.) The USFS states that while Rosemont Copper conducted geochemical testing on different rock types believed to be representative of the ore body and waste rock, Rosemont Copper did not conduct detailed mineralogical laboratory analysis of the rock samples collected. (Id.) Some of the expert geochemical consultants believed that detailed mineralogical analysis "is essential to understanding future geochemical impacts." (*Id.*)

The FEIS states that the Forest Supervisor "reviewed the available information and determined that the analysis conducted to date is sufficient to support the geochemical modeling relied upon in the FEIS. However, the USFS also decided it was necessary to implement additional requirements for future mineralogical analysis…" (*Id.*; emphasis added.) The USFS felt it necessary to incorporate additional monitoring components into the mitigation and monitoring plan to address the substantial scientific uncertainty associated with the geochemical monitoring, waste rock characterization, and the potential for acid rock drainage. (*Id.*)

The USFS did not adequately respond to technical concerns raised by the Coalition regarding the adequacy and completeness of the geochemical testing and predictive groundwater flow modeling used by USFS to predict geochemical impacts. Also, while the USFS apparently contracted for additional technical investigations to address public concerns about geochemical testing and the fate and transport of pollutants, the public has had no opportunity to review the new information presented in the FEIS. The public has had no opportunity to assess the methodology, assumptions, and results of additional geochemical investigations cited in the FEIS nor have members of the public had an opportunity to review the results of the peer reviews performed of these additional studies. Given the scale of the Rosemont Copper Project, the potential for irreparable, long-term groundwater quality impacts (i.e., "in perpetuity"), the potential harm to public safety by possible groundwater contamination of regional aquifers that are used as a source of drinking water supply, and the potential harm to wildlife and natural resources (including harmful impacts to riparian areas and Outstanding Arizona Waters) the Forest Service must conduct more robust geochemical analyses to fully assess the risk of groundwater contamination and the potential for aquifer water quality standards violations.
We object to summary of impacts presented in the FEIS relating to the ability to meet aquifer water quality standards based upon incomplete information and flawed geochemical testing. In particular, we object to the USFS failure to conduct the necessary mineralogical analyses to support the geochemical analyses and that would reduce scientific uncertainty about the reactivity of waste rock piles. We object to any USFS decision to approve Rosemont Copper Project mining operations before more complete geochemical testing is conducted and necessary waste rock characterization tests are performed on representative waste rock and tailings samples

Suggested Remedies: The USFS must revise its analysis and conduct more extensive geochemical testing and predictive groundwater flow monitoring in order to adequately demonstrate that aquifer water quality standards will not be violated. Additional geochemical testing must include additional waste rock and tailings characterization tests, humidity cell testing, whole rock chemistry, and more complete mineralogical analyses. These additional investigations must be considered in the revised analysis, and presented in a revised DEIS that is released for public review and comment.

2. The USFS fails to provide support its conclusion that impacts to groundwater quality resulting from seepage from mine facilities will be "negligible."

The Coalition commented that the USFS had inadequately examined the impact of seepage from Rosemont Copper Project facilities on groundwater quality. (*See* SSSR et. al. at 48.) The Coalition challenged USFS assertions in the DEIS that impacts to groundwater quality would be "negligible" because the USFS finding of "negligible" impact was not supported by adequate geochemical testing , groundwater flow monitoring, or hydrologic analyses. (*Id.* at 49.) The Coalition criticized the geochemical testing and modeling conducted for the DEIS as being fundamentally flawed. We specifically questioned laboratory "leaching experiments" whose results seriously underestimate the amount of pollutants derived from weathering, leaching, and seepage from the mine tailings facility in concentrations that would exceed aquifer water quality standards. (*Id.* at 49-50.)

The USFS identifies potential impacts of the Rosemont Copper Project on groundwater quality as a major issue to be addressed in the FEIS. The USFS framed the groundwater quality issue in the FEIS as follows:

> "Construction and operation of the mine pit, waste rock, and leach facilities have the potential to exceed Arizona Aquifer Water Quality Standards. The mine pit could result in the creation of a permanent pit lake, which has the potential to concentrate dissolved metals and toxins and may lower pH levels. Likewise, disposal of waste material in surface facilities such as tailings, waste rock, and leaching operations could potentially contribute to degradation of the aquifer."

(*See* FEIS Executive Summary at xi; FEIS at 364.)

The USFS states that under the proposed action and all of the action alternatives, seepage will occur from the unlined dry stack tailings facility from entrained process water (*See* FEIS Executive Summary at xxx.) Infiltration of precipitation through the waste rock facility "could" cause seepage (although the USFS characterizes the potential for seepage from the waste rock dump as "unlikely"). (*Id.*) The USFS also acknowledges that the dry stack tailings and waste rock facilities "could" impact groundwater quality but that geochemical modeling indicates that the water quality of potential seepage from the facilities would meet aquifer water quality standards. (*Id.*)

The USFS states in the FEIS that seepage from the heap leach facility under the proposed action is expected to continue for up to 115 years after mine closure. (*Id.*) Geochemical testing and modeling conducted by USFS contractors indicate that heap leach seepage will exceed aquifer water quality standards for cadmium, fluoride, and selenium. (*Id.*) The USFS states in the FEIS that "[c]onceptual modeling shows that <u>with treatment</u>, heap leach discharge can meet aquifer water quality standards." (*Id.*, emphasis added.) The FEIS is silent with regard to what happens to <u>untreated</u> discharges of heap leach seepage after mine closure.

The USFS also states in the FEIS that the mine pit lake water quality would "potentially" exceed aquifer water quality standards for thallium and ammonia and various surface water quality standards for cadmium, copper, lead, mercury, zinc, and selenium. The USFS then dismisses these potential water quality impacts with the statement that surface water quality standards and aquifer water standards do not apply to the mine pit lake. (*Id.*)

The USFS methodology for determining impacts to groundwater quality is described as involving both geochemical and groundwater predictive flow monitoring to predict likely impacts on groundwater quality downgradient of the proposed mine. (*See* FEIS at 367.) The USFS describes impacts from seepage from tailings, waste rock, and heap leach facilities in the FEIS and essentially concludes that "[o]verall, infiltration from precipitation over tailings, waste rock, or the heap leach facilities is expected to be negligible." (*See* FEIS at 377.) This USFS prediction of negligible impact is based upon infiltration modeling that indicates that precipitation that does not immediately run off would remain near the surface and "be lost to evaporation or transpiration by vegetation." (*Id.*) Members of the public, including the Coalition, questioned the adequacy of the infiltration modeling that the USFS relied on to predict seepage rates in the DEIS, as noted above. The USFS acknowledges that the infiltration modeling the USFS used to reach its conclusions in the DEIS were questioned during public comment, and in response the USFS states that Rosemont Copper conducted "more extensive and conservative infiltration modeling" and provided that revised modeling to the USFS. (*Id.*)

The Coalition objects to the inadequate USFS response to Coalition comments regarding the impacts of seepage from Rosemont Copper Project facilities. Also, the USFS has provided new information in the FEIS to support its conclusions that seepage from mine facilities will be "negligible." The Coalition supports additional, more extensive and conservative infiltration modeling; however, we object to the lack of any opportunity to members of the public to review and evaluate the revised infiltration modeling results provided to USFS by consultants for the Rosemont Copper Company, the project proponent. We object to the USFS overreliance on data and information (in this case the results of revised infiltration models) that are conducted by technical consultants for the Rosemont Copper Company and that the agency refuses to share with the public.

We question modeled infiltration results stating that there will be *no* infiltration of precipitation into the waste rock, tailings or heap leach facilities and that all infiltrated water into these mining facilities "is still eventually lost to evaporation." (See FEIS at p. 378.) The USFS conclusion that "no water is incorporated into the waste rock, and as no precipitation infiltrates the facility even under extreme climatic and ponding conditions, no seepage is expected from the waste rock facility" simply defies common sense understandings of how rainfall infiltrates into the ground (even into waste rock dumps!).

Suggested Remedies: The USFS should make available the results of the revised infiltration modeling conducted by Tetra Tech in a revised DEIS so the results can be reviewed and analyzed by members of the public. The conclusion that there will be no seepage from the waste rock dump is counterintuitive and the public should have the opportunity to critically review the data and information that supports that surprising conclusion. Again, the Coalition is concerned that consultants for the project proponent are providing the revised infiltration modeling data to USFS. We recommend that the USFS contract with an independent consultant without ties to Rosemont Copper to conduct either a revised infiltration model or peer review of the Tetra Tech infiltration modeling. The agency must provide this information in a revised DEIS that is released for public review and comment.

3. The FEIS fails to adequately analyze potential groundwater contamination by arsenic.

The Coalition commented that the USFS had failed to evaluate the potential risk of arsenic contamination of groundwater from the tailings facility at the proposed Rosemont Copper

mine. (*See* SSSR et. al. at 53.) We pointed out the potential synergistic effects of arsenic and sulfate on the fate and transport of groundwater contaminants. (*Id.*) We also commented that the USFS used the wrong regulatory standard to model the fate and transport of arsenic. We provided information to the USFS that EPA had reduced the Maximum Contaminant Level (MCL) for arsenic in National Primary Drinking Water Regulations to 10 µg/L and that the 10 µg/L MCL should be used in geochemical modeling to predict impacts on groundwater quality. We raised the issue that the 10 µg/L MCL for arsenic would likely be adopted as an aquifer water quality standard in Arizona and that its future adoption would increase the risk of future aquifer water quality standards violations from discharges from the Rosemont Copper Project facilities.

The USFS acknowledges public concern over the levels of arsenic expected in seepage from the Rosemont Copper Mine tailings facility in the FEIS (*See* FEIS at 363-364.) The USFS response regarding the ability of discharges from Rosemont Copper Project facilities to meet aquifer water quality standards is summarized as follows:

> "Modeled water quality for potential seepage from tailings and waste rock meets standards; modeled water quality from lined heap leach exceeds standards for cadmium, fluoride, and selenium but would not be discharged; treatment of heap leach with an engineered biological system meets standards; modeled water quality in mine pit lake exceeds aquifer water quality standard for thallium and potentially ammonia, but the standard is not applicable to pit lakes."

(*See* FEIS at 369.)

The above USFS response is predicated on the use of the 50 µg /L aquifer water quality standard to compare to standards. The USFS responded to the issue of the appropriate arsenic standard for comparison purposes, noting the existing discrepancy between the current aquifer water quality standard adopted by the State of Arizona (50 µg/L) and the drinking water MCL for arsenic promulgated by EPA (10 µg/L). (*Id.*) However, the USFS decided to use the less stringent aquifer water quality standards for purposes of comparison in its analysis of possible groundwater contamination by arsenic. The USFS rationale for using the 50 µg/L arsenic standard is stated as follows:

> The Coronado has considered public comments that arsenic concentrations associated with discharges to groundwater from the mine should be compared with the drinking water level of 0.010 milligram per liter but has determined that to do so would be inconsistent with applicable State laws and regulations, inconsistent with the issued aquifer protection permit, and contrary to the decisions of the pertinent permitting authority, which is the ADEQ. Therefore, in the FEIS, arsenic concentrations are compared with the Arizona Aquifer Water Quality Standard of 0.050 milligram per liter, as well as with background arsenic levels.

(*See* FEIS at 372.)

The Coalition objects to the inadequate USFS response to the issue of potential groundwater contamination by arsenic from Rosemont Copper Project facilities. The USFS response is overly legalistic and bureaucratic , focusing on what the current Arizona aquifer water quality standard for arsenic is, rather than on what the proper standard should be to provide adequate human health protection. As the USFS acknowledges in the FEIS, the MCL for arsenic in

drinking water is 10 µg/L. This is the concentration of arsenic that should be achieved in groundwater to prevent adverse human health effects. The effects include non-cancer effects such as thickening and discoloration of the skin, stomach pain, nausea, vomiting; diarrhea; numbness in hands and feet; partial paralysis; and blindness. Arsenic also has been linked to cancer of the bladder, lungs, skin, kidney, nasal passages, liver, and the prostate. To prevent these adverse human health impacts, the USFS should use the MCL of 10 µg/L instead of continuing to rely on the outdated and superseded AWQS.

EPA promulgated the revised MCL of 10 µg/L for arsenic on January 22, 2001, replacing the old standard of 50 µg/L. The revised MCL for arsenic became effective on February 22, 2002, more than a decade ago. The State of Arizona has adopted those Primary Drinking Water MCLs that were promulgated prior to August 13, 1986 as AWQS as required by Arizona Revised Statute (ARS) §49-223. A.R.S. §49-223 also requires ADEQ to open a rule making docket to adopt additional MCLs promulgated by EPA after August 13, 1986 (like the arsenic MCL promulgated in 2001). ADEQ is required to open a docket to adopt a new or revised AWQS by within one year after federal promulgation of the MCL. ADEQ has never met its statutory duty to initiate rulemaking to revise the arsenic standard to 10 µg/L. The USFS should not rely on the obsolete and superseded arsenic AWQS of 50 µg/L in the ADEQ rules because ADEQ has failed in its statutory obligations to update the aquifer water quality standard to 10 µg/L. The USFS should have used the 10 µg/L MCL for arsenic for comparison purposes to protect groundwater used for drinking water supply and thereby to adequately protect human health.

Suggested Remedies: The USFS must revise the geochemical testing for arsenic and use the 10 µg/L MCL for arsenic in order to adequately assess risks to human health protection for well owners who may be impacted by potential arsenic contamination of groundwater from the Rosemont Copper Project. The USFS must provide this information in a revised DEIS that is released for public review and comment.

4. The USFS cannot rely on ADEQ to demonstrate that Best Available Demonstrated Control Technology (BADCT) will be used for groundwater quality.

In our previous comments we stated that, while the Rosemont Copper Project's mining plan of operation (MPO) describes various pollutant control processes for project facilities, the Rosemont Copper Company did not make the required demonstration that the pollution control technologies described in the MPO constituted best available demonstrated control technology or BADCT. (*See* SSSR et al. at 56.) The Coalition objected to the use of loopholes and qualifying phrases, such as "where practicable" when discussing BADCT implementation. Finally, we questioned the lack of information demonstrating the effectiveness of the proposed pollutant control technologies on a commercial scale for a mine like the proposed Rosemont Copper Mine. (*Id.*)

The basic USFS response to these previous comments consists of a statement that the USFS deferred the BADCT determinations for Rosemont Copper Project facilities to the Arizona Department of Environmental Quality (ADEQ) through the Aquifer Protection Permit (APP) permitting process. The USFS states that an APP was issued by ADEQ on April 3, 2012. (*See* FEIS at 392.) The USFS also provides a summary of the ADEQ BADCT determinations for Rosemont Copper Project facilities, including the dry stack tailings facility, process water storage ponds, the primary settling basin, raffinate pond, heap leach pad, pregnant leach solution pond, storm water pond, waste rock facility and the non-municipal solid waste landfill.

(*See* FEIS at 392-393.) The USFS noted that the ADEQ BADCT determinations may change if the Mining Plan of Operation for the project is revised and becomes final. (*Id.* at 394.) The FEIS omits any discussion of the current legal status or ongoing appeal of the Aquifer Protection Permit issued by ADEQ on April 3, 2012. While the USFS acknowledges that the APP and BADCT determinations may change as a result of changes to the Rosemont Copper Project MPO, there is not even an acknowledgement in the FEIS of the procedural facts that the APP (as well as all of the ADEQ BADCT determinations summarized in the FEIS) is provisional and are currently under appeal.

The USFS response to Coalition comments regarding the failure to demonstrate BADCT is inadequate. The USFS may not defer to ADEQ to make BADCT determinations through the Aquifer Protection Permit (APP) program; rather the agency is required under NEPA to provide adequate information and analysis regarding this determination independently. In addition, the FEIS fails to acknowledge that the APP issued for this project is currently under appeal by multiple plaintiffs challenging ADEQ's issuance of the APP and the state agency's BADCT determinations.

Suggested Remedies: The USFS must analyze and disclose how this project meets all applicable standards and provide this information in a revised DEIS that is released for public review and comment.

5. The USFS cannot rely on ADEQ to ensure adequate groundwater monitoring.

The Coalition criticized the proposed frequency of groundwater monitoring described in the DESI as inadequate. (*See* SSSR et al. at 56.) The Coalition commented that the frequency of monitoring did not include sampling during "climate and geophysical events" (i.e., storm events) that may occur in the future. (*Id.*) The Coalition also questioned the monitoring plan that relies on annual or biannual sampling and monitoring surveys. The Coalition commented that proposed large groundwater withdrawals and the effects of hydraulic sink created by excavation of the open pit mine require more frequent groundwater monitoring. (*Id.*) We also commented on the need for daily storm water runoff monitoring during monsoon storms and other storm events to ensure that storm water management system work as planned. (*Id.*) Finally, we commented that proposed monitoring frequencies were inadequate because they did not produce sufficient numbers and types of samples to produce valid statistical results. (*Id.* at 57.)

The USFS did not adequately respond to Coalition comments on groundwater monitoring. The only references to groundwater quality and aquifer level monitoring in the FEIS are found in Groundwater Quality section in the discussion of mitigation effectiveness. (*See* FEIS at 395-396.) The USFS states that it would include monitoring of waste rock for seepage and monitoring to determine impacts from pit dewatering on downstream sites in Barrel Canyon and Davidson Canyon as mitigation measures. (FEIS at 395.) The USFS also would require additional water quality monitoring springs and wells for water quality changes (*Id.*) Finally, the USFS states that groundwater quality and aquifer level monitoring would be required under the APP issued by ADEQ and that such monitoring would ensure that water quality problems, if present, would be identified and monitored. (*Id.* at 396.)

The FEIS does not include a USFS response to Coalition comments regarding the frequency of groundwater monitoring and storm water runoff monitoring. The USFS may not defer to ADEQ to ensure that adequate monitoring takes place in order to identify water quality

problems; rather the agency is required under NEPA to provide adequate information and analysis regarding the monitoring that would be required in order to ensure that any water quality problems are identified.

Suggested Remedies: The USFS must require more frequent groundwater quality and stormwater monitoring as mitigation measures independent of state requirements, and provide this information in a revised DEIS that is released for public review and comment.

6. The FEIS fails to provide an adequate analysis of the potential impacts from acid rock drainage.

The Coalition commented on the DEIS that the USFS did not adequately address the potential adverse effects from acid rock drainage from Rosemont Copper Project facilities. (*See* SSSR et al. at 59-60.) In our comments, we cited a report that assessed the reliability of EIS predictions of water quality impacts from hard rock mines in the West (Kuipers et. al, 2006). The Kuipers report contained statistics indicating that 60 percent of all mines reviewed in the report had mining-related surface water quality standards violations when their respective EIS had predicted they would not. Thirty-six percent of the mines reviewed had acid mine drainage. (*Id.*) In nearly all of the mines with acid mine drainage, the responsible management agency had ignored or underestimated the risk of acid mine drainage in the EIS prepared for the mine. (*Id.*) The Coalition cautioned the USFS not to make the same mistake of underestimating the potential for acid mine drainage, citing the example of other mines where inadequate geochemical characterization, inadequate sample representation, inaccurate acid / base accounting, and overestimation of the neutralization potential of waste rock produced at the mine, led to inaccurate geochemical modeling results. (*Id.*)

In response to comments and concern over the potential for acid mine drainage from the Rosemont Copper Project, the FEIS provides a discussion on acid mine drainage from the Rosemont Copper Project and concludes that there is a low probability for impacts to surface water quality to occur from acid rock drainage. (*See* FEIS at 468 to 471.) In general, this USFS conclusion is based on waste rock characterization of rock types from the project area and geochemical testing performed by the technical consultants for the Rosemont Copper Company.

Tetra Tech, the Rosemont technical consultant that performed the waste rock characterization and geochemical testing, describe the rock types at the Rosemont Copper Project area as consisting mostly of limestone and skarn (metaphosed limestone) with minor amounts of quartz monzonite porphyry, andesite, and arkose rock types. Tetra Tech also reports that sulfide mineralization is present in the project area but that the sulfide content of the host rock was low. Acid-neutralizing limestone was abundant in the project area. (*See* FEIS at p. 468.) Static testing of soil samples and rock samples indicated a relatively low potential for acid generation (11 percent and 5 percent respectively). (*Id.* at 468-469.) One rock type, Bolsa Quartzite was shown to produce net acidity as a result of sulfide oxidation. (*See* FEIS at 469.)

The USFS states that the waste rock dump, dry stack tailings facility, and the closed heap leach facility would be encapsulated with inert or acid-neutralizing waste rock after mine closure and reclamation. The USFS asserts that design of these facilities and the use of acid-neutralizing rock to buffer acidic discharges in another reason that the potential for acid mine drainage from the Rosemont Copper Project is low [Id]. The USFS summarizes the reasons the agency believes that there is a low potential for acid mine drainage:

"Because inert or acid-neutralizing waste rock would be used to build

> buttresses around waste rock and tailings facilities to provide acid buffering, there is little potential for acid rock drainage. Proper implementation of the waste rock stack design and routine inspections of the waste rock facility are components of the ADEQ Aquifer Protection Permit. Modeling and geochemical analysis indicate that there is a low probability for impacts to surface water quality to occur from acid rock drainage (Tetra Tech 2010c)."

(FEIS at 470.)

The USFS incorrectly states in its discussion of acid mine drainage in the FEIS that water with a pH greater than 4.5 "…is said to be alkaline and has the capacity to neutralize acid." (*See* FEIS at 468.) The characterization of mine water with a pH of 4.5 as alkaline and acid neutralizing is flatly wrong. According to standard and widely available pH scales used to teach pH concepts to middle-schoolers, water with a pH of 7 is characterized as neutral and any water with a pH from zero to 6 Standard Units (S.U.) is acidic. Water is described as increasingly acidic as its pH decreases from 7 S.U towards zero. For example, acid rain is described as having a pH of between 4 and 5 standard units. Acidic lakes are described as having a pH of approximately 5 S.U. Coffee, considered an acidic beverage, typically has a pH of around 5 S.U. Water with a pH greater than 7 S.U. is described as basic or alkaline with increasing alkalinity as pH increases from 7 S.U to 14 S.U. The fact that the USFS could get a basic scientific fact about pH so wrong in its discussion of acid mine drainage in the FEIS illustrates the USFS uncritical acceptance of investigations performed by the Rosemont Copper Company consultants and calls into question the accuracy of the USFS analysis of acid mine drainage issues, as well as the accuracy of the entire document.

The monitoring and mitigations measures recommended by the USFS to assess potential acid rock drainage from Rosemont Copper Project facilities inspire little confidence in the accuracy of the geochemical testing and waste rock characterization performed by Tetra Tech. One USFS mitigation measure involves requirements for continued monitoring and the segregation and encapsulation of potentially acid generating waste rock with acid-neutralizing material to reduce the risk of potential acid generation. (*See* FEIS at p. 471.) The FEIS states, "A waste rock segregation plan has been incorporated into the design of the facility and would be informed by continued monitoring and testing of waste rock for acid-generating potential as it is developed from the mine and placed into the waste rock facility." (FEIS at 397.) However, there is no waste rock segregation plan presented as a reference to the FEIS, or is there sufficient information presented in the FEIS to be able to determine how waste rock will be segregated to help prevent acid rock drainage.

The USFS also felt it necessary to require additional waste rock characterization tests on waste rock and tailings during mining operations "to ascertain that the reactivity of the waste rock pile is fully understood in order to ensure an adequate closure design is implemented." (*Id.*) If additional geochemical testing and waste rock characterization is needed to provide greater certainty about potential acid mine drainage, then the additional tests must be performed <u>before</u> the USFS makes its decision regarding the Rosemont Copper Project.

Suggested remedies: The USFS must revise its analysis and conduct additional geochemical testing and waste rock characterization in order to demonstrate that proposed Rosemont Copper Project facilities will not cause acid mine drainage. The USFS must also develop a comprehensive waste rock segregation plan, including well defined waste identification,

segregation, and placement procedures. The agency must provide this information in a revised DEIS that is released for public review and comment.

7. The FEIS fails to provide an adequate analysis of the potential for the mining process to concentrate naturally radioactive materials in the tailings.

The first discussion of Technological Enhancement of Naturally Occurring Radioactive Materials (TENORM) in the FEIS appears in the "Groundwater Quality and Geochemistry" section of chapter 3. In the preliminary sections of the FEIS, TENORM is listed as a new issue which has previously not been commented on: "Potential impacts related to radioactivity and asbestos have been added to the FEIS. Potential impacts to air quality, soils, and ground and surface water from pollutants associated with the mine are disclosed in Chapter 3 of the FEIS. Specifically, the potential for Technological Enhancement of Naturally Occurring Radioactive Materials (TENORM) is addressed in the Groundwater Quality section of Chapter 3." However, TENORM has implications for a variety of problems, from air quality and generation of hazardous materials, to effectiveness or lack thereof air and water quality monitoring, and probably most serious, for workplace hazards due to radiation, which are not apparently covered in the FEIS.

The FEIS states that in response to public comments, the CNF requested further investigation into "the potential for the mining process to concentrate naturally occurring radioactive materials in the tailings." (FEIS at 384.) The following objections concern this passage in the FEIS regarding that investigation:

> "The investigation focused on the ranges of uranium typically found in crustal-type rocks, the general concentrations by rock type generally found in the Rosemont deposit, the results of radionuclide and whole rock geochemical analysis conducted by Rosemont Copper on rock samples, and the solubility of uranium at the pH ranges expected to be encountered in the tailings. The most common source of radioactive materials is igneous intrusive and metamorphic basement rocks; as discussed above, compared with other deposits, these types of rocks are largely absent from the Rosemont deposit, although other types of rocks, including those present, typically also have lower levels of radioactivity. Geochemical analysis conducted by Rosemont Copper generally supported the finding that elevated levels of radioactive materials were not present. Mobility of any uranium present in the tailings was expected to be low, based on geochemical testing. Overall, the review found that the potential for technological enhancement of naturally occurring radioactive materials was adequately investigated and that the mineralized and unmineralized rocks present in the Rosemont deposit would not generate detectable concentrations of these materials in the resulting tailings (Kline et al. 2012)." (*Id.*)

First, the statement that "Geochemical analysis conducted by Rosemont Copper generally supported the finding that elevated levels of radioactive materials were not present" is questionable. The original data which Rosemont submitted on the radioactive chemical content of their ore source material was deficient. Rosemont's consultants never characterized thorium, found in large quantities separately from uranium in areas of the Southwest in the vicinity of the Rosemont claims. Nor did Rosemont report any attempts to check for and quantify the

mildly radioactive lanthanide (rare earth) elements, which might also be present. Further, the background geochemical characterization did not include detailed and complete mineralogical analyses of the samples. Thus, the assumptions about which minerals in the ore deposit contain radioactive elements are subject to serious challenge.

Second, Rosemont actually omitted from their tables of chemical analyses of the composition of the ores any radioactive elements. Rosemont has never corrected their data tables accordingly.

Third, the FEIS does not clearly characterize "mobility" of uranium from the tailings. By the time uranium gets to the tailings it has been chemically treated by sulfuric acid, sodium sulfide, and exposed to a chelating agent to extract copper which has a potential affinity to bind other metal elements. The chemical environment is highly acidic, although the tailings pile is surrounded by carbonate based rocky material which has a potential to neutralize some of the acid if liquids migrate through the formation. The geochemical relationships to phosphates and sulfates in the tailings, as well as trace quantities of fluoride and chloride, are not explored, nor are the geochemical correlations with other elements. The same applies to radium and thorium.

Fourth, in the air quality permit appeal hearings, the problems of TENORM arose because the Rosemont site occurs over a depleted uranium claim. Depleted uranium is a major source of TENORM. Further, Rosemont inquired with respect to ADEQ's information with EPA on TENORM issues from copper mining. Given this information, what does "elevated values" mean for material cited from the EIS above? The radioactivity content levels may be confused with respect to "natural background level" of the geological strata, and therefore erroneously not considered a problem.

Fifth, the CNF cannot depend solely on its consultant report Kline (2012) because that report noted that the authors simply assumed that samples were handled properly, the results reported properly, and that all quality control aspects of a chain of custody were accounted for. However, the authors did not question the quality of the data, nor comment on the background geochemistry report notes from the radioactivity analyses presented.

Sixth, the last sentence of the above-cited passage from the FEIS is contradicted by the materials in the background geochemistry characterization report. The only leachate sample reported in any specialized background radioactivity testing confirmed the presence of the uranium in the leachate and the ore, and its leaching potential, thus showing detectability.

Seventh, a radioactive substance that is found naturally at a given level in a given geological stratum does not mean it is not an environmental hazard. Erosion from the dry stack and blasting will both release the material to the environment and make it toxicologically available whereas it might not be if it remained originally trapped in undisturbed mineral strata.

Suggested Remedies: The USFS must revise its analysis of the potential for the mining process to concentrate naturally radioactive materials in the tailings, and present this information in a revised DEIS that is made available for public review and comment.

8. The FEIS has inadequately addressed the problems of selenium in groundwater and surface waters and their effects on wildlife.

In our previous comments we discussed issues related to the impacts of selenium on wildlife. (SSSR et al. at 60, 89.) The FEIS responded by stating: "The Coronado has worked with their contracted geochemical experts to review the USEPA concerns regarding these two constituents (Hoag, Bird, and Day 2012; Hoag, Sieber and Rasmussen 2012, Kline et al 2012) and believes the analysis in the EIS is adequate and defensible. It should be noted that some uncertainty remains in the analysis regarding selenium, and the potential for stormwater runoff to have elevated selenium concentrations. As noted above, it is due in part to this uncertainty that the Coronado is working with Rosemont Copper to develop more thorough characterization of waste rock and tailings." (FEIS at Appendix G-65.)

There are several objections to the FEIS response:

First, the USFS should have required completion of this characterization of waste rock and tailings prior to release of the final EIS. To leave this important background informational step until after completion of review of the EIS prevents objections on the materials from specialists who are knowledgeable about arsenic and selenium chemistry. It also shows incomplete work by the USFS.

Second, the USFS officer should have taken a conservative stance with respect to the uncertainties listed in the comment above rather than rendering a positive decision which precludes any adjustments should the information obtained about arsenic and selenium issues be not favorable.

Third, the reports by Hoag, Sieber and Rasmussen 2012, and Kline et al, (2012), contain a considerable amount of weasel wording with respect to descriptors of the work accomplished, especially in the use of the adjective adequate. The reports give the impression that the positive opinions with respect to Rosemont, TetraTech, and related consultant work were at best marginal and really cannot address the concerns about the possibilities of the adverse effects which generated the USFS questions.

Suggested Remedies: The USFS must revise its analysis to address the problems of selenium in groundwater and surface waters and their effects on wildlife, and present this information in a revised DEIS that is made available for public review and comment.

9. The FEIS relies on inadequate or undefined test samples in its analysis of the likelihood of leaching from tailings.

In our previous comments on the DEIS, we stated, "three different types of experiments were utilized to assess the likelihood of leaching of toxic elements from the tailings pile (or the exposed open pit rocks, or the waste rock piles). Note that some information about the details of these experiments is given in the DEIS appendix materials, other information is derived from provided references, and we have inferred the rest from standard protocols for these tests. While some of the tests conventionally specify a grain size for the test rock powder, no such information could be found in the DEIS. Clearly this is a major variable in the tests, as leaching of a fine-grained powder will be more effective than leaching of a coarse powder. Since the copper mineral extraction processes are only effective with very fine grained powder (probably 20-50 micrometers?), it is incumbent on the USFS to show in the DEIS that weathering and leaching of such a powder does not lead to a violation of AAWQ Standards." (SSSR et al. at

50.)

In response, the USFS refers the reader to Vol. 2 of the FEIS, which refers the reader to peer-reviews of earlier reports. (FEIS Appendix G # 906.) The response does not illuminate the question. Under Dust Control, the FEIS mentions that relatively larger grain sizes than normal would be derived from the grinder, with 80% passing 150 mesh, instead of 250-325 mesh. (FEIS at 287.) However, the grain size is dictated by the metallurgical requirements, and cannot be adjusted solely based on dust control issues. This is a crucial point in interpreting the leaching experiments, because the leaching efficiency is a strong inverse function of grain size. (*See* Hoag, Sieber et al, 2012, at 6.) Other aspects of the leaching techniques are also important, but not defined in the FEIS or project record. Was there any flotation fluid present during leaching, as the tailings material will certainly contain some flotation fluid? What is the chemical nature of the flotation fluid? What was the temperature of the leaching experiments, as the surface of the tailings piles will be quite hot during summer monsoon rainfall? While the lithology of various samples utilized for leaching is provided, nowhere is the mineralogy quantitatively specified – i.e. were typical ore minerals present? Both sulfide and oxide? In what modal abundance? This is important because the ore minerals are typically also the host for many of the toxic elements. The issue of mineralogical studies was brought up repeatedly in comments to the DEIS. Peer reviews of earlier reports (*e.g.* Hoag, Bird and Day, 2012) on the one hand emphasize the need for thorough mineralogical studies, but then state that the earlier reports have done an acceptable job. In fact, the earlier reports contain virtually no quantitative mineralogical studies, with thin section evaluations aided by electron probe analyses, X-ray diffraction, etc.

Suggested Remedies: The USFS must supply the necessary documentation if available, and run additional tests under more realistic conditions in order to adequately assess the potential for leaching from the tailings. The USFS should conduct detailed mineralogical studies; considering that these tests provide the basic starting data for the seepage models, and because numerous toxic metals are already exceeding or nearly exceeding AWQS, every detail of these tests must be carefully controlled and documented. The USFS must provide this information in a revised DEIS that is made available for public review and comment.

10. The FEIS does not present the humidity cell tests as cumulative values, which is as required under relevant protocols.

In our previous comments we stated that in regards to Humidity Cell (HC) leaching experiments, "1 kg of rock powder is exposed at 25-30°C to alternating humid and dry air, to facilitate oxidation of sulfides and other minerals. This powder is then extracted weekly for 3-4 hours with 0.5 kg of pure water, and this water is analyzed for a range of elements of interest. In the present case, the experiment was continued for 20 weeks." (SSSR et al. at 50.)

We went to note that "the HC test results appear to have been pooled in 5 week batches; these showed no detectable levels of Be, Cd, Cr, Pb, Hg, Ni, Se or Tl. Arsenic (As) and antimony (Sb) were above detection limits, but mostly just below or at AAWQ Standards. While these appear to be "long term" tests (20 weeks), each actual exposure of rock to a leach solution was only 3-4 hours. Furthermore, the test data should have been provided as cumulative amounts extracted, in addition to "concentrations per each extraction". If this total amount extracted is converted to concentrations with the experimental water/rock ratio of 0.5, then all concentrations will increase by a factor of ~ 20 times, and many values then will likely be in excess of AAWQ Standards. Note that this test is still far from the natural process that will be

taking place in the leach pile. Some appreciation of this can be gained from the "modified" humidity cell test proposed by Bouzahah, Benzaazoua and Bussiere (2010), which utilized a constant degree of saturation with no drying cycles. Cumulative sulfate extracted was 4.5 time that of the conventional Humidity Cell (e.g. ASTM protocol D5744- 07)." (SSSR et al. at 135.)

In response, the USFS states, "a variety of comments have been made regarding the sufficiency of the type and number of geochemical tests conducted by Rosemont Copper. Following the public comment period, the Coronado requested opinions from geochemical specialists on a number of these issues:

- It was determined that the number, type, and distribution of samples were sufficient to adequately support the geochemical modeling conducted to date (Hoag, Bird et al. 2012).
- It was determined that the nine samples used to represent the future tailings material were adequate in number and also were geologically representative of the future tailings material (Hoag, Bird et al. 2012).
- Some comments suggested that Rosemont Copper be required to conduct formal, detailed mineralogical analysis of waste rock samples. While this type of analysis may be useful for providing realistic constraints on model assumptions, it was determined that the mineralogy of the deposit was well understood and that detailed work would likely not appreciably change the results or conclusions of the geochemical models (Hoag, Bird et al. 2012). This issue remains a point of scientific uncertainty and professional disagreement, as previously discussed.
- The EPA raised the concern that the synthetic precipitation leaching procedure (SPLP) results may under-represent concentrations in the geochemical models. This issue had been addressed through the peer review process of the geochemical modeling and was reevaluated in light of public comments. It was determined that the synthetic precipitation leaching procedure data were indeed appropriate for use in the geochemical models (Hoag, Sieber et al. 2012).

(FEIS at 376.)

The USFS further notes as a monitoring mitigation, "Additional waste rock and tailings characterization (FS-GW-03). During operations, additional waste rock characterization tests, above and beyond those required by the aquifer protection permit, would be required to be conducted on waste rock and tailings. This additional analysis includes requirements for humidity cell testing, whole rock chemistry, and mineralogical analysis in addition to the acid-base accounting and leachate testing already being conducted for the aquifer protection permit." (FEIS at 471.)

In addition, regarding use of the SPLP leaching method, Hoag, Sieber et al, states, "They have also documented that scaling the SPLP results for Rosemont rock materials is not necessary to match the results expected in HCTs because SPLP results for many constituents are higher than those found in the HCT results (Tetra Tech, 2010o)". (Hoag, Sieber et al. at 4.)

This is an insufficient response to our concerns. The SPLP leaching test involves a single 24-hour interaction between 1 kg of rock powder and 20 kg of very weak acid. This is to be compared with the Humidity Cell Test (HCT) that leaches 1 kg of rock powder for a few hours each week for at least 20 weeks. Clearly the HCT is more realistic of natural field conditions, whereby the tailings, for example, are only sporadically exposed to rainfall, where the amount

of rock exposed to a given volume of rain is small, and where the rock is otherwise exposed to oxidation by air in the interim between rainfall events.

One of the observations from the peer-review by SRK states: "The SPLP results on two tailings samples (Tailings-022807 and Tailings-05 June 2007) were non-detects for arsenic. This may not be relevant as tailings are rinsed thoroughly during metallurgical test work, and therefore leachable concentrations in the test results are expected to be low." (Hoag, Bird and Day (2012) at 12.) The same peer review recommended that "Geochemical modeling inputs should incorporate humidity cell and on site test work results on mined and weathered materials rather than SPLP/MWMP on drill core wherever possible." (*Id.* at 30.)

ADEQ supports the use of SPLP tests, as that is the standard specified in the Arizona BADCT Mining Manual. However according to the Arizona Administrative Code (AAC), it must be shown "That the facility will not cause or contribute to violation of an Aquifer Water Quality Standard at the applicable point of compliance…" (AAC R18-9-A202(A)(8)(a)(i).) The USFS must ensure compliance with Arizona law as well as the minimum requirements stated in the BADCT Manual.

Thus, it appears that there is significant support for using the HCT as a relevant source of data for input to the Fate and Transport models. However, and most critically, there is no understanding in the FEIS or any of the supporting record that the HCT results are to be aggregated or cumulated, not treated as single week analyses. In other words, the effect of toxic element seepage on the aquifer will depend on the sum of all the leached materials over time, not on the single one-week result of an SPLP test. The ASTM Protocol (D5744- 07) for Humidity Cell testing fully documents this in Section 12.9.1, and Equation 8. Using results from Rosemont's own studies, samples of arkose and andesite from the Willow Canyon Formation (which makes up 40% of the early waste rock to be removed) were Humidity Cell tested for 35 weeks. (Rosemont Aquifer Permit Application Appendix Q at 244-264.) Not only were most of the weekly arsenic and antimony values above federal standards for groundwater, when cumulated for 35 weeks the arsenic concentrations were 0.66 and 0.75 mg/L, and the antimony was 0.49 and 0.53 mg/L respectively. These values are 60-90 times higher than federal standards. If used as starting concentrations for the Seepage, Fate and Transport modeling, the results would prohibit granting of an Aquifer Protection Permit. To be clear, we know that such a permit has been granted, but it is currently under appeal in part for exactly the issues expressed here. The granting of an APP by ADEQ cannot be used by the USFS as justification for giving Rosemont a pass in the FEIS.

Suggested Remedies: The USFS should use the existing data, which are already_sufficient to be used as starting values for new seepage, fate and transport modeling, and conduct modeling using these more appropriate values. The UFS must provide information regarding the corrected modeling and present this information in a revised DEIS made available for public review and comment.

This modeling will almost certainly show massive exceedances for As, Sb, Tl, Pb, Cd, and possibly other toxic elements. The only way to mitigate the problem of leaching is to fully line the tailings and waste rock storage facilities with a geo-membrane system, which the USFS should require of Rosemont before this project moves forward.

11. There are numerous deficiencies in analytical protocols, reporting of results, and failures to meet Arizona water quality standards.

In our previous comments we stated, "The [Meteoric Water Mobility Procedure] MWMP and [Synthetic Precipitation Leaching Procedure] SPLP experiments are quite similar, differing only in the choice of leaching acid, and the water/rock sample ratio chosen. In principle, the SPLP results can be expected to be up to 20 times lower than those of the MWMP tests, simply due to the dilution effect of using 20 times more solution per weight of rock powder. …[B]ecause of the short duration of the test, most of the results are near or below detection limits. Note that in general the blanks and detection limits of the analytical methods utilized by [the consultant] were substantially lower (factor of 10) than the [Arizona Aquifer Water Quality] AAWQ Standards concentrations. However, for thallium, the detection limit was much higher than the AAWQ limit; for antimony, the detection limit was the same as the AAWQ value; for arsenic, the detection limit was only half of the AAWQ limit. This is clearly too close for comfort with these three important toxic elements." (SSSR et al. at 51, 135-136.)

We further stated, "Looking only at the MWMP results, which will always be higher than the SPLP results, the elements Be, Cd, Cr, Pb, Hg, Ni, Se are generally well below [State] Standards. The upper limits given for thallium was 7 times the AAWQ standard, so Tl cannot be eliminated as a problem. Similarly, antimony had a detection limit 3 times the AAWQ Standard, so is potentially a problem. Arsenic had a similar problem in tests on the 2010 samples, but was below the AAWQ Standard for tests on the 2007 and 2008 samples. So, even given the short duration and questionable applicability of the various leaching tests to natural situations, several toxic elements were shown to be above AAWQ Standards. This issue cannot be sanitized with summary statements such as "Potential seepage from dry-stack tailings is expected to meet current Arizona Aquifer Water Quality Standards." (DEIS page 295)." (*Id;* emphasis added.)

Regarding groundwater quality, we stated that the "DEIS omits groundwater contamination in its "six" public health hazards related to mine activities (p. 647 of Volume 2 of the DEIS). The DEIS indicates that the public health concern is with people not involved with the mine. These are people who depend on groundwater for drinking water and other purposes." (SSSR et al. at 53.)

We went on to note, "the DEIS has not looked at possible groundwater contamination by arsenic even though EPA has already told the USFS this may occur because of possible pollutant release from the tailings. The arsenic problem has several aspects that make the situation more complicated than might be suggested by EPA's remarks. (a) Arsenic in groundwater will move with any sulfate plume in the groundwater. In fact, the sulfate will concentrate arsenic to levels beyond what even modeling can show. Groundwater contamination by a sulfate plume has already been documented in Pima County, making this geochemical relationship a subject of concern. (b) EPA has recently reduced the allowable levels of arsenic in groundwater and these changes should become mandatory in any aquifer water quality regulations. There is now the danger that this specific contaminant will violate the aquifer regulations. (c) The arsenic compounds will lower pH of the water and add to the depletion of any buffering capacity by calcium compounds. These are additional acid generators. … The DEIS omits mention of other possible toxic elements as possible groundwater contaminants that can possibly be leached from the tailings pile or processes prior to disposal of tailings: chromium, zinc, antimony, lead, thallium, and the radioactive elements, especially thorium. Chromium, thorium and other radioactive elements are carcinogens.

Antimony and thallium affect cardiac function. Lead is a neurotoxin. The EPA is reducing the allowable levels of lead from 25 to 10 parts per million." (SSSR et al. at 53.)

In response, the USFS refers the reader to Vol. 2 of the FEIS, which then refers to and summarizes several peer-reviews of earlier reports (e.g. Hudson and Williamson, 2011; SWCA Revised Analysis, 8/25/13; Rosemont Copper, 2012f). (FEIS Appendix G #875, #906.)These peer-reviews are in general critical of the way in which analytical data are presented, and sometimes critical of the quality of the data itself. But the peer-reviews may then conclude that the original reports provide adequate justification for the conclusions drawn – the FEIS then translates this final finding into the FEIS without actually trying to fix anything, or even deem the inadequacies unacceptable.

Rather than address the issues we raise, the data reporting status has become even more confused since the DEIS was issued. Even casual readings of the FEIS and associated peer-reviews reveal this situation. Dissolved concentrations are not always distinguished from "total" concentrations, entries in a data table are frequently listed as "not present", the meaning of which is given as "either not detected and therefore not modeled, or was below detection limits in the modeled seepage". (*See e.g.*, FEIS at Table 71.) There is no excuse for allowing this kind of ambiguity. There are still cases where the detection limits are above the AWQS or other applicable standards. For example, the EPA drinking water standard, and the AWQS for thallium is 0.002 ppm, yet various data tables may range in detection limits for Tl from 0.0001 to 0.050 ppm! (FEIS at 461, Table 102.) Where exceedances are provable, the FEIS may actually assert that these are not common, and not significant given a larger body of values that meet a standard; however an exceedance is an exceedance, and the USFS must address it.

The situation with arsenic is a complete muddle, because of the discordance between Arizona standards and Federal standards, and therefore because of the persistent issue of labeling groundwater different from surface water. The USFS has completely abdicated their responsibility here, and allowed Arizona, through ADEQ, to put the agency in an untenable position. The USFS has a stated policy of recognizing the general connection between surface water and groundwater, and they should assert this as a guiding principle. Drawing a distinction between a shallow alluvial aquifer and a regional groundwater aquifer is not a distinction in "connectivity" but only one of time scale on which the connectivity operates. To conclude, for example, that the lower Davidson Canyon is not hydraulically connected to the regional aquifer is incorrect. (*See* FEIS at 539.) The application of the anti-degredation criteria would then place very stringent limits on arsenic in Davidson Canyon, as the base flow arsenic levels are all below even drinking water standards.

Finally, we have significant concerns regarding this statement in the FEIS: "based on discussions with ADEQ on preliminary drafts of the FEIS, it was made clear to the Coronado that the responsibility and jurisdiction for assessing whether the mine meets anti-degradation criteria lie with ADEQ. The person seeking authorization for a regulated discharge to a tributary to, or upstream of, an Outstanding Arizona Water (in this case Rosemont Copper) has the responsibility to demonstrate to the State of Arizona that the regulated discharge will not degrade existing water quality in the downstream Outstanding Arizona Water. This demonstration by Rosemont Copper, and determination by the State of Arizona, has not yet been completed." (FEIS at 549.) Thus, it is incorrect for the USFS to rely on ADEQ and assume that this project does not violate state standards, when ADEQ itself does not even know whether the project will meet the standards.

Suggested Remedies: The USFS must issue a revised DEIS that indicates the outstanding questions regarding Rosemont's compliance with state water standards, and that addresses the issues we raise above. The only defensible way forward is to make the aquifer and surface water arsenic standards the same and apply the "connectivity principle" to both the Outstanding Arizona Waters "Tier 3 Anti-Degradation criteria", and to the modeling of the impacts of arsenic and other toxic elements on the aquifer arising from the Rosemont mine, and provide this information in a revised DEIS made available for public review and comment.

12. The FEIS fails to address deficiencies in the leach tests due to the lack of a microbial component.

In our previous comments we noted "that all three experimental leaching tests were strictly inorganic (abiotic). It is well known that the presence of organic acids and active biological processes can increase weathering and leaching rates of some toxic metals by huge factors (e.g. White and Brantley, 1995; Erel et al., 1990; Stille et al, 2011). Therefore, in actuality, the results from the leaching experiments discussed here should all be viewed as lower limits, with the leaching rates under field conditions certainly higher, and probably much higher." (SSSR et al. at 51.)

The USFS responds by referring the reader to Vol. 2 of the FEIS, without any mention of a biological component in the leaching experiments. (FEIS Appendix G #906.) There is no mention either in Vol. 2, or any of the post-DEIS reports or references in the project record. We note that there are references to "biological treatments" or "bioengineering", particularly in Hudson and Williamson, 2011, but these refer to attempts to clean up dirty waters with biological sequestration – this is not what we are talking about in this present argument.

It is absolutely clear that this issue has been totally ignored, despite our initial comments on the DEIS. While it might appear convenient to dismiss the problem by claiming there is no significant active microbial activity in the dry Rosemont "desert", this would be an incorrect assessment, or at the very least an assessment demanding robust validation.

From a regulatory perspective, the Arizona Mining Guidance Manual (BADCT) is clear: "The Arizona Administrative Code (A.A.C.) R18-9-A202(A)(4) requires that a summary of the known past facility discharge activities and the proposed facility discharge activities be conducted to indicate all of the following:

- The chemical, biological, and physical characteristics of the discharge;
- The rates, volumes and frequency of the discharge for each facility;
- The location of the discharge."

For a small sampling of the voluminous literature on this subject, there is a list of 17 scientific papers given at the end of this filing.

Suggested Remedies: The USFS should run more experiments under well planned and carefully executed conditions; there is significant literature on this subject that should provide guidance to designing useful experiments. Because these leaching tests provide the basic starting data for the seepage models, and because numerous toxic metals are already exceeding or nearly exceeding AWQS, every detail of the tests must be carefully controlled and documented. The USFS must provide this information in a revised DEIS that is made available

for public review and comment.

Aside from successful results from the above tests and modeling, the only way to mitigate the problem of leaching is to fully line the tailings piles. The USFS should require this of Rosemont as an alternative, before this project moves forward.

13. The FEIS analysis lacks leach test data on oxide ore lithologies.

In our previous comments we stated, "There is a lack of clarity regarding the selection of the samples that were used in the leaching tests. For example, the "2010 samples" were chosen to comprise the five major rock types making up the sulfide ore material, plus one composite sample representing the actual mixture of rock types to be mined during years 4 to 7. There appears to be an intention to focus on the sulfide ores, and no direct mention is made regarding leach tests of the oxidized ore. This material will be primarily mined in preproduction, and in years 1, 2 and 5, and will be intentionally strongly leached in a heap leach facility (where seepage can be captured). However, some parts of the sulfide ore will also contain oxidized ore minerals that will end up on the tailings pile after sulfide extraction, and these may have a drastically different behavior during the various leach tests. If leach tests of this material have been performed, they should be discussed. If not, either tests should be made, or reasons given as to why they are not needed." (SSSR et al. at 52.)

The USFS does not seem to address these concerns in the FEIS or in any of the peer-reviews or reports of record. With the proposed plan to eliminate the heap leach facility, the problem of leaching and seepage from the oxide ore becomes even more critical. The samples that have undergone leach testing to date do not obviously include oxide ore (and in fact it is not clear that any of the leach samples actually are "ore grade, either oxide or sulfide – see Attachment D in Hudson and Williamson, 2011). While it may be argued that the oxide mineralogy is closer to being "in equilibrium" with near-surface oxygenated conditions, there is no *a priori* way of translating this into quantitative "leachability" information.

Suggested Remedies: As recommended above, one possible remedy is to do additional leach testing of drill core composites that accurately represent both the oxide material that may be stockpiled, and the mixed oxide/sulfide ore grade material that will end up on the tailings piles. These tests must include Humidity Cell tests that have an active microbial component, the data must be cumulated according to ASTM protocol, and this must then be used as "starting values" for new seepage, fate and transport modeling. This information should be presented in a revised DEIS that is made available for public review and comment.

Revised modeling will almost certainly lead to a finding of aquifer contamination, and the only remedy for this is a fully lined geo-membrane system; in other words, treat the waste rock, storage rock and tailings in the same way as had been proposed for the heap leach facility. Note that such a liner system would likely pre-empt the need for any further leach testing. The USFS should require Rosemont to undertake this mitigation measure before this project moves forward.

14. The FEIS analysis has numerous problems with the infiltration, fate and transport modeling.

In our previous comments we stated, "In addition to the inapplicability of the laboratory experiments, the hydrologic "sink" or "trap" created by the open pit is frequently cited as a factor in sequestering groundwaters contaminated by seepage from the tailings pile. While

there is unquestionably a local "sink" produced by the open pit, there must also be a flow gradient driving groundwater off the property. This was perhaps not revealed by the modeling because the boundaries of the hydrodynamic model may have been set too close to the Rosemont property. With the bottom of the pit eventually reaching about 3000', there will be a hydrodynamic gradient toward any distant surface elevation below 3000'. The question isn't whether flow will be driven in such a direction, but whether the flow will be important. This will depend on the permeability of the intervening formations. The flow model needs to be adapted to address this issue, and at least demonstrate that such flow will be inconsequential. There is a statement on page 291 that appears to admit that groundwater beneath the tailings stack will move northward and eastward (away from the open pit). If true, and if this groundwater exceeds AAWQ Standards due to seepage from the tailings pile, or the open pit itself, then regional aquifer contamination is possible. Quantitative modeling must be used to deny this possibility, using more realistic input "seepage" water concentrations than those discussed above. (This discussion is related to the comment on the water resource impacts of the Sonoita Plain included in this document.)" (SSSR et al. at 52.)

In response, the reader is referred to Vol. 2 of the FEIS, where general comments are included about groundwater flow, and seepage modeling. (FEIS Appendix G #875.) These comments are then documented by reference to numerous "peer reviews" of the prior project record (O'Brien, 2013; Hoag, Bird et al, 2012; Hoag, Sieber et al, 2012; Rosemont Copper, 2012f; SWCA 2013k; Hudson and Williamson, 2011). Largely, these reviews re-iterate information existing at the time of the DEIS, and add very little substantive response to our DEIS comments.

The seepage, fate and transport modeling are still incomplete and fail to address numerous important issues. When initial tailing are emplaced, they will be thin, un -compacted, and will not have the h ydraulic conductivity profiles that were modeled. There will be no "cone of depression" from the open pit, thus all groundwater flow will be "downhill", and not captured by the open pit. As the tailings pile builds up, it will be variably compacted by dust -control measures, and will not have a homogeneous permeability structure. It will certainly not start out with the extremely low hydraulic conductivity that was chosen for the modeling. Likewise, the underlying alluvium and bedrock will have many high per meability paths. None of this complexity has been actually modeled. The FEIS tries to circumvent this failure by repetitively mentioning one of the outcomes that arose from the preliminary modeling effort, namely that the total seepage from the tailings pi le would be only 8 gpm. This indeed sounds trivial, but to "put it in context", this is 4.2 million gallons per year.

Suggested Remedies: The USFS should run a full 3-dimensional seepage, fate and transport model, with moving boundaries, presence of flow localization both in the tailings pile and in the substrate, rainfall that mimics the 3-day 13 inch black swan events that have actually occurred in southern Arizona. The USFS must provide this information in a revised DEIS made available for public review and comment.

15. The FEIS fails to adequately analyze the technical feasibility of the dry-stack tailings.

In our previously submitted comments on the DEIS, we noted that the USFS failed to adequately investigate the proposed dry stack tailings technology as a mitigation measure that "would reduce Rosemont Copper's consumption of water by 50 to 60 percent over traditional industry designs." (SSSR et al. at 38.) We stated, "While dry-stack technology is now used in

many open-pit mines globally, and in some with comparable semi-arid conditions (e.g., La Coipa, Chile), we know of none that are employing this technology at anywhere near the processing levels envisioned by Rosemont (20,000 tons per day is the limit of current practice, versus – 75,000 tons per day for Rosemont). One thing is for certain, as a company Rosemont Copper has never used dry stack tailings technology in mineral production given that it has never engaged in mineral production. Consequently, the DEIS should have investigated this critical mitigation measure more thoroughly - sought out specific examples where it has been utilized and independently evaluated these applications for suitability to the Rosemont Copper project. Further, a revised or supplemental DEIS must analyze the effects of using a more typical tailings treatment should dry tailings fail." (Id.)

In response the USFS states, "[t]he EIS is meant to be a summary document of environmental impacts. There are numerous reports that support the analysis as well as the project design that are incorporated by reference. Details related to the tailings storage design can be found in the design report by AMEC. The Forest Service has reviewed design documents and decided there is adequate detail from which to base a decision on." (FEIS Appendix G #970.)

One of the primary reasons dry tailings are utilized over wet tailings is that the designed moisture content allows the tailings to be compacted to an optimum density to permit the tailings themselves to provide structural stability, and to minimize the permeability. In the past, haul truck and bulldozer compaction has not proved to be adequate to meet these design assumptions/specifications. To reference an obviously deficient tailings compaction method in both the DEIS and FEIS, despite the error being highlighted in the DEIS comments, does not lend confidence in the competency of either the Forest Service or its contractors, who probably wrote the response.

Suggested Remedies: The USFS should independently analyze all aspects of the technical feasibility of the dry-stack technology and include this analysis in a revised DEIS for public comment. Incorporating by reference technical reports prepared by consultants to the proponent is not sufficient given the significance of this "mitigation" measure.

16. The FEIS fails to adequately analyze the viability of engineered biological systems on an industrial scale.

In our previous comments we stated, "The DEIS mentions that a bioengineering process will assure that cadmium, fluorine, nickel and selenium as possible groundwater contaminants are prevented from becoming groundwater pollutants, but the statement has no scientific support because there are no references or discussions on its use or efficacy. Rosemont Mine recently announced "innovative biological processes" in the Arizona Daily Star (*Mitigation measures listed for Rosemont,* by Tony Davis, October 18, 2011) utilizing bacteria to remove toxic elements from waste streams to prevent contamination of groundwater. The main reference in the DEIS to an "engineered biological system" appears as an entry in Table 62 on page 282 of Volume 1, The DEIS indicates that this system supposedly will correct water quality problems associated with cadmium, nickel fluoride and selenium which were raised in modeling calculations with respect to the Heap Leach facility 2." (SSSR et al. at 53-54.)

We then go on to note several problems with this assertion, including that 1) this entry has no reference to treatment of arsenic, which under revised aquifer and groundwater regulations, in place as of 2008 nationally, reduces the allowable level of arsenic from 50μg/liter to 10μ/liter; 2) most of the "innovative biological processes" and "bioengineering processes" to remove

toxic metals and other elements from waste streams using metal accumulation in bacteria have only been laboratory-tested; 3) there is concern that such processes will not treat fluoride; 4) at very high levels of heavy metal accumulation in the bacteria the metals become toxic to the bacteria and the culture dies, and new culture must replace the dead culture, which requires a reseeding or re-inoculation of cultures to allow the process to continue, all of which creates biohazard issues, yet there is no indication of how Rosemont will handle this biohazard waste; 5) sometimes bacterial metal removal processes call for the possible use of genetically engineered organisms ,yet it is unclear if Rosemont will need additional licensure from EPA for this work; 6) the USFS fails to note in the DEIS whether require a special biohazard monitoring facility for these processes separate from and in addition to its regular facilities or how Rosemont will address bioengineered organisms as an environmental problem; (SSSR et al. at 54-55.)

Finally, our previous comments state, "Most of these bacterial processes depend on one or a combination of several mechanisms: surface adhesion and absorption, cellular incorporation as chelated ligands, and use of electron transport mechanisms that release energy when elements with multiple valence states change valences during various chemical reactions. Surface adhesion is likely to work with most of the elements, but the elements can be "washed off" or desorbed, and that requires further controls. In some cases, surface reactions may provide mineral occlusions of the toxic elements in iron oxide and calcium oxide matrices. The second method depends on cysteine linkages, and should work with all elements that can combine with sulfide ion based proteins.

"These include iron, cadmium, copper, nickel, zinc, chromium, mercury and silver. That process will likely be less effective for the radioactive elements and thallium. Because of the selenium content of the waste stream, the major sulfur ion based protein, cysteine, can form a selenocysteine derivative. This chemical can also bind to the elements which can bind to the sulfur linkages. The resulting selenocysteine adducts are less toxic than purely sulfide linkages on proteins and less stable. They can break down more easily and much faster than the sulfur adducts, and conceivably, could release the heavy metals back to the processing streams or effluents because of the weaker selenium bonded proteins. The third method depends on elements with several possible positive valence states, and will likely not work with thallium, antimony, cadmium, and zinc. However, such processes have been documented with uranium, nickel, molybdenum, iron, and chromium. Any uranium utilization will make the bacterial wastes a low level radioactive waste product. Since Rosemont is mining molybdenum, it is not likely they would wish this material to be lost to bacterial waste stream." (SSSR et al. at 55.)

In response, the USFS admits, "Based on the modeling, seepage from the heap leach facility before and after passive treatment with crushed limestone would still exceed numeric Arizona Aquifer Water Quality Standards for cadmium, fluoride, and selenium. However, the engineered biological system would reduce concentrations of all constituents below numeric Arizona Aquifer Water Quality Standards." (FEIS at 382.) The agency offers some discussion in the FEIS of the proposed use of engineered biological systems, and some testing data drawn from Hoag et al 2012 and Hudson and Williamson 2011 showing that on a laboratory scale such a system can be effective for some toxic elements but not all. (*See Id.*) (*Id.*)

With the heap leach facility not included in the Barrel Alternative, the preferred alternative, it's not clear an engineered biological system (EBS) is necessary, since the FEIS claims there are no exceedances of AWQS from the tailings piles or the waste rock storage facilities that could

be treated with an EBS. The new MPO indicates that there will be an oxide ore storage facility, but as yet there has been no testing of possible seepages from such a facility, thus no established need for an EBS. In any event, claiming such a system will cure aquifer contamination problems on an actual mine scale, as opposed to the lab scale of the preliminary experiments, is clearly wishful thinking and the USFS cannot rely on this to mitigate the impacts.

Suggested Remedies: Should the need for a mine-scale EBS be deemed necessary, for example if the additional testing suggested above proves AWQS violations, then a major effort will be required to demonstrate mine-scale capability for EBS systems. The USFS should revise its analysis accordingly and provide the information in a revised DEIS that is available for public review and comment.

GROUNDWATER QUANTITY

1. The FEIS fails to adequately analyze impacts to regional groundwater sources.
We commented in the DEIS that the USFS analysis of the impacts of the Rosemont Copper Project's groundwater pumping on regional groundwater resources was inadequate because the USFS limited the temporal bounds of the hydrologic analysis to the operational life of the mine, or only 20 years (SSSR et al. at 38).

The USFS did not adequately respond to this comment in the FEIS. The USFS acknowledged in the FEIS that "[t]he mine life, including construction, operation, reclamation, and closure, is approximately 24.5 to 30 years …." (FEIS Executive Summary at vii.) The USFS further explains in Footnote 1 to the Executive Summary of the FEIS that: "The draft environmental impact statement (DEIS) gave the mine life as 20 to 25 years. However, this only refers to the operational mine life, and it has been corrected in the final environmental impact statement (FEIS). The stages of mine life are as follows: pre-mining (18 to 24 months), active mining (20 to 25 years), final reclamation and closure activities (3 years), and post-closure (indefinite)." (FEIS Executive Summary, Footnote 1, at vii.) The USFS asserts in the FEIS that the group of issues relating to Rosemont Copper Project impacts on water resources (Issue 3) include effects during pre-mining, active mining, final reclamation and closure, and the post-mining phases of the project on the quality and quantity of water for beneficial uses , wells, and stock watering. (*See* FEIS Executive Summary at x.) However, there appears to be little or no actual analysis of the long term impacts of groundwater mining on the post-mining phases of the Rosemont Copper Project's in the FEIS.

The USFS extended the temporal bounds of the hydrologic analysis for the mine water supply well field in the Upper Santa Cruz Subbasin to 140 years after initiation of groundwater pumping "in order to allow the cone of depression that would result from 20 years of groundwater pumping to stabilize." (FEIS at 293.) The USFS acknowledges that 20 years represents the maximum amount of drawdown in the vicinity of the Rosemont Copper Project water supply wells, the lateral extent of the cone of depression would continue to expand after groundwater pumping stopped. (*Id.*)

The USFS extended the temporal bounds of the hydrologic analysis for the Davidson Canyon / Cienega Basin area on the eastern side of the Santa Rita Mountains to 1,000 years after the completion of mine operations. (*See* FEIS at 293.) The USFS asserts in the FEIS that it has

attempted to provide "snapshots" of predicted changes in groundwater conditions at 20, 50, 150, and 1,000 years after final reclamation and closure of the Rosemont Copper Project. (*Id.*)

> "It is recognized that predicting conditions 1,000 years in the future is speculative at best, as is discussed in greater detail later in this section; however, this long time frame was selected in order to allow the bedrock aquifer impacted by the mine pit to come close to equilibrium. The analysis area shown in figure 43 was selected to encompass all areas within which groundwater could be affected by either the mining water supply well field near Sahuarita or the mine pit; the analysis area encompasses the areas included in the groundwater models conducted for the analysis (approximately 1,060 square miles)."

The USFS fails to adequately respond to this comment in the FEIS. While the USFS extended the temporal bounds of the groundwater models to 140 years for the Santa Cruz Basin and 1,000 years for the eastern side of the Santa Rita mountains, the USFS did not provide any meaningful analysis of the hydrologic impacts of the Rosemont Copper Project within the extended temporal boundaries. In particular, the USFS failed to analyze the long-term impacts of the Rosemont Copper Project groundwater withdrawals on water resources during the indefinite post-closure period after the mine ceases active operations. It is not an adequate response to describe "potential" impacts and then downplay predicted impacts as "speculative at best" or uncertain.

Suggested Remedies: The USFS must provide an more detailed analysis of the predicted impacts to groundwater resources within the extended temporal and geographic boundaries of the hydrologic analysis. It is an insufficient response to simply list impacts and characterize them as potential, speculative, or uncertain. The USFS must make a reasonable attempt to describe likely and reasonably foreseeable impacts of the Rosemont Copper Project's groundwater pumping on regional groundwater impacts. The USFS must make a credible attempt to analyze the environmental and socioeconomic impacts on existing water users over the active mine life of the Rosemont Copper Project (i.e., 24.5 to 30 years). The USFS must extend the analysis to include reasonably foreseeable long-term impacts over the extended temporal boundaries of the hydrologic analysis. The agency must provide this information in a revised DEIS that is released for public review and comment.

2. The FEIS fails to adequately analyze the impact of Rosemont's water use.

In the DEIS, the USFS failed to consider adequately the critical importance of water in the Southwest to flora and fauna of southern Arizona ecosystems and the potential impacts of relatively small reductions in water quality and water quantity to those ecosystems. (*See generally* SSSR et al.) The USFS also failed to adequately consider the potential impacts of the proposed Rosemont Copper Project on the water supply for current and future residents of southern Arizona. (*See* SSSR et al. at 37.)

The USFS states in the FEIS that the Arizona Department of Water Resources (ADWR) authorized the withdrawal of up to 6,000 acre-feet of groundwater per year for the Rosemont Copper Project. The FEIS states that the current estimate of Rosemont Copper Project is between 4,700 and 5,400 acre-feet of fresh water per year. (FEIS at 41.) To put that in perspective, 4,700 to 5,400 acre feet of water translates to an estimated 1,531,499,700 to 1,759,595,400 gallons of groundwater each year (or 1.5 to 1.75 billion gallons of groundwater per year). The FEIS also states that the estimated total ground water consumption over the life of the mine is approximately 100,000 acre-feet or 32,585,100,000 gallons of groundwater (that

is over 32.5 billion gallons of groundwater over the lifetime of the proposed mine!). (*Id.*) The Rosemont Copper Project proposes to pump this immense amount of groundwater from four to six production wells located on land owned or leased by Rosemont Copper near the community of Sahuarita in the Santa Cruz Valley. (*See* FEIS at 41-42.)

Total fresh water to be used during mining operations is estimated to be about 4.8 million gallons per day (Citing Huss 2009:91). Most of this "fresh water" will be supplied by groundwater wells in the Santa Cruz Valley. Much smaller quantities of water will be obtained from storm water and pit dewatering on the mine site. The FEIS states that it is estimated that up to 18,500 acre-feet could be obtained from pit dewatering over the life of the mine and used for ore processing or dust control.

While the USFS identifies large-scale groundwater withdrawals as a major issue in the FEIS, the USFS fails to adequately analyze the impact of estimated groundwater pumping over the estimated life of the mine. The USFS estimate of total groundwater consumption over the life of the mine in the FEIS is almost certainly an underestimate. Using the lower estimated values in the FEIS for annual groundwater consumption (4,700 acre feet per year) and the shortest estimated mine life of 24.5 years, the estimated total fresh water use during mining operations comes to 115,150 acre-feet per year (i.e., 24.5 years x 4,700 acre feet per year = 115,500). If one uses the higher estimated values stated in the FEIS for annual groundwater consumption of 5,400 acre feet per year and a projected mine life of 30 years, the total water use over an estimated 30-year life of the proposed Rosemont Copper Project comes to 162,000 acre feet. There appears to be no factual basis in the FEIS for the USFS estimate of 100,000 acre-feet. Using the numbers provided by the USFS in the FEIS, the estimated total groundwater consumption over the life of the mine ranges from 115,000 to 162,000 acre feet per year, or approximately 15 percent to 62 percent higher than the USFS estimate of 100,000 acre feet. The FEIS is riddled with these contradictory estimates.

Suggested Remedies: The USFS must provide an adequate analysis of the project's water use, including addressing the contradictory estimates of total groundwater consumption. The USFS should also provide the technical basis for the estimate of 100,000 acre feet or include the higher range of total water use of 115,000 to 162,000 acre feet of groundwater. The agency must provide this information in a revised DEIS that is released for public review and comment.

3. The FEIS fails to address the impacts on groundwater quantity in the upper Santa Cruz Basin near Sahuarita.

We commented on the DEIS that the USFS did not adequately analyze the socioeconomic impacts of groundwater pumping by the Rosemont Copper Project on existing businesses and water users in the upper Santa Cruz River basin in the DEIS. (*See* SSSR et al. at 40.) We stated in our comments that the USFS did not analyze how decreases in the water table in the upper Santa Cruz basin would economically affect existing well owners. (*Id.*) We also pointed out that the USFS had identified seventy feet of additional drawdown of the water table in the Santa Cruz River valley that would be attributable to groundwater pumping for the Rosemont Copper Project in the DEIS. (*Id.*) We also pointed out in our comment that each foot of decline in the water table would result in increased costs to existing well owners due to the additional lift and additional pumping costs. We criticized the USFS failure to provide any socioeconomic analysis of these increased costs in the DEIS. (*Id.*)

The USFS identified Issue 3B: West Side Groundwater Availability as a major issue in the FEIS. (*See* FEIS Executive Summary at xi.) It is evident from this issue identification that the USFS clearly understands the issue that "[w]ater needed to run the mine facility could reduce groundwater availability to private and public wells in the Santa Cruz Valley, specifically the communities of Sahuarita and Green Valley, Arizona and that household water availability could potentially be reduced." (FEIS Executive Summary at xi.) While the USFS acknowledges public concern over the absence of analysis on predicted impacts on individual well owners in the DEIS, the USFS did not respond adequately to those concerns by providing additional analysis in the FEIS. Instead, the USFS continues to avoid the bottom line issue of what are the likely impacts of groundwater pumping by the Rosemont Copper Project on individual home owners, existing businesses, and communities by characterizing impacts as merely potential, (i.e., "*could* reduce groundwater availability") and by saying that "the information available for most wells remains insufficient for assessing impacts to individual wells." (FEIS at 291.) The USFS apparently was able to collect enough information "…to describe the progression of impacts to all wells over time and space, to give a better picture of potential impacts that could occur to individual wells." (*Id.*) The USFS was able to describe the existing rate of water table declines and predict an *additional* decline in the water table in the upper Santa Cruz Basin of 1.5 to 3.5 feet per year and a total drawdown of the regional aquifer of 90 feet due to groundwater mining by the Rosemont Copper Project. (*See* FEIS at 317.) The USFS was able to predict the geographic extent of the impact from groundwater pumping (i.e., 3 to 4 miles from the pumping center), the duration of impact in years (100 to 140 years), and the approximate number of the 500 to 550 individual wells that would be affected by Rosemont's groundwater pumping. (*See* FEIS at 317-318.) The USFS asserts that limitations of the Mine Water Supply model developed by Montgomery and Associates (2009a; 2010) that the USFS used to model impacts to groundwater levels associated with the mine supply well field made USFS assessment of impacts to local wells "not feasible." (FEIS at 305.) The USFS also asserts unpersuasively that it would be "prohibitively costly and time consuming to create…"an inventory of existing wells with the requisite information to assess impacts to existing well owners. (*Id.*)

While the USFS identifies groundwater pumping for the Rosemont Copper Project and the reduction of groundwater availability for existing well owners as a major issue in the FEIS (i.e. Issue 3B), there is no quantitative or even a qualitative analysis of a reduction in groundwater availability nor any socioeconomic analysis of the effect of groundwater mining on existing well owners. The USFS acknowledges that pumping of mine supply water in the upper Santa Cruz Subbasin will remove water from the regional aquifer and will lower groundwater levels an additional 1.5 to 3.5 feet to year (for a total decrease of 5 to 10 feet each year). (*See* FEIS at 291, 317-318.) The mine supply well field is predicted to impact existing well owners for 100 to 140 years after groundwater pumping begins. Given existing rates groundwater decline in the area, the potential impact of additional drawdowns of the regional aquifer, the 500 to 550 existing water users that could be affected in the Sahuarita area, the USFS must provide a thorough analysis of these impacts.

Suggested Remedies: The USFS should conduct an inventory of the 500 to 550 individual wells that could be affected by groundwater pumping at the production for the Rosemont Copper Project. The USFS should obtain the necessary information on well depth, screened intervals, and current depths to groundwater to assess likely impacts to existing well owners within the affected geographic area of the mine supply well field for the project. After the well inventory is completed and the necessary data and information has been compiled, the USFS

should provide either a quantitative, or qualitative hydrologic and socioeconomic analysis of the likely impact of the predicted 90-foot drawdown of the regional aquifer over the next 100 to 140 years. What is the likelihood that existing wells will dry up? What is the likelihood that groundwater pumping will affect groundwater supplies for agricultural users? What is the likely impact on local community water systems? The USFS must analyze the reasonably foreseeable effects of groundwater pumping on existing water users in the local community in the upper Santa Cruz Basin and provide this information in a revised DEIS that is released for public review and comment.

4. The FEIS fails to analyze the Sahuarita Heights Well Owner Agreements to determine whether they constitute an adequate mitigation measure.

The Coalition criticized the USFS identification of the Sahuarita Heights Well Owner Agreements as a mitigation measure in the DEIS. (*See* SSSR et. al. at 40.) The Coalition challenged USFS's assertions in the DEIS that well owner agreements would "ensure" that residential wells in the Sahuarita area would remain productive during mining operations . (*Id.*) We criticized these USFS assertions in the DEIS as being overly broad and misleading and we commented that the mitigation measures related to the Sahuarita Heights Well Owner Agreement required additional analysis and clarification in the FEIS because the DEIS lacked sufficient detail or specifics to allow a determination of the adequacy of the mitigation measures. For example, the Coalition pointed out that the USFS did not state how many existing wells were or would be covered by Rosemont's proposed well protection program nor did it describe the number of existing wells within the area of hydrologic impact of the groundwater mining for the Rosemont Copper Project. (*Id.*)

The USFS did not respond adequately to Coalition comments questioning the adequacy of the Sahuarita Heights Well Owner Agreement mitigation measure. The USFS states in the Executive Summary that the FEIS includes mitigation measures designed to "…avoid, minimize, rectify, reduce, eliminate, or compensate for the impacts of the proposed action and other action alternatives." (FEIS Executive Summary at xxii.) The FEIS states:

> "Rosemont Copper would mitigate the potential effects of mine related pumping on residential water supply wells in the Sahuarita Heights neighborhood by entering into an agreement with the United Sahuarita Well Owners. This well protection plan addresses pump inspection, pump maintenance, pump replacement, well inspection, well maintenance, and well replacement to ensure that residential water wells in the Sahuarita area that are enrolled in the program remain productive throughout the life of minerals production operations."

(FEIS Executive Summary at xxix.)

The USFS also states in the Executive Summary that "Rosemont Copper has committed to recharging <u>available</u> Central Arizona Project water to offset groundwater pumping. <u>The location of the recharge may not be in the vicinity of the mine water supply wells</u>, although Rosemont Copper has entered into an agreement with the Community Water Company for construction of a pipeline to the Sahuarita area that would allow for recharge near the pumping wells." (FEIS Executive Summary at xxix (emphases added).)

The USFS responses in the FEIS are essentially restatements of text that the Coalition previously criticized in the DEIS. The USFS reasserts its position that the creation of a well

protection program agreement will somehow provide effective mitigation for groundwater mining in the Sahuarita area and that the well protection program will ensure that residential well owners in the Sahuarita area will be protected.

First, the Coalition was unable to find in the FEIS where the USFS provides specifics, details, or additional clarifications of the proposed well protection plan that would provide an objective basis for determining the adequacy of the well protection plan as a mitigation measure. The USFS merely restates the unsupported assertion that the proposed Rosemont United Sahuarita Well Owners (RUSWO) well protection program will *ensure* that residential water wells in the Sahuarita area would "…remain productive throughout the life of minerals production operations." (FEIS Executive Summary at xxix; FEIS at 359.)

It is impossible to evaluate the effectiveness of the RUSWO agreement as a mitigation measure from the information provided in the FEIS. First, it is obvious that a RUSWO agreement does nothing to actually "minimize, rectify, reduce, or eliminate" depletion of the regional aquifer in the Sahuarita area. Second, the USWO agreement does not appear to require that Rosemont provide "wet" water for groundwater recharge to mitigate declining water tables in the Sahuarita area caused by groundwater mining for the project. Third, the FEIS explicitly states that "the well protection plan would be effective at mitigating impacts to well owners near the mine water supply pumping, provided that those residential owners have entered into the agreement" with the Rosemont Copper Company (*Id.,* emphasis added.) It does nothing for residential well owners who choose not to enter into legally binding agreements with Rosemont Copper Company for any number of legitimate reasons. Like the DEIS, the FEIS suffers from the same lack of analysis regarding how many residential well owners are or may be covered by the RUSWO well protection program. (*See* SSSR et. al. at 40.) Finally, while provisions of the well protection plan described in the FEIS generically address "pump inspection, pump maintenance, pump replacement, well inspection, well maintenance, and well replacement" the FEIS is silent regarding whether the Rosemont Copper Company will be required to deepen existing wells to mitigate declining water tables in the Sahuarita area or be obligated under the well protection plan to recharge the regional aquifer in the Sahuarita area, reduce pumping at the mine supply well field, or provide for an alternative water supply for residential well owners if groundwater pumping for the mine dries up their existing residential wells.

The Rosemont Copper Project commitment to recharging available CAP water to offset groundwater pumping in the Sahurarita area is an empty promise. The key word qualifying Rosemont's commitment and which renders the commitment meaningless is the modifier, "available," before "Central Arizona Project water." A qualified commitment to recharge "available" CAP water is both misleading and disingenuous. As the Coalition pointed out in its comments on the DEIS, currently there is no excess CAP water available to the Rosemont Copper Company that it can use for purposes of groundwater recharge. (*See* SSSR et. al. at 41.) The fact is, there is no CAP water legally or physically available to the Rosemont Copper Project that can be used for groundwater recharge in the Sahuarita area and it is highly unlikely that CAP water will become available for groundwater recharge purposes in the foreseeable future. Given ongoing drought conditions in the Colorado River Basin, the predictions by climate scientists that drought conditions are likely to continue in the Southwest, current water demands in the Tucson AMA, and the recent Bureau of Reclamation (BOR) Colorado River Basin Water Supply and Demand Study that predicts continuing future imbalances between water supply and future water demand, it is highly unlikely that any CAP water will be

available for groundwater recharge to mitigate groundwater mining by the Rosemont Copper Project. While the USFS acknowledges these issues and public concerns in the FEIS at p. 360, the USFS did not provide any substantive response to the issues raised by the Coalition.

Even in the highly unlikely event that CAP water becomes available for groundwater recharge within the Tucson AMA, the USFS acknowledges that the location of any groundwater recharge may not be in the vicinity of the mine water supply wells. This acknowledgement alone calls into the question the effectiveness of the well protection plan as a mitigation measure.

Finally, and most importantly, the USFS fails completely to address the issue of the voluntary nature of the mitigation measures proposed by the Rosemont Copper Project. As the USFS admits:

> "Under Arizona water law, there is no requirement for Rosemont Copper to recharge water to offset groundwater extracted under their groundwater withdrawal permit. The recharge as proposed is a completely voluntary mitigation measure. Therefore, it is accurate to say that having earned long-term storage credits by recharging excess Central Arizona Project water, Rosemont Copper would legally be allowed to sell them or use them for additional pumping. However, that is not what Rosemont Copper has proposed."

(FEIS at 361.)

The USFS uncritically accepts at face value the voluntary nature of the mitigation measures proposed by the Rosemont Copper Project. We object to the USFS uncritical acceptance of Rosemont promises to mitigate groundwater mining at its mine supply well field. Good intentions, qualified promises (e.g., recharging "available" CAP water), and vague provisions of proposed well protection plans do not constitute effective mitigation measures.

Suggested Remedies: The USFS must prepare a revised DEIS that either eliminates from discussion Rosemont Copper using Central Arizona Project water as a mitigation measure or, in the alternative, includes enough detail about the availability of CAP water for recharge, the proposed well protection plan, and the Rosemont United Sahuarita Well Owners agreements to allow for a credible assessment of their effectiveness as mitigation measures. Effective mitigation measures will include legally enforceable, unqualified, and unconditional requirements that bind Rosemont Copper and that require either a reduction in mineral production and associated groundwater pumping for the proposed mine at if existing well owners are adversely affected. The FEIS must consider real requirements to provide "wet" water to recharge depleted regional aquifers or include requirements to provide alternative water supplies for existing well owners and local communities if mining-related groundwater pumping depletes the regional aquifers they depend on for their life needs. The agency must provide this information in a revised DEIS that is released for public review and comment.

5. Proposed groundwater mitigation measures in the Tucson Active Management Area are voluntary and thus inadequate for the purposes of mitigation.

The Coalition questioned several mitigation measures contained in the DEIS on the grounds that Rosemont Copper Project had "voluntarily" committed to implement them within the Tucson Active Management Area (Tucson AMA). (*See* SSSR et. al. at 41.) The Coalition questioned the following mitigation measures in the DEIS : 1) using "available" CAP water

for groundwater recharge within the Tucson AMA, 2) conducting groundwater recharge within the Tucson AMA as close as possible to the mine supply well field in the area of the cone of depression caused by groundwater withdrawals for the mining project, 3) "to the extent practicable", Rosemont would use CAP storage credits to balance groundwater pumped from the mine supply well field with the intent to maintain a surplus inventory of storage credits prior to groundwater withdrawals for the Rosemont Copper Project, and 4) maintaining water storage and use inventory records to show that CAP recharge credits were balanced against groundwater removed from the Tucson AMA. (*Id.*) We criticized all of these mitigation measures because they were voluntary, were not legally enforceable, and they did not legally bind the Rosemont Copper Company.

The USFS essentially repeats the same regional groundwater mitigation measures for the Tucson AMA that were previously asserted in the DEIS, without substantive change and with the same deficiencies, with only minor semantic differences. (*See* FEIS at 359-360.) The USFS reasserts in the FEIS that Rosemont Copper would use "available" CAP water for groundwater recharge in the Tucson AMA. (*See* FEIS at 359.) The USFS repeats the assertion from the DEIS that groundwater recharge within the Tucson AMA would occur "as close as possible" the mine well supply field in the area of the cone of depression caused by Rosemont's groundwater withdrawals. (*See* FEIS at 359.) The USFS again repeats this same assertion from the DEIS in the FEIS, i.e., that "to the extent practicable" CAP storage credits would be used to balance groundwater pumped from the mine supply field "with the intent" to maintain a surplus inventory of storage credits prior to pumping groundwater for the mine. (*See* FEIS at 360.) Finally, The USFS repeats the assertion that Rosemont Copper will maintain water storage and use inventory records to show that CAP recharge credits are balanced against groundwater removed from the Tucson AMA. (*See* FEIS at 360.)

The USFS did not respond adequately to the Coalition comments relating to "voluntary" measures to mitigate groundwater withdrawals within the Tucson AMA. The Coalition objects to USFS's uncritical acceptance of Rosemont's promises to voluntarily implement measures to mitigate groundwater withdrawals within the Tucson AMA. The mitigation measures in the FEIS are inadequate because their "voluntary" nature renders them unenforceable. Also, the stated mitigation measures are too vague, speculative, qualified, or otherwise conditioned to ever be implemented as actual mitigation measures in the real world. They are instead "paper" mitigation measures. How will the USFS mitigate groundwater withdrawals in the Tucson AMA if the Rosemont Copper Company, in the exercise of its discretion, decides not to implement any of the stated mitigation measures? For example, Rosemont's promise to use "available" CAP water for groundwater recharge is meaningless if CAP water isn't available. The USFS should provide some analysis of the availability of CAP water in the FEIS to determine the adequacy of this proposed mitigation measure. Rosemont's promises to recharge groundwater within the Tucson AMA "as close as possible" to the mine supply well field is meaningless without some USFS analysis of the availability of groundwater recharge sites within the Tucson AMA. Similarly, what if Rosemont determines it is "impractical" to use CAP storage credits to balance groundwater withdrawals? What will the USFS do if there is a disagreement over the practicality or feasibility of implementing this mitigation measure? Finally, statements of intent to maintain a surplus inventory of storage credits prior to initiating groundwater withdrawals for the proposed mine may represent good intentions, but good intentions do not constitute adequate mitigation measures.

Suggested Remedies: The USFS should prepare a revised DEIS that contains measures that require legally enforceable actions by the Rosemont Copper Company to mitigate groundwater withdrawals within the Tucson AMA, and eliminate "voluntary" mitigation measures or those mitigation measures that are little more than vague, qualified promises or irrelevant statements of intent. The agency must provide this information in a revised DEIS that is released for public review and comment.

6. The USFS fails to address how Rosemont Copper's groundwater pumping will alter the migration of the Sierrita sulfate plume.

In our comments on the DEIS, we criticized the USFS failure to analyze or model how groundwater pumping at the mine supply well field would impact the migration of the Sierrita sulfate plume. (SSSR et al. at 42.) We objected to the USFS characterization in the DEIS that 70 feet of additional groundwater drawdown attributable to mine supply well pumping was "minor". (*Id.*) We objected to the USFS conclusory statement in the DEIS, made without supporting data or evidence, that it was unlikely that this "minor" amount of drawdown of the water table would significantly affect Sierrita Mine mitigation pumping or result in additional migration of the Sierrita sulfate plume. (*Id.*) We criticized the USFS characterization of a 70-foot drawdown of the water table as "minor" and we requested that the characterization be corrected. We also requested the removal of the conclusory statement because of the absence of any USFS analysis or numerical modeling to support the USFS assertion that there would be no significant effect on migration of the Sierrita sulfate plume. (*Id.*)

The USFS acknowledges in the FEIS that groundwater level drawdown from pumping for the Rosemont mine supply wells is estimated to be as great as 90 feet immediately adjacent to the mine supply well s and 10 feet approximately 3 to 4 miles away from the production wells. According to the USFS, the area impacted by the groundwater drawdown encompasses an area of 42 square miles. (*See* FEIS at 330.) The USFS also acknowledges in the FEIS that the overall drop in groundwater levels caused by groundwater pumping by the mine supply wells "would not recover unless water levels in the regional aquifer began increasing as a whole". (*Id.*)

The USFS responded to Coalition concerns regarding the Sierrita Mine sulfate plume; however, the USFS continues to downplay the significance of the issue by describing it as being an issue of inadequate disclosure or lack of adequate description in the DEIS (*See* FEIS at 363.) In a more substantive response to the Sierrita sulfate plume issue, the FEIS states, "Minor changes in gradient or groundwater levels as a result of mine supply pumping would occur in the vicinity of the Sierrita sulfate plume. Overall, direction of flow, location of plume, and effectiveness of control are not expected to be affected." (*See* FEIS at 370.)

The USFS continues to characterize changes in gradients and groundwater levels in the vicinity of Sierrita sulfate plume as "minor" in the FEIS and states in a conclusory fashion that migration of the Sierrita sulfate plume is not expected to be affected by groundwater pumping by Rosemont's mine supply wells. The USFS reaches this conclusion despite acknowledging that "[A]ny change in water levels, gradient, or flow direction has the potential to cause migration of existing areas of groundwater contamination." (FEIS at 391). More telling is the USFS admission that the extent of the sulfate plume originating from the Sierrita Mine has not been fully characterized by Sierrita or the Arizona Department of Environmental Quality. (*See Id.*)

The Coalition objects to the inclusion of the unsupported conclusion in the FEIS that groundwater pumping from the Rosemont mine supply wells will only have a "minor" impact on the migration of the Sierrita sulfate plume. The USFS cannot credibly reach this conclusion in the absence of a more complete hydrological investigation and/or groundwater modeling that better characterizes the regional groundwater system, the extent of the Sierrita Mine sulfate plume, hydraulic gradients in the area, groundwater flow paths, and aquifer characteristics such as hydraulic conductivity and transmissivity. The Coalition was unable to find any data or information in the FEIS that supports the USFS conclusion that Rosemont groundwater withdrawals will have a minor effect on the migration of the Sierrita sulfate plume. The USFS unsupported conclusion of only a minor effect on the migration of the Sierrita sulfate plume rests on untested USFS assumptions. This USFS response is inadequate and it should be removed from the FEIS in the absence of hydrologic data to support a determination of "minor" effect. Also, additional hydrologic analysis must be done to better model and predict possible interactions between intersecting cones of depression created by groundwater pumping at Rosemont's mine supply well field and mitigation pumping for the Sierrita Mine.

Suggested Remedies: The USFS must revise its analysis to include more complete hydrologic modeling data. The agency must provide relevant supporting evidence for the conclusion that mine supply pumping will have only a minor effect on the Sierrita sulfate plume. In the absence of supporting evidence, the USFS must withdraw the conclusory statement that mine supply groundwater pumping is not expected to affect the sulfate plume. The agency must provide this information in a revised DEIS that is released for public review and comment.

7. The FEIS fails to analyze the impacts of proposed groundwater pumping on overdraft of the regional aquifer within the Tucson AMA.

We commented on the USFS mischaracterization of the impacts of groundwater mining for the Rosemont Copper Project with regard to overdraft of regional aquifers in the Tucson AMA. (*See* SSSR et. al. at 43.) We pointed out that USFS stated in the DEIS that groundwater withdrawals associated with the Rosemont Copper Project constituted "only 6% of the annual withdrawals" in the Tucson AMA. (*Id.*) we also pointed out that the USFS needs to accurately represent Rosemont's groundwater withdrawals and discuss the important issue that groundwater withdrawals for the proposed mine will exacerbate the annual imbalance between groundwater withdrawals and annual groundwater recharge within the Tucson AMA. We recommended that USFS perform an analysis of the effect of Rosemont's additional groundwater withdrawals on the goal of achieving equilibrium (or "safe yield") in the Tucson AMA. (*Id.*)

The USFS acknowledges in the FEIS that groundwater mining for the Rosemont Copper Project will affect overall groundwater availability within the Upper Santa Cruz Subbasin and within the Tucson AMA as a whole. (*See* FEIS at 338.) The FEIS states that the pumping of an additional 5,400 acre feet of groundwater each year represents a six to seven percent increase over estimated groundwater pumping within the Upper Santa Cruz Subbasin and a two percent increase over estimated groundwater pumping within the entire Tucson AMA. (*Id.*) The Coalition was unable to find in the FEIS any USFS analysis or discussion of Rosemont's additional groundwater pumping and its impact on achieving safe yield goals in the Tucson AMA.

The USFS failed to respond to the our comments regarding the impact that groundwater pumping for the Rosemont Copper Project will have on groundwater overdraft and achieving

the goal of safe-yield within the Tucson AMA. The Arizona Department of Water Resources (ADWR) defines "safe yield" as a groundwater management goal which attempts to achieve and thereafter maintain a long-term balance between the annual amount of groundwater withdrawn in an active management area and the annual amount of natural and artificial recharge in the active management area. The USFS acknowledges in the FEIS that Rosemont's groundwater pumping represents an increase in groundwater withdrawals within the Tucson AMA, an active management area that currently is not achieving safe yield. We were unable to find in the FEIS any discussion of Rosemont's additional groundwater pumping and consistency with the Third Management Plan for the Tucson AMA. Obviously, additional groundwater withdrawals within the Tucson AMA will make it much more difficult to achieve the goal of safe yield within the management plan time frames outlined in the Third Management Plan.

Suggested Remedies: The USFS must revise its analysis to include a complete discussion of additional groundwater pumping for the Rosemont Copper Project and how that additional pumping affects achievement of the goal of safe yield within the Tucson AMA. The agency must provide this information in a revised DEIS that is released for public review and comment.

8. FEIS fails to provides an adequate analysis of the potential impacts to the ground-water system of the Sonoita Plain.

The FEIS provides an inadequate analysis of the potential impacts to the ground-water system of the Sonoita Plain, ignoring the potential for highly detrimental declines in water levels in the saturated rocks underlying it. The USFS summarily dismissed substantive comments regarding the significant deficiencies in the consultants' analyses that were outlined in the *Statement of Concern,* which was submitted by the Sonoran Institute and other parties during the Rosemont DEIS public-comment period. We incorporated the *Statement of Concern* into our DEIS comments on this project, attached it as Appendix D(i) to our comments, and included an extensive discussion of it in the text of our letter. (SSSR et al. at 43-47.)

The *Statement of Concern* reported results of a technical study that suggest a potential for significant lowering of the top surface of the zone of saturation (water table) beneath large areas east of the proposed Rosemont Mine (the Sonoita Plain) if a deep open pit is constructed. The study and report were produced by W. R. Osterkamp, Research Hydrologist, National Research Program, U. S. Geological Survey; the report included, as an appendix, an independent ground-water hydraulics analysis of the Sonoita Plain by Larry Winter, Professor and Head, Department of Hydrology, University of Arizona. The report was based on a conceptual model developed for the study that was similar to conceptualizations used by consultants Montgomery and Associates, Tetra Tech, and Tom Myers for their ground-water flow models. Generalized results for the several efforts were consistent – that ground water near and east of the proposed mine would drain into the deep open pit of the mine, thereby dewatering aquifers underlying undetermined areas of the Sonoita Plain.

The USFS admits in the FEIS that the ground-water system beneath areas east of and near the mine site will be adversely impacted, but the degree of impact outlined in the FEIS is based on erroneous analysis. Potential hydrologic impacts identified and relied upon by the USFS are not credible because they are based on output from finite-difference ground-water flow models that (1) restricted the scope of concern to areas in proximity to the mine site, (2) used unverified and unrealistic hydraulic parameters that may have yielded flawed results, and (3)

extrapolated results to inconsequential future times without considering the effects of unpredictable short-term human interference or long-term climate and water-flux changes. It is clear that ground-water modeling done by the consultants and the results of the modeling have been improperly conducted, using values for aquifer characteristics that do not properly describe the hydraulic conductivity of the water-bearing rocks underlying the Sonoita Plain. Results of the modeling for areas at and near the proposed mine were detailed, but were deficient in that they did not specify estimated effects of subsurface dewatering in much of the Sonoita Plain.

The USFS's conclusions regarding how a deep open-pit mine will affect ground water near the mine site were largely based on results from ground-water flow models applied by Montgomery and Associates and Tetra Tech; both were commissioned by Rosemont and therefore may lack objectivity and credibility. A similar modelling effort by Tom Myers was commissioned by Pima County and is also cited in the FEIS; however, the only two significant analyses of the potential hydrologic effects in the Sonoita Plain by qualified, non-commissioned ground-water scientists were submitted to the USFS in the *Statement of Concern*. These unsolicited and unfunded reports, by W. R. Osterkamp and Larry Winter, are not cited in the FEIS. Although their interpretations may have been acknowledged in the DEIS by the USFS, conclusions accepted by the FS appear to be restricted to those submitted by Montgomery and Associates, Tetra Tech, and Myers.

The modelling results of the consultants did not acknowledge but instead generalized differing lithologies of rocks underlying the mine site and the Sonoita Plain (clastic vs. carbonate beds) and the geohydrologic characteristics of the rocks (fractures, solution openings, etc.). The consultants' investigations failed to consider the possibility or likelihood of confined (artesian) ground-water conditions beneath the Sonoita Plain.

In the *Statement of Concern*, Drs. Osterkamp and Winter advocated detailed studies to determine the aquifer properties and potential for ground-water declines:

> Extensive technical investigations by consultants, including hydrologic studies, have been commissioned by the Rosemont Copper Company. Among several reports describing the geology, ground-water hydrology, proposed surface-water and ground-water monitoring, and expected reactions of the regional hydrologic systems to open-pit copper mining, Montgomery and Associates (2009) prepared *Groundwater flow modeling conducted for simulation of proposed Rosemont Pit dewatering and post-closure*. The report provides a detailed analysis of expected effects to the local ground-water reservoir owing to proposed copper mining before, during, and after mine construction, and gives quantitative results of temporal changes to the ground-water reservoir in the mine vicinity based on numerical modeling. Although descriptions of local and regional geology are provided, the analysis generalizes the effect of mining to all rocks without specifying that near-surface rocks, clastics and volcanics, likely have transmissivities different from the underlying carbonate rocks. Acknowledged is the extensive fracture permeability that is present for most rocks at the mine site, but

> potentially variable effects of dewatering owing to lithologic differences of the rocks to be penetrated by the pit, particularly carbonate beds, are disregarded. Implicit in the analysis is that ground water is unconfined throughout the system. This assumption differs from that of the conceptual model of Dr. Osterkamp and of the hydraulic model of Dr. Winter; it is probably incorrect relative to the carbonate beds.

(SSSR et al. Appendix D(i) at 7.)

This passage is of extreme importance. The ground-water flow models of the consultants are ill-equipped to consider secondary permeability (the potential for ground-water flow through fractures, joints, faults, and especially solution openings in carbonate rocks). The computations of the flow models, therefore, yield results that rely on the low primary permeabilities of saturated rocks and suggest water-level lowering owing to drainage into a deep pit that may be unrealistically small. Thus, the modelling results reject a potential for lowering of ground-water levels except near the mine site; because of secondary permeability, however, particularly in limestone beds (which, as demonstrated by numerous caves and springs east of the Santa Rita Mountains, are known to have locally very high values for secondary permeability), significant declines in ground-water levels in areas of Sonoita and Elgin and beyond are possible. Even small declines in ground-water levels are almost assured to reduce dramatically the discharges of many seeps and springs (such as at the Empire Ranch headquarters) in much of the Sonoita Plain.

All human-related activities of the Sonoita Plain area rely on ground water pumped from wells, and all of the grasslands and water-sensitive bottomlands depend on moisture derived from natural processes of precipitation, streamflow, infiltration, and spring discharge and seepage. Analysis of the geology and hydrology of the eastern flank of the Santa Rita Mountains and areas east of the mine site caused concern that these water sources are vulnerable to decrease or elimination by the excavation of a deep open pit at the site of the proposed Rosemont Mine.

Within the Sonoita Plain there is a disparity between the rate of exurban development and the ground-water resource needed to support present and future housing and businesses. The disparity occurs because (1) the subsurface is the only available source of water for environmental and human needs, (2) relative to presently available data, the occurrence of ground water is neither uniform or predictable throughout the Sonoita Plain, (3) inadequate hydrologic assessments for developments may cause water scarcity for property owners and a disruption of ground-water recharge, and (4) disturbance to the hydrologic system, such as drought, excessive ground-water withdrawals, or drainage of ground water into a deep open-pit mine will exacerbate previous overdrafts.

The Myers analysis commissioned by Pima County concluded that mine excavation could "lower the regional water table by up to 1500 feet. This would create a drawdown cone which would draw water from the regional groundwater similar to pumping from a large diameter well. This substantial drawdown may draw groundwater from a significant distance if the adjoining aquifers are hydraulically connected to the bedrock aquifer of the pit." (SSSR et al. Appendix D(i) at 8.) A lowering of the water table by hundreds of feet beneath the Sonoita Plain would destroy the ability of most wells to provide water to home owners and businesses, would destroy all aspects of the economy of Elgin, Sonoita, and outlying areas, and would be

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destructive of ecosystem processes. Rocks that probably will be exposed by excavation at the open-pit mine range from late-Cretaceous and Tertiary-age clastic and volcanic beds to underlying Paleozoic carbonate strata. The carbonate beds at the mine site dip steeply eastward before flattening to near-horizontal beneath the Sonoita Plain. If exposure of these rocks causes ground-water drainage into the open pit to a level approaching a lowermost elevation of 730 m (2400 ft), the water resources, especially the ground-water resource, of the Sonoita Plain could be severely compromised.

Near-surface rocks exhibit phreatic, or unconfined, ground-water conditions whereas water wells demonstrate that at many sites the underlying carbonate beds transmit water under confined or artesian conditions; in both cases ground water appears to move primarily by flow through fractures, faults, joints, and solution openings (secondary permeability), not by movement through intergranular openings of the rock masses (primary permeability. The ground-water flow models that were used by Rosemont consultants are poorly designed to compute ground-water movement based on secondary permeability, and thus the results lack credibility.

If a deep, open pit penetrates saturated rocks it can be likened to a water well penetrating the same rocks. Water flowing from saturated bedrock into the excavation will create a "cone of depression", a conical volume of dewatered rock surrounding the pit that is deepest at the pit bottom and declines in depth with distance from the mine. Depending particularly on rock characteristics, the length and intensity of pumping at a well, and the time since an open pit was constructed, the edge of the cone, or the limits of effect, will diminish outward and the cone will merge with the top of the pre-existing zone of saturation.

The principal response by the USFS to comments regarding possible effects during mining on ground-water resources underlying the Sonoita Plain appears to be represented by water-level decline maps generated by ground-water modelling of the consultants. (*See* FEIS at 341-342.) These effects, represented principally by 5-foot drawdown contours, extend about 4 miles (6 km) east of the mine after 20 years; no areas of the Sonoita Plain as threatened by meaningful water-level decline. The FEIS does not acknowledge that map B included in the *Statement of Concern* suggests the possibility for unacceptable decline throughout the Sonoita Plain, or that curves of Larry Winter show potential water-level declines as far east of the mine as 50 km (30 miles). (SSSR Appendix D (i) at 20; 25- 26.)

Nor does the FEIS address directly artesian versus phreatic ground-water conditions, varying primary versus secondary permeabilities relative to rock characteristics, or a regional reduction of water pressure or water level in beds underlying the Sonoita Plain. This point, which is expressed in detail in the *Statement of Concern*, is addressed indirectly in the FEIS in numerous places – too numerous to specify; nowhere in the FEIS is there direct response to the concerns listed. Nowhere in the FEIS is the concept of permeability mentioned except invalidly and in a different context (fault zones). (*See* FEIS at 492.) Because the FEIS does not contain mention of permeability, except for with regard to fault zones, or the related concepts of transmissivity and potentiometric surface, it appears that the USFS either rejects the investigation results that Drs. Osterkamp and Winter have presented, or it lacks the technical expertise to do so.

A review of the FEIS also failed to identify a response to the contention that there is a disparity between the rate of exurban development in the Sonoita Plain and the ground water needed to

support present and future housing and businesses. Furthermore, there is no acknowledgment that (1) the subsurface is the only available source of water for environmental and human needs, (2) inadequate hydrologic assessments for developments may cause water scarcity for property owners and a disruption of ground-water recharge, and (3) disturbance to the hydrologic system, such as drought, excessive ground-water withdrawals, or drainage into a deep open pit will exacerbate previous overdrafts.

Nowhere in the FEIS is there response to Myers' conclusion that mine excavation could "lower the regional water table by up to 1500 feet. This would create a drawdown cone which would draw water from the regional groundwater similar to pumping from a large diameter well. This substantial drawdown may draw ground water from a significant distance if the adjoining aquifers are hydraulically connected to the bedrock aquifer of the pit." (SSSR et al. Appendix D(i) at 8.) A lowering of the water table by hundreds of feet beneath the Sonoita Plain would destroy the ability of most wells to provide water to home owners and businesses, would destroy all aspects of the economy of Elgin, Sonoita, and outlying areas, and would be destructive of ecosystem processes.

The results of the three ground-water modelling efforts in the Davidson Canyon/Cienega Basin indicate that the mine pit would create permanent drawdown of the water table. Ground water would flow toward the mine pit in perpetuity from the time at which the excavation intersects the water table. At first, during active mining, ground water would be pumped directly from the mine pit or from dewatering wells next to the mine pit. After reclamation and closure, the pit is expected to fill with ground water, forming a mine-pit lake. The lake would lose water through evaporation and would be continuously replenished in part by ground water from the regional aquifer. In this way, the mine pit lake is expected to act as a permanent regional hydraulic sink. These results appear to be technically flawed because the modelling efforts of the consultants were conducted with an assumption of phreatic (water-table) ground-water conditions, whereas there is ample evidence that many of the limestone beds and possibly some of the overlying clastic and volcanic beds are confined and under artesian pressure. Unlike the ground-water flow models of Montgomery and Associates, Tetra Tech, and Myers, the ground-water hydraulics model of Winter and the conceptual model of Osterkamp include assumptions of semi-artesian to artesian conditions beneath much of the Sonoita Plain. These models should have been given serious consideration by USFS and included in the potential impacts, but were not.

Pumping at the mine pit would lower the regional ground-water level. (FEIS figures 54 through 58) Because the pit lake would remove ground water, the cone of depression is expected to persist indefinitely. The boundaries of the cone of depression will migrate outward for a very lengthy period until they reach equilibrium. The models estimate equilibrium to be reached between 700 and 7,000 years after closure of the mine. The cone of depression would stop expanding, but the flow of ground water toward the mine pit would continue.

Similar concerns were raised in letter submitted January 18, 2012, to Jim Upchurch by Patricia Sanderson Port, Regional Environmental Officer, Office of Environmental Policy and Compliance, Office of the Secretary, DOI. DOI's comments addressed, among other concerns, potential impacts to ground-water supplies. Specific topics for which changes or additions were recommended in that letter included the ground-water flow models of Montgomery and Associates and Tetra Tech (artificial lateral boundaries, constant-head and general-head boundary cells, surface-water and ground-water capture, and testing of results using a steady-

state model, comparison of computed flow rates), the commissioning of an independent ground-water flow model, clarification (correction) of erroneous comparisons and descriptions of the Montgomery and Tetra Tech model applications, application of a "well parameterized groundwater flow model", specification of aquifer characteristics (transmissivity, hydraulic conductivity, storage capacity) used in the flow models, application of aquifer properties in the flow models that "result in a worst-case scenario of predicted water-level change and reduced ground-water discharge to springs and streams, acknowledgment that Montgomery and Associates documented the occurrence of highly permeable fault and fracture zones in otherwise low-permeability rocks throughout the mine vicinity, and the need for long-term monitoring.

An inspection of the FEIS revealed little if any acknowledgment of these recommendations submitted by DOI. The FEIS mentions hydraulic conductivity several times in regard to aquifer characteristics, but transmissivity, artificial lateral boundaries, surface- and ground-water capture, and a worst-case scenario are not included. Many of the recommendations made in this letter are similar to those made in the *Statement of Concern*, especially to consider a worst-case scenario and to inventory in detail the occurrences of springs and seeps. These recommendations apparently were rejected.

We note that in response to comments regarding deficiencies in the ground-water modeling used in the DEIS, the USFS conducted "additional technical investigations in order to ensure that the models were reasonable with respect to their prediction of impacts." (FEIS at 290.) However, this investigation did not include any communications or follow-up with Dr. Osterkamp or Dr. Winter regarding the information submitted in the *Statement of Concern*, despite the significant scientific uncertainties raised and the reasonable support provided that such uncertainties exist. In dismissing these relevant and legitimate concerns, the FEIS states that such concerns "are not substantiated by available data and do not rise to a level to suggest that the modeling assumptions and modeling techniques used in this analysis are inappropriate." (FEIS at 299.) We strongly disagree with this demonstrably false statement.

The Forest Service convened an October 18, 2012, meeting among the Rosemont hydrologic consultants, itself, and representatives of USGS, BLM, EPA, and FWS to explore "at length ...uncertainties regarding the magnitude and timing of groundwater (sic) drawdowns, particularly as those drawdowns relate to potential reductions in discharges to springs and streams." (FEIS at 227.) No indication was provided that reductions in ground-water levels beneath the Sonoita Plain were of interest. Although Drs. Osterkamp and Winter, through transmittal of the *Statement of Concern* to the Forest Service by the Sonoran Institute, were the principal, unbiased commentators expressing apprehension about the "uncertainties", neither was aware of the meeting or invited to participate. USGS participation at the meeting was by Stanley A. Leake, who was asked by the Forest Service to review the ground-water flow-modeling results of Montgomery and Associates and Tetra Tech, and John Hoffmann, then the Chief, Arizona Water Science Center, who was an observer. Because Leake's focus was restricted to the "analysis area", he generally confirmed the findings of the consultants, but later privately acknowledged that adverse impacts to the ground-water system further to the east beneath the Sonoita Plain were likely if ground-water drainage into an open pit were to occur (John Hoffmann, USGS, personal commun., 2013; Stan Leake, USGS, personal commun., 2014).

Suggested Remedies: The USFS must expand the "analysis area" to encompass the full area to be impacted, including the Sonoita Plan. To ensure that discharge of water into the pit of the proposed Rosemont Mine does not have immediate and long-term effects on ground water of the Sonoita Plain, the *Statement of Concern* recommended a variety of studies. (*See* SSSR et al. at 45-47, Appendix D(i) at 9-15.) It was advised that the USFS conduct detailed and independent investigations be conducted throughout potentially affected areas of the Sonoita Plain, Pima, Santa Cruz, and Cochise Counties. The results of these investigations should be peer-reviewed by impartial experts prior to submission of results to the USFS and other regulatory agencies. The investigations should include but not be limited to geology, hydraulic properties of water-bearing rocks, ecological analyses of the Sonoita Plain and adjacent hills and mountains, and the economic impacts. The USFS should also consider a worst-case scenario and must inventory in detail the occurrences of springs and seeps. These analyses are necessary for the analysis to be minimally adequate in addressing this issue. Whereas parts of these recommendations may have been considered indirectly through the reports of the commissioned consultants, inspection of the FEIS does not suggest that the recommended actions were explicitly addressed. The agency must provide this information in a revised DEIS that is released for public review and comment.

SURFACE WATER QUALITY

1. The FEIS fails to provide an adequate analysis of the impacts to surface water quality or discussion of reasonable measures to mitigate these impacts.

We previously commented that analyses of potential surface water quality contamination from the proposed Rosemont Copper Project were woefully inadequate and that the USFS had accepted, without critical or independent review, analyses that were submitted by consultants for the Rosemont Copper Project. (*See* SSSR et al. at 60.) The Coalition urged the USFS to prepare independent analyses of surface water quality impacts from mine runoff and make those analyses available to the public for review and comment. (*Id.*) The Coalition expressed concern over surface waters with existing water quality that were already degraded with respect to arsenic, copper, lead, and selenium. (*Id.*) We stated our concern that any further pollutant releases would result in violations of applicable water quality standards. (*Id.* at 60-61.) The Coalition also expressed concern regarding the impact of mine operations on existing surface quality with respect to silver, nickel, and chromium. (*Id.*)

The basic USFS response to Coalition issues related to surface water quality is to state that existing surface water quality is already degraded with respect to many of the pollutants of concern identified by the Coalition (e.g., silver, arsenic, copper, lead, selenium and thallium) and that modeled storm water quality is not expected to degrade existing water quality further when mitigation is taken into consideration. (*See* FEIS at p. 479.) Because the action alternatives are designed to contain storm water that comes into contact with processing facilities, tailings or ore onsite and because monitoring protocols would be put in place at a point of compliance, the potential for contaminants entering surface water "is considered low." (*See* FEIS at 479.)

The USFS acknowledged that the Rosemont Copper Project could negatively impact surface water quality in violation of surface water quality standards. The USFS identified the potential violation of water quality standards as a major issue that needed to be addressed in the FEIS:

"Construction and operation of tailings, waste rock, and leach facilities

> have the potential to result in sediment or other pollutants reaching surface water and degrading water quality, leading to a loss of beneficial uses. If sediment enters streams, turbidity will increase, and State water quality standards could be exceeded. Downstream segments of Davidson Canyon and Cienega Creek are Outstanding Arizona Waters (Tier 3), which are given the highest level of antidegradation protection. As outstanding resource waters under the Arizona Revised Statutes, Tier 3 waters must be maintained and protected, with no degradation in water quality allowed."

(*See* FEIS Executive Summary at xi.)

The methodology used by the USFS to assess the risk for contaminants entering natural drainages and surface waters via storm water runoff is the same as the methodology used to assess the potential risk of acid mine drainage. The USFS relied on geochemical testing to predict water quality of storm water that comes into contact with waste rock. (*See* FEIS at 446.) To represent rock types present in the Rosemont Copper Project area, the USFS used a weighted average of geochemical test results proportionate to the percentage of rock type present in the area (*Id.*) This weighted average was compared to applicable surface water quality standards and existing surface water quality data for Barrel Canyon, Davidson Canyon, and Cienega Creek to assess the potential risk of surface water quality standards violations. The USFS concluded, using the method described above to model expected storm water quality, that storm water runoff from waste rock is predicted to meet Arizona surface water quality standards (*Id.* at 447.) The USFS also states in the FEIS that all of the action alternatives would result in surface water quality impacts, including potential impacts from acid mine drainage, erosion and sedimentation, and impacts from other contaminants in storm water runoff associated with Rosemont mining operations (*Id.* at 463.) Based on available information, the USFS concludes that existing storm water quality already exceeds applicable surface water quality standards for total silver, total arsenic, total and dissolved copper, total lead, total selenium, and total thallium (*Id.* at 479.) The USFS asserts that modeled storm water quality from tailings and waste rock facilities "is not expected to degrade the existing surface water quality in the analysis area, *when consideration is given to mitigation measures*." (*Id.*)

The USF response in the FEIS to Coalition concerns regarding surface water quality impacts from the Rosemont Copper Project is inadequate. USFS conclusions are based on a limited number of synthetic precipitation leaching procedure (SLPL) tests and by averaging SPLP test results. There is no FEIS discussion of the assumptions used in the modeling procedure nor is there any real discussion of the uncertainties associated with the methods that the USFS used to reach its conclusions regarding surface water quality. The Coalition objects to USFS use of weighted averages to compare storm water runoff quality to applicable water quality standards.

Also, in the absence of more detailed information on the methods of analysis to predict surface water quality, we object to the unsupported surface water quality conclusions stated in the FEIS. The public have had no opportunity to evaluate the appropriateness or scientific validity of the USFS modeling procedures, assumptions, or the use of weighed averages to model expected storm water quality. The USFS addresses this uncertainty by telling the members of the public to find a more detailed discussion in the project record, citing a study titled *Revised Analysis of Surface Water Quality*. (Memo. to file from Chris Garrett, SWCA Environmental Consultants. Phoenix, AZ: SWCA Environmental Consultants. August 25, 2012.) While the Coalition appreciates the literature citation, the members of the public have had no opportunity

to obtain or review this memorandum to the file in the project record to evaluate the validity of the USFS conclusions regarding storm water quality. Also, the modeling procedures and the use of weighted averages to predict the quality of storm water runoff do not appear to have been subjected to peer review.

Despite unanswered questions about the SLPL and modeling procedures used to predict expected storm water quality, the USFS acknowledges that modeled water quality for runoff from soils will exceed water quality standards applicable to Barrel Canyon for dissolved silver, total lead, and dissolved mercury (*Id.* at 472.) Predicted water quality of tailings seepage (if it were to appear in Barrel Canyon) will exceed applicable surface water quality standards for dissolved silver, dissolved cadmium, total and dissolved lead, dissolved mercury, and total selenium (*Id.* at 473.) The USFS, while recognizing that surface water quality standards violations will occur, defers to the Arizona Pollutant Discharge Elimination System (AZPDES) storm water permit to be issued by the Arizona Department of Environmental Quality to address these expected standards violations and to implement adequate control measures to ensure that storm water discharges from the Rosemont Copper Project facilities meet applicable water quality standards or require Rosemont to take corrective action when the standards violated. In other words, the USFS attempts to absolve itself of any duty to prevent surface water quality standards violations from the project through adequate mitigation procedures in the FEIS. Instead, the USFS attempts to shift responsibility for dealing with expected surface water quality problems to the ADEQ storm water permitting process. The Coalition objects to any USFS decision to approve Rosemont Copper Project facilities when the agency knows the project will result in violations of state-adopted water quality standards. The Coalition particularly objects to approval of the project when it is known that the project will discharge bioaccumulative pollutants such as mercury and selenium.

Suggested Remedies: The USFS must include discussion of additional mitigation measures to address discharges of storm water runoff or seepage that are predicted to violate surface water quality standards for dissolved silver, dissolved cadmium, total and dissolved lead, dissolved mercury, and total selenium. The agency must provide this information in a revised DEIS that is released for public review and comment.

2. The FEIS provides an inadequate analysis of sediment yield, an important component of Clean Water Act compliance.

In our previous comments, we noted that the USFS analysis of sediment yield in the DEIS did not adequately evaluate the impacts to intermittent and perennial streams downstream of the proposed Rosemont Copper Project mine (*See* SSSR et al. at 58-59.) The Coalition specifically commented on the inadequacy of the 1968 Pacific Southwest Inter-Agency Committee (PSAIC) method that the USFS used to assess sediment yield and impacts to downstream waters. The Coalition specifically criticized the PSAIC method as "an outdated, empirical model that is too generalized for site specific analysis. (*Id.* at 58.) We pointed out that the PSAIC model was a scoring / ranking model and was less rigorous and more subjective than other available models that produce more accurate sediment yield results. (*Id.* at 59.) We commented that the PSIAC was a qualitative tool and that a quantitative method should have been used to predict sediment yield given the complexity of the proposed action and action alternatives and the Outstanding Arizona Water designations of downstream waters.

The USFS describes the surface water quality issue in the FEIS as follows:

"Construction and operation of tailings, waste rock, and leach facilities

> have the potential to result in sediment or other pollutants reaching surface water and degrading water quality, leading to a loss of beneficial uses. If sediment enters streams, turbidity will increase and state water quality standards could be exceeded. Downstream segments of Davidson Canyon and Cienega Creek are Outstanding Arizona Waters (Tier 3), which are given the highest level of antidegradation protection. As outstanding resource waters….Tier 3 waters must be maintained and protected, with no degradation in water quality allowed."

(*See* FEIS at 444.)

In the FEIS, the USFS modeled expected changes in sediment yield from the Rosemont Copper Project area to Lower Barrel Canyon using the 1968 Pacific Southwest Inter-Agency Committee Method (*See* FEIS at 446.) The PSIAC model provided a qualitative assessment of sediment yield and the potential for downstream scour or aggradation caused by changes in sediment yield. (*Id.*)

The USFS presents a summary of the effects of changes in geomorphology and to characteristics of downstream channels on Table 97 in the FEIS. The USFS summarized these effects as follows:

> "Sediment load would decrease, but sediment concentrations would remain the same, compared with baseline; analysis indicates that no changes in geomorphology (scour / aggradation) are expected in Barrel Canyon or Davisdson Canyon owing to change in sediment load."

(*See* FEIS at 447.)

The USFS did not respond adequately to Coalition comments questioning the adequacy of the methods used to determine sediment yield. The USFS ignored Coalition comments specifically pointing out the deficiencies of the 1968 Pacific Southwest Inter-Agency Committee Method (PSIAC Method) used to determine sediment yield. The Coalition objects to the use of the PSIAC method because: 1)it is a qualitative method, and 2) better, more quantitative methods are available to the USFS to model sediment yield. Despite the cited deficiencies of the chosen PSIAC and the availability of better more quantitative methods of modeling sediment yields, the USFS chose to continue using the more subjective, qualitative, and less accurate method of estimating sediment yield in the FEIS.

The USFS must quantify impacts this project will have on sediment yield, as required by law. The agency should use one of the more quantitative, watershed-based methods recommended in previous Coalition comments to more accurately model sediment yield and provide this information in a revised DEIS that is released for public review and comment.

3. The FEIS fails to incorporate a 500-year storm event into its assessment of proposed stormwater management facilities.

In our comments on the DEIS we pointed out that storm water management facilities (e.g., berms, ponds, storm water diversion channels, and ditches) were not analyzed using the best data and analytical methods. (*See* SSSR et al. at 57-58.) The Coalition specifically criticized USFS use of the 100-year, 24-hour storm event as the design storm for purposes of storm water runoff modeling. We recommended that USFS use a larger design storm (i.e, the 500-year storm event) to account for occurrences of multi-day precipitation events that were likely due to expected climate change. (*Id.* at 57.) We argued that the Rosemont Copper Project must

design storm water management facilities for probable future storm events that are larger than the 100-year, 24-hour event. (*Id.*)

In response, the USFS states that it considered surface water quantity impacts due to the direct modification of topography and the alteration of surface water regimes in the Rosemont Copper Project area as a result of mining and the development of mine infrastructure. (FEIS at 398.) The USFS states that it also considered indirect effects of mining activities on downgradient surface water drainages, including Barrel Canyon, Davidson Canyon, and Cienega Creek (*Id.*)

The USFS states that the methodology that the USFS relied on to assess changes in surface water quantity in the FEIS consists "primarily of hydrologic modeling of 100-year peak storm flows resulting from design precipitation events (specifically, the National Oceanic and Atmospheric Administration Atlas 14 24-hour mean precipitation value and the Natural Resources Conservation Service Type II 24-hour temporal storm distribution) using the U.S. Army Corps of Engineers (USACE's) computer program Hydrologic Engineering Center Hydrologic Modeling System , Version 3.4." (*Id.* at 401.) The USFS did not change 100-year, 24-hour design storm to a 500-year storm event as we recommended.

The USFS states that it reviewed the hydrologic modeling approach used by Rosemont Copper and the methods used to estimate storm water flows for the DEIS in response to public comments received on the DEIS. (*Id.*) The USFS states that it contracted additional analyses to determine whether the Rosemont modeling approach was valid and appropriate. The USFS, citing Zeller (2011b), validated the Rosemont hydrologic modeling approach using USGS statistical methods of analysis. (*Id.*) Zoeller (2011b) also recalibrated the chosen model using local data from USGS stream gages in Barrel Canyon and Davidson Canyon. The USFS affirmed the use of the Rosemont modeling approach as a valid and reasonable approach based on this verification and recalibration. (*Id.* at 400.) The USFS summarized the results of its review process as follows:

> "The Golder modeling effort provided one piece of information out of many used by the Coronado to assess the surface flow models, sediment transport models, and design storms used for sizing stormwater management features. The full list of peer review, sensitivity analyses, and other review relied upon by the Coronado is summarized in the record (citation omitted). This includes an interactive peer review process conducted by professionals with expertise in the field of stormwater management and modeling that took place between August 2010 and June 2011, two individual modeling reports describing sensitivity analyses (citations omitted), and an additional detailed rebuttal of cooperating agency comments (citation omitted). Based on this information, the Coronado has determined that the surface flow and sediment modeling used in the FEIS is reasonable and appropriate to provide an informed analysis…"

(*See* FEIS at 403.)

The USFS did conduct additional peer review and sensitivity analyses to provide information to support its conclusion that the Rosemont modeling approach used to estimate storm water runoff and to design stormwater management facilities was appropriate and reasonable. However, the USFS did not adequately respond to the Coalition's issue regarding the use of the

500-year storm event and its recommended use in the Rosemont modeling approach. We object to the USFS failure to address the 500-year storm event in the Rosemont modeling approach to provide higher precipitation values to estimate stormwater flows in downstream drainages or to design stormwater management facilities. The failure to incorporate the 500-year storm event into the modeling approach could result in a significant underestimation of stormwater flows within and downstream of the Rosemont Project Area and could result in poorly designed stormwater management infrastructure that cannot handle the stormwater runoff from such extreme storm events.

The failure to incorporate the 500-year storm event is particularly objectionable when the USFS acknowledges in the FEIS that climate change is predicted to bring about an increase in extreme rainstorms, flooding, and higher volumes of surface passing through ephemeral channels in shorter periods of time. (*See* FEIS at 437-438.) The USFS is aware or should be aware of what climate change holds for the Sky Island region of southeastern Arizona. The USFS should require additional sensitivity analyses in the Rosemont modeling approach to take such predicted extreme rainstorms into account.

Suggested Remedies: The USFS must incorporate the 500-year design storm into its analysis to generate a more reasonable range of model inputs and design parameters for stormwater management facilities. The agency must provide this information in a revised DEIS that is released for public review and comment.

PUBLIC HEALTH & SAFETY

1. FEIS provides incorrect information, inadequate analysis, and unsupported conclusions regarding the impacts to public health and safety from this project's air pollutant emissions.

We previously commented on the inadequate analysis provided by the DEIS, noting specifically that the DEIS statement that "risk to public health and safety from recreational hazards, subsidence and other geological hazards, noise, or air quality would be unlikely to occur" was unsubstantiated and scientifically unsupportable. (SSSR et al. at 13.)

In response, the FEIS states, "The Coronado has reviewed the public health and safety analysis that was conducted for the DEIS and determined that revision of the analysis is not necessary with the exception of three updates," including a revised air quality model, that, according to the FEIS, now shows that "all Federal standards are expected to be met at the perimeter fence line for the proposed action, Phased Tailings Alternative, and Barrel Alternative." (FEIS at 989.)

This statement is blatantly incorrect and must be revised. The FEIS itself states, "the proposed action and Phased Tailings Alternative would not be protective of NFS surface resources beyond the perimeter fenceline. Minor changes in stacking and hauling would likely allow these alternatives to comply with NAAQS, similar to the Barrel Alternative below, if determined to be appropriate by the Forest Supervisor. As modeled, however, <u>these alternatives would not meet NAAQS.</u>" (FEIS at 263; emphasis added.)

This misstatement is repeated in several key places in Public Health and Safety section of the FEIS and calls into question the veracity of this entire analysis, as well as the unsubstantiated

conclusions regarding impacts to public health and safety. For example, the FEIS states that the Public Health and Safety section "has been updated with the findings of the revised [air quality] modeling results which indicate that Federal air quality standards would be met at the perimeter fenceline with the exception of the Barrel Trail and Scholefield-McCleary Alternatives," failing to mention that, as modeled, both the proposed action and the Phased Tailings Alternative also fail to meet NAAQs, and in fact the only alternative that the modeling shows meeting the Federal standards is the preferred alternative. (FEIS at 990.)

The FEIS repeats this inaccuracy when stating its conclusion that the mine's air quality emissions won't impact public health, stating, "The revised analysis indicates that that the Barrel Alternative, the proposed action, and the Phased Tailings Alternative would meet all Federal air quality standards at the perimeter fenceline… Therefore, the proposed action, Phased Tailings Alternative and Barrel Alternative would protect public health." (FEIS at 1009.) This is incorrect and again, this significant inaccuracy calls the entire analysis into question.

In regards to the Barrel Alternative, the FEIS states that "while the sensitivity analysis indicated a slight increase in the modeled criteria pollutant concentrations…it was determined that the results did not warrant a full rerun of the modeling for the Barrel Alternative." (FEIS at 217.) Instead of providing meaningful analysis, the USFS uses sweeping assumptions to disregard health and public safety issues related to air quality, including disease and traffic accident safety and mortality (*See* FEIS at 990).

Finally, the FEIS states that they state that it is" presumed" that "if" NAAQS compliance is achieved for PM10 and PM 2.5 in the Barrel alternative, that the public health will be protected. (*See* FEIS at 1009.) Yet, the USFS admits that there may be exceedances beyond the fence line for two other alternatives, and that it may have effects that could be detrimental to human health. The USFS needs to revise this section so that it correctly notes that <u>all</u> of the action alternatives except for the Barrel Alternative are likely to exceed Federal standards for potentially harmful pollutants. We also note that we have significant concerns regarding the revised air quality modeling that was done which are addressed elsewhere in our objections, and thus we question even the conclusions regarding the Barrel Alternative.

The sweeping assertion that the public health and safety will not be impacted is not substantiated by science, nor is it even substantiated by the USFS's own analysis. As we outline elsewhere in our objections, the revised air quality modeling is questionable at best. The USFS puts unfounded confidence in the revised models and thus dismisses respiratory diseases and other serious health issues that are known to be aggravated by air pollution (e.g. Asthma, COPD, Valley Fever). In its analysis, the USFS does not consider the carcinogenic potentials of air pollutants, nor neurotoxicity and other diseases caused by toxic elements released by the proposed mining operations. In addition, the entire air quality issue seems to have been delegated to the ADEQ and its permit for this project, which is currently under appeal for many of the same issues we mention here.

Furthermore there is still no proof that the filtering from dry stack processing will be effective in this area. As noted above the USFS mistakenly admits that only two of the alternatives could be detrimental to human health, when by their own admission at least four of the action alternatives will exceed Federal air quality standards. Thus, the USFS's assumptions regarding the potential danger are fundamentally flawed.

Suggested Remedies: The USFS must provide additional analysis of potential impacts to public health and safety caused by this project's air pollutant emissions in a revised DEIS, and include input from recognized experts in open pit mine pollution and toxicity.

2. The FEIS provides an inadequate analysis regarding potential increases in lung disease, including Valley Fever *(Coccidiomycosis)*, that may result from mining operations.

As stated in our previous comments, *Coccidioidomycosis* (Valley Fever) is an environmental mediated, systemic infection caused by the inhalation of airborne spores, arthorconidia from Coccidiodes immitus, a soil dwelling fungus prevalent in the deserts of the southwestern US. The spores are released into the air by ground disturbances from construction, mining and spread by high winds and monsoon storms. Cocci infection can cause serious pneumonia, general loss of weight and generalized deterioration of health. (*See* SSSR et al. at 14.)

The FEIS relies on the revised air quality modeling to dismiss these objections, apparently assuming that because Federal air quality standards for particulates will be met at the perimeter fenceline for three of the action alternatives (a statement that is blatantly incorrect, as pointed out above), there will be no increase in lung disease, especially Valley Fever (Coccidiomycosis). Even if the FEIS provided accurate information regarding whether the action alternatives meet Federal standards (which it does not) this assumption is unsupported. Beyond the plain fact that air pollution does not respect fenceline boundaries, disturbances of the land by blasting and digging will in fact release untold amounts of cocci spores. These spores quickly become airborne in both fine (< 2.5 micron) and ultrafine particles which are known to be carried for miles by wind and severe wind gusts (haboobs) and monsoon activity all over Arizona. (*See* SSSR et al. at 14.) Furthermore, meteorological data indicate that high wind speeds are common in the Rosemont area , and cocci is a wind borne disease which causes much morbidity, deterioration of health and can even be fatal. In light of these facts and the unfounded assumptions relied upon by the USFS, the potential increases in Valley Fever has not been not properly considered.

Suggested Remedies: The USFS must provide an adequate analysis and consider the potential increases in lung disease that may result from this proposed project, and disclose those impacts in a revised DEIS.

3. The FEIS provides an inadequate analysis of NOx emissions and potential impacts to public health and safety.

As we noted in our previous comments, the EPA previously indicated that both NOx and ozone may be exceeded by this project, and Pima County has indicated that carbon monoxide may be exceeded. (SSSR et al. at 15.) Page 33. The EPA has directed the USFS that it must measure and monitor NOx and ozone for this project. (SSSR et al. at 33-34.) In response to these comments, the USFS included references to NOx that are sprinkled throughout the documents in various places under the Air Quality section in Chapter 3, but few if any of these comments specifically address concerns related to public health and safety impacts of this pollutant.

The FEIS also refers on numerous occasions to the ADEQ's permitting authority related to the issue of air quality. (*See* e.g., FEIS at 260: "determination of whether Rosemont Copper's emissions represent a violation of applicable air quality laws and regulations is solely under the

regulatory authority of ADEQ as the agency issuing the permit.") However In addition, the ADEQ's permit for this project, as well as the procedures the agency relies on to issue such permits, is currently the subject of a legal appeal, and we question whether the USFS can abdicate its responsibility to ensure that this project meets all applicable laws and regulations to the ADEQ when that state agency's permit and procedures remain in question.

We contend that NAAQS for PM10, as well as other pollutants, will be exceeded by this project. We note that table 45 of the FEIS indicates borderline to high levels of NO2, and PM 10 particles. (FEIS at 161.) Pima County is already on-record as being very close to exceeding limits for oxone and CO in some areas, so it is likely that any additional emissions from the mine would place the County out of compliance and could result in penalties for areas and parties other than the mine in order to come into compliance. Finally, we reiterate our serious concerns over the modeling accuracy and input data used by Rosemont and relied upon by the USFS for many of its conclusions.

Suggested Remedies: The USFS must provide a revised DEIS that includes an adequate and meaningful analysis of NOx emissions and potential impacts to public health and safety.

4. The FEIS inadequately analyzes the public health impacts resulting from potential releases of lead and arsenic.

As we pointed out in previous comments, lead (Pb) and arsenic are two major toxic and hazardous materials associated with mine source activities that are released by all mining activities. (*See* SSSR et al. at 15.)These toxic materials are neurotoxins which are especially dangerous to children, pregnant women, and the elderly; acute and chronic exposure can lead to profound neurologic changes, including brain damage. In addition, aerosolized arsenic is a carcinogen. (*See* SSSR et al. at 26.)

The FEIS provides no reliable data for background lead levels, stating that "background concentrations…for lead were conservatively assumed to be equal to the modeled concentration due to the unavailability of data." (*See* FEIS at 264.)

The FEIS also states that , with respect to other toxic contaminants, "determination of the makeup of particulates is not a standard analysis conducted when evaluating particulate emissions." (FEIS at 218.) Referring to federal standards to protect the public health and sensitive populations, the FEIS goes on to say that for purposes of this analysis, "it is presumed that if compliance with the NAAQS is achieved for lead, particulate matter less than or equal to 2.5 microns in diameter and particulate matter less than or equal to 10 microns in diameter, public health would be protected from any toxic components within the particulate emissions as well." (*Id.*)

The lack of meaningful analysis and reliance on mere presumptions is of significant concern. It is the duty and responsibility of all agencies to be sure that toxic elements and particles will not be released in any part or place of the mining activity. The toxic effects of lead are well known, particularly in children. In addition, arsenic is present in many forms in the rock and soil and any release can become a contaminating situation for both air and water. The EPA is concerned with lead contamination and is currently considering lowering acceptable standard levels. As we discuss elsewhere, many of these toxins take on new chemical structure and makeup when released by blasting due to physical chemical actions.

The FEIS notes that "upon review of the results (of additional modeling done by Rosemont), the Coronado did not fully agree with the rationale presented by Rosemont Copper" regarding the use of background data for NAAQQ compliance. (FEIS at 229.) The USFS's uncertainty speaks to the concerns that we have raised and continue to raise over modeling used for this issue.

Suggested Remedies: The USFS must provide a revised DEIS that provides a meaningful and defensible analysis regarding the public health and safety impacts resulting from potential releases of lead and arsenic. The USFS should also require that this project meets any and all new EPA NAAQS standards for lead.

5. The FEIS fails to assess the presence of asbestos and asbestiform materials in the project area and fails to analyze the potential impacts to public health.

As we stated in our public comments, the DEIS neither mentioned, nor required monitoring the chemical and mineralogical composition of the particulate matter to confirm the absence of toxic elements, asbestos or asbestiform and asbestos-like minerals, or provide data to indicate that relates to possible violations of emission regulations with respect to these materials. (SSSR et al. at 17-18.) Among the EPA regulations on air pollution, there are specific regulations applicable to airborne asbestos and asbestiform minerals, as well as hazardous and toxic materials emissions.

It should be noted that asbestos and asbestiform minerals are found in the particulate matter from copper mines in Butte, Montana, and even ASARCO in the Pima County area west of the Town of Sahuarita recognizes the asbestos problem in their operation of an open pit copper mine. There are reported indications that tremolite, a naturally occurring amphibole and serpentine mineral and one of the minerals in the asbestos group, has been found at the Rosemont proposed mine site. Left undisturbed in the rock formations, it is harmless. Once released by mining or construction, it is deadly. Research on tremolite itself has been on-going for decades, and environmental health specialists maintain that tremolite dust is the most deadly form of asbestos.

The FEIS acknowledges that asbestiform minerals, specifically tremolite has been found in various mining operations and that it is found in the geologic rock formations associated under the Rosemont mine proposed area. (FEIS at227.) According to the DEIS, the USFS relies without question on Rosemont claims that the asbestiforms they found at the sight were "locally limited, and the minerals were not observed to have the silky fibers or aggregate mats that are typical of the asbestos-containing form of these minerals." (*Id.*) The FEIS then states that the Arizona Geological Society and Rosemont do not think that asbestiform minerals are present in the Rosemont deposit itself and repeat that the potential for the presence of airborne asbestos from mining activities is handled through analysis of all particulate matter and the ability for the project to meet air quality standards for particulate matter." (*Id.*)

As noted elsewhere in our objections, there are indications that asbestiforms are widespread in the rock formations of this area. Furthermore, the tremolite dust forms released from rock by blasting and grinding is the most deadly form of and is a known cause of mesothelioma. The claim that any risk to this as well as other toxic and carcinogenic chemical compounds is of no concern because the revised air quality modeling shows that federal standards are met at the fenceline is without serious merit. Aside from the serious questions regarding the revised air quality modeling which are discussed elsewhere in these objections, a meaningful

analysis of this issue would require a large scaled and deep bore analysis of rock geo-chemistry by an independent technology firm. The risks for under reporting and under analysis are too great and not consistent with the ethical responsibilities imposed on the agencies by NEPA and the EPA; the FEIS must meaningfully analyze this information.

Suggested Remedies: The USFS must provide a revised DEIS that includes a meaningful and verifiable analysis of this critical public health issue.

6. The FEIS provides an inadequate analysis of the presence of radioactive elements in the project area and the potential impacts to public health.

In our previous comments, we noted that the DEIS for this project ignored the radioactive elements present in the source materials, including thorium, uranium, and radium, although Rosemont background documents seem to ignore thorium entirely. (See SSSR et al. at 32.) Although these might show up in the waste rock tailings, the blasting process to produce ore for further extraction of copper, silver and molybdenum, will also likely release these elements from the mineral matrices and you will also have radioactive particulate matter.

We noted that "the DEIS requires no measurements of radioactivity of particulates. During the processes of extracting copper, silver and molybdenum, if these radioactive components of the ore become soluble, their soluble state will allow them to pass through many of the processes untouched." (*Id.*) Many of these radioactive elements can also can form volatile fluorides and the presence of fluoride in the ore materials allows the formation of these compounds in various processing steps under appropriate conditions. Neither the background documents nor the DEIS indicated that such conditions are not found in the various steps, and therefore the formation of these radioactive compounds cannot be dismissed. The fluoride compounds of these radioactive elements, if formed in various reaction steps, will be vented as volatile toxic chemicals from these processes.

The concentration of naturally occurring radioactive material through industrial processes is well documented and is often referred to as Technologically Enhanced Naturally Occurring Radioactive Material (TENORM). The topic of TENORM has received significant attention by regulatory agencies, including the International Atomic Energy Agency (IAEA) and the US Environmental Protection Agency (EPA) which in 1999 published an evaluation of the concentration of naturally occurring radioactive material at Arizona copper mines. The ore body at the Rosemont Mine shares a similar provenance with many of the mines evaluated by EPA, where impacts by TENORM including those to surface water, groundwater, and soils are documented.

According to the FEIS, samples from wells and springs showed the presence of radium and uranium elements, and that adjusted gross alpha activity exceeded the Arizona Aquifer Water Quality standard from three different drill hole samples; other radioactive substances such as thorium were apparently not tested for. (*See* FEIS at 374.) The USFS requested further investigation of this issue from their consulting geochemical experts and from Rosemont studies, and the FEIS states that the analysis by Rosemont "generally" supported the finding that elevated levels of radioactive materials were not present. (FEIS at 384.) The FEIS states that "overall, the review found that the potential for technologically enhancement of naturally occurring radioactive materials were adequately investigated" and that the tailings would not generate detectable concentrations. (*Id.*)

The FEIS analysis of this issue is inadequate. The details of the studies done by the USFS experts and Rosemont experts are not revealed in the FEIS. Because changes can continue to occur long after the mine operation ceases further investigation is warranted.

Suggested Remedies: The USFS must provide a revised DEIS that provides a full and meaningful assessment of the potential for radioactive changes (enhancement) and an analysis of the potential impacts to public health.

RECREATION

1. The USFS fails to Include a Recreation Specialists' Report in the FEIS.

In our previous comments we pointed out that no Recreation Specialist Report was available in the project record, and asked the agency to make such a report available as soon as possible, or if there was no such report, to correct that oversight. (SSSR et al. at 77.) The USFS responded by stating that "Specialist Reports are used in some NEPA projects and not in others. There is no requirement that separate Specialist Reports be prepared. For the Rosemont Copper Project, all pertinent information regarding the recreation analysis is provided in the FEIS, and therefore a separate Specialist Report was deemed to be unnecessary." (FEIS Appendix G at G-49.)

Even if there is no legal requirement for a Recreation Specialist's Report, the CNF should have prepared one for this FEIS, considering the importance of recreation on this Forest. The CNF, and the Santa Rita Ecosystem Management Area in particular, are heavily used for recreation. First, the Coronado National Forest is viewed by the public as a "recreation forest" and recreation is viewed as "a priority" for CNF users. (FEIS at 1091.) The Draft ROD (at 10), the FEIS (*see e.g.*, at 833, 841; 843-51), and the Draft Coronado National Forest Plan revision (*see e.g.* at 74-76; 135-38) are replete with discussions of the myriad recreational uses and potential on the Forest. Second, the FEIS makes clear that the Rosemont Mine will lead to "loss of access and recreation opportunities and loss of or reduction in solitude, remoteness, rural setting, and quiet" and that the mine "may lead to permanent changes ... in the type of recreation available and may result in increased pressure on public and private lands in other places to compensate for lost opportunities." (FEIS at 834; *see also* at 858.) Finally, the Arizona Game and Fish Department (AZGFD) analyzed the potential impacts of the Rosemont Mine and concluded that it would "render the northern portion of the Santa Rita Mountains ... worthless for wildlife recreation." (Ltr. to Beverly Everson, Geologist, CNF from Joan E. Scott, Habitat Program Manager, AZGFD, July 8, 2008.)

However, despite the acknowledged importance of recreation and the severe negative impacts the mine would have on recreation - both in the immediate project area and across a much wider impact zone due to displaced recreation - the CNF admits that "there is little quantitative information available on recreation use and trends in the analysis area." (FEIS at 837; 860.) Not only is it is hard to imagine why, in the seven years that this process has been ongoing, the CNF never collected that quantitative data, but its failure to do so undercuts the USFS response that "all pertinent information regarding the recreation analysis is provided in the FEIS." Moreover, there are many other examples of missing information in the FEIS that could -- and should - have been obtained through a Specialists Report, including, in particular, the impacts on other areas from displaced recreation.

Suggested Remedies:
In light of importance of recreation on the CNF and in the project area, and the severe negative impacts the mine would have on recreation - both in the immediate project area and across a much wider impact zone due to displaced recreation - the CNF should withdraw its draft Record of Decision, prepare a Recreation Specialist's Report, and include that report in a revised DEIS.

2. The FEIS fails to provide a full analysis of the Arizona Trail relocation alternatives.
In our comments on the DEIS we pointed out that it offered no realistic alternatives for the Arizona Trail, thus the conceptual trail realignments offered in the DEIS cannot be commented on in any meaningful way. (*See* SSSR et al. at 77.) We also stated that the USFS must present complete and total realignment alternatives as near to the objectives of the laws and policies associated with the Arizona National Scenic Trail as practicable. (*See* SSSR et al. at 77.)

While the USFS provides certain information regarding a revised location for the trail on the east side of State Highway 83, it appears that the relocation options were prepared based on a GIS map and that field evaluations will not take place until during trail construction. (*See* e.g., FEIS at 804-06; s*ee* FEIS at Appendix B-63.)

Although the USFS added a trail relocation alternative that crosses to the east side of Highway 83, the FEIS does not provide a full analysis of the trail relocation alternatives based on site-specific field evaluations. (*See* FEIS at Appendix G-49.) The agency has acknowledged that no site-specific field evaluation of this alternative was conducted to analyze any challenges or barriers to construction of the new 13-mile segment. Similarly, it does not appear that the agency conducted a site-specific field evaluation of the new alternative that includes an analysis of noise, scenery, and other mine-related impacts that will be experienced by trail users on the new segment. Finally, it does not appear that a site-specific field evaluation was conducted to analyze the impacts of trail construction and use on wildlife, vegetation and other resources across the new segment.

Suggested Remedies: The USFS should conduct a comprehensive, site-specific field evaluation of the alternative trail locations, as well as a similarly comprehensive site-specific evaluation of potential construction-related issues, mine-related impacts on trail users, and impacts on wildlife, vegetation and other resources, and include those assessments in a revised DEIS that is made available for public review and comment.

3. The FEIS provides conflicting information regarding the timeline for closing the existing segment of the Arizona Trail and constructing the new segment.
In our previous comments we noted that the Arizona National Scenic Trail must be moved before the proposed project can begin. (SSSR et al. at 77.) Unfortunately, the FEIS contains multiple conflicting references to the timeline for constructing the new segment and closing the existing trail in the Rosemont project area:

- "Construction of new trail segments will be completed within 1 year of approval of the ROD." (FEIS at 51.)
- "The relocation would begin after the ROD and must be completed within 1 year of approval of the ROD. Rosemont Copper would be required to provide trail access prior to restricting or closing the existing Arizona National Scenic Trail to public use." (FEIS p. 857.)

- "Relocated trail segment would be pioneered and available for public use at the time the existing trail segment is closed to public use." (FEIS at Appendix B-63.)
- "Final construction of the relocated trail and associated facilities would be completed within 1 year of the time the existing trail is closed to the public." (FEIS at Appendix B-63.)
- "Rosemont Copper is responsible for providing funds to the Arizona Trail Association to ensure that trail relocation ... is completed before mine related activities close the existing trail to public use." (FEIS at Appendix B-63.)

In addition, despite language in the FEIS and Mitigation Measure FS-RW-01 requiring Rosemont to keep the existing trail open until the new segments are completed (see above), the USFS appears to retain for itself the authority to close the existing trail because of mine construction or related activities: "*The Forest Service would approve, in advance, any activity that would restrict the trail to public use*, with the *intent of maintaining the trail in an open condition* during the "through hiking" season. *All reasonable attempts would be made to avoid closing the trail during the "through hiking" seasons* of March, April, October, and November." (FEIS at Appendix B-63.)

The USFS failed to adequately respond to our comment requesting that the new trail segments are completed and open to the public before work can begin on the Rosemont Mine. Moreover, it is impossible to tell whether the USFS is proposing to complete construction within one year of the ROD being approved or within one year of closing the existing trail. Similarly, it is impossible to know whether the USFS is going to require Rosemont to keep the existing trail (which runs through the project area and in some locations would be inside the proposed perimeter fencing) open until the new segments are completed and open to the public or whether the agency will allow Rosemont to close the existing trail - whether temporarily or permanently - before those new segments are completed and open.

Suggested Remedies: The USFS should modify Mitigation Measure FS-RW-01 and related sections of the FEIS to prohibit implementation of the MPO until the new Arizona Trail segments are completed, pioneered and open to the public. In addition, the agency should modify Mitigation Measure FS-RW-01 and related sections to ensure that the existing trail remains fully open and accessible to the public until the new Arizona Trail segments are completed, pioneered and open to the public. The USFS must provide this information in a revised DEIS that is made available for public review and comment.

4. The FEIS fails to provide adequate information about the cost of the Arizona Trail relocation, or to provide key information about Rosemont's funding commitment.

The DEIS asserted that "Rosemont Copper has already paid for the establishment and enhancement of a segment of the Arizona National Scenic Trail in the project area," and in our comments we noted that there was there was no explanation as to how this pre-project payment for a segment of the Arizona National Scenic Trail is a mitigation measure for the planned project, which has yet to be approved. (*See* SSSR et al. at 80.) The USFS failed to indicate how many miles of trail were paid for, whether the paid for segment of the trail has been established or enhanced, and how the mine operations will impact the paid-for segment of the trail. (*Id.*) It is unclear how paying for some undescribed segment of the Arizona National Scenic Trail, a trail that will be significantly negatively impacted by the mine operations, is a mitigation measure; we noted in our previous comments that it would be more properly classified as an

attempted bribe of the community. (*Id.*) In any event, for this to be classified as a "mitigation measure" it must be more fully explained and the information noted above must be provided to the public. (*Id.*)

The USFS failed to respond to this comment and also failed to adequately analyze or provide any information about the cost of the Arizona Trail relocation, how much Rosemont has committed to pay for the trail relocation, whether that funding commitment has been reduced to writing, or where funds for the trail relocation will come from if Rosemont's commitment falls short. In its discussion of Mitigation Measures, the USFS says only that Rosemont "would fund" and "is responsible for providing funds" for the trail relocation. (FEIS at 871, Appendix B-63.) However, there does not appear to be any other discussion of the information described above.

Suggested Remedies: The USFS must provide a detailed analysis of what the trail relocation will cost and disclose how much Rosemont has committed to pay for the relocation, whether that commitment has been reduced to writing, and where the relocation funds will come from if Rosemont's commitment falls short. The analysis and disclosures must be made available for public review and comment in a revised DEIS.

5. The FEIS provides an inadequate analysis of the impacts that displaced recreation will have on other public lands.

In our previous comments we noted that the DEIS failed to analyze the probable relocation of recreation activities currently taking place in the proposed Rosemont project. (*See* FEIS at 77.) The DEIS contained a mere acknowledgement of displacement impacts to the immediate management areas, with absolutely no examination of the ways that this displacement will alter management practices. (*Id.*)

While there are multiple references in the FEIS to the loss of recreation activities and access if the mine is approved, together with admissions that "there is little quantitative information available on recreation use levels and trends" and "it is assumed that the displacement of the public from the project area would result in increased visitation to nearby lands," the agency acknowledges that it relied only on "existing data, knowledge of mine layout and activities, and professional judgment." (FEIS at 836.) There are no analyses or descriptions of the site-specific impacts on those nearby lands or the types of management activities, including restrictions on use, that might be necessitated in order to protect those areas from increased visitor use. (*See e.g.* FEIS at 852-60.)

The USFS failed to analyze the direct, indirect and cumulative effects of displaced recreation from the project area to other nearby lands. It is not sufficient to simply "assume" that visitors will go to those other places - a logical assumption in a "recreation forest". The agency must actually analyze and disclose what the impacts might be in those areas.

Suggested Remedies: The USFS needs to develop a full analysis of the significant direct, indirect and cumulative environmental and economic impacts of displaced recreation use on other areas of the CNF and adjacent public lands, including an analysis of pending and/or potential management actions, such as restrictions on use that might be necessitated to protect those areas from increased visitor use. The USFS must include those analyses in a revised DEIS that is made available for public review and comment.

6. The FEIS provides an inadequate analysis of the impacts of displaced OHV use on other public lands, and fails to require adequate mitigation for these impacts.

In our comments on the DEIS we asked the USFS to identify the shifts of off-highway activities and other recreation that will result from this project and analyze the impacts on the new areas where this traffic will be displaced onto. (*See* SSSR et al. at 77-78.) As we noted in our comments, the USFS describes the Rosemont area in the DEIS as "one of the more popular and traveled off-highway vehicle riding areas, the loss of which would be more intense than the loss of roads in other portions of the Santa Rita Backcountry Touring Area". (*Id.*) We further noted that this comparison is too limited, considering this "intense loss" will have a dramatic, negative affect on other parts of the CNF and the Las Cienegas National Conservation Area, as these areas outside the Rosemont are predominantly fragile grassland savannahs less capable of bearing the added pressure of Off Highway Vehicle (OHV) displacement because of a proposed Rosemont closure. (*Id.*) We asked the USFS to provide an analysis of foreseeable restrictions and closures that would be put into place to protect these areas from the increased OHV use caused by a Rosemont closure, the order of priority these restrictions might take, and the methods the FS and BLM would employ in monitoring and regulating these increases in OHV traffic. (*Id.*) We asked that these analyses and mitigation alternatives include cost projections of maintenance, enforcement and rehabilitation resulting from all action alternatives. (*Id.*)

In response, the FEIS states that the CNF "has formed a team to address recreation use that will be displaced from the mine area under a separate NEPA process. Rosemont Copper has agreed to provide funding to the Coronado that could be applied to a planning effort to identify areas and infrastructure to accommodate displaced OHV use, and development of facilities for OHV use." (FEIS at Appendix G-49.) According to the FEIS, Rosemont Copper would provide funding to produce a plan for developing facilities and managing off-highway-vehicle use that would be displaced from the project area. Rosemont would enter into a voluntary collection agreement to provide funding for uses that include the NEPA analysis and decision process to determine where additional facilities are warranted and appropriate, in addition to implementation of the off-highway-vehicle mitigation; this could include \construction of off-highway-vehicle facilities, public outreach and education, and management and enforcement. (FEIS at Appendix B-64.) It goes on to say that "the collection agreement would be in place at the time the final MPO is approved. This measure may be refined with further details once the collection agreement is finalized and approved by both parties." (*Id.*)

It is not acceptable - nor does it constitute mitigation - for the USFS to simply kick the can down the road by agreeing to analyze the impacts of displaced OHV recreation on other areas through a future NEPA process that would be initiated at an unspecified time in the future through a yet-to-be signed funding agreement with Rosemont. The FEIS acknowledges that "displaced motorized recreation from the project area may result in increased motorized activity in locations less suitable for motorized recreation, such as Gardner Canyon, the Louisiana and Ophir Gulches, the Las Cienegas National Conservation Area, and the Greaterville area, as well as in increased conflicts between user groups (especially motorized and nonmotorized recreation user groups)." (FEIS at 858.) The impacts to OHV use in the project area will occur as soon as motorized roads and trails are closed, which will be long before the described NEPA process would even be initiated, let alone completed. As a result, it is highly likely that the displaced OHV recreation will move to, and potentially threaten, other areas on the CNF, as well as other public lands in the area, that are, in the USFS's words, "less

suitable" for OHV use and/or could lead to conflicts with non-motorized user groups, long before any analysis of the impacts on those areas is completed.

In addition, the USFS failed to conduct a quantitative assessment of the cumulative impacts of closing access to OHVs in the project area together with potential motorized road closures or restrictions elsewhere in the area. Simply stating that the USFS is already proposing to "add, decommission, close, or change designation of roads in the FSR database and prohibit off-road motorized travel" in certain areas, including the Santa Rita Ecosystem Management Area and other ranger districts on the DEIS, is no substitute for a quantitative assessment of those impacts as part of a thorough (and required) cumulative effects analysis.

Suggested Remedies: The USFS needs to provide a full analysis of the admittedly significant environmental and economic impacts of displaced OHV use on other areas of the CNF and adjacent public lands, including a comprehensive cumulative effects analysis with a quantitative assessment of other pending and/or potential road closures or vehicle restrictions. The USFS also needs to identify adequate and enforceable mitigation measures that will address these impacts. This information must be provided in a revised DEIS that is made available for public review and comment.

7. The FEIS fails to provide an analysis of the direct, indirect and cumulative effects of the noise impacts related to displaced OHV recreation.

As we stated in our previous comments, the USFS failed to analyze impacts of displaced OHV activity and the associated noise. (SSSR et al. 78.) We noted that "while the DEIS examined ambient noise levels for the purpose of noise modeling, it offered no comparative discussion of OHV noise level, or lack of it, within and beyond the Rosemont area." (*Id.*) In response, the FEIS provides the following information:

> "[I]mplementation of the Forest Service Travel management Rule (which would add, decommission, close, or change designation of roads in the NFSR database and prohibit off-road motorized travel for dispersed camping in certain areas) would result in changes to the established system of roads and trails in the Santa Rita Mountains. It is anticipated that those changes would include closing unauthorized roads and existing system roads, prohibiting motor vehicle use, and adding new roads to the current system. The Santa Rita Mountains would continue to be closed to cross-country motorized vehicle travel. Road closures and vehicle prohibitions would contribute to a decrease in access for motorized recreation opportunities in the analysis area in the long term. <u>When combined with roads that would be decommissioned as a result of the project (see the "Recreation and Wilderness" resource section in this chapter), decommissioned roads would decrease motorized recreation opportunities and would subsequently reduce noise associated with motorized recreation.</u> Road decommissioning activities in the vicinity of the proposed mine could create noise that would overlap with noise from mining related activities, thus resulting in additional noise for short periods (days to weeks) in the immediate vicinity of such activities."

(FEIS at 988; emphasis added.)

There is no indication that the USFS actually modeled noise impacts related to OHV use and incorporated those into an analysis of the impacts of displaced OHV recreation into other locations on the CNF or in adjacent areas. In addition, Mitigation Measure FS-RW-03 proposes that Rosemont would enter into a voluntary agreement to provide funding for a NEPA process and development of a plan to manage displaced OHV recreation. (FEIS at Appendix B-64.)

The USFS failed to conduct an analysis of the direct, indirect and cumulative effects of the noise-related impacts tied to displaced OHV recreation. Simply stating that closing roads and restricting motorized access would reduce noise associated with motorized recreation is no substitute for actually conducting an analysis of the direct, indirect and cumulative effects of the noise-related impacts tied to displaced OHV recreation, particularly when the FEIS acknowledges that displaced OHVs "may result in increased motorized activity in locations less suitable for motorized recreation, such as Gardner Canyon, the Louisiana and Ophir Gulches, the Las Cienegas National Conservation Area, and the Greaterville area, as well as in increased conflicts between user groups (especially motorized and nonmotorized recreation user groups)." (FEIS at 858.)

In addition, it is not acceptable - nor does it constitute mitigation - for the USFS to simply kick the can down the road by agreeing to analyze the impacts of displaced OHV recreation on other areas (whether related to noise or other issues) through a future NEPA process that would be initiated at an unspecified time in the future through a yet-to-be signed funding agreement with Rosemont.

Suggested Remedies: The USFS needs provide a full analysis of the admittedly significant environmental and economic impacts of displaced OHV use on other areas of the CNF and adjacent public lands, including an analysis of noise-related impacts in those areas, and include the analyses in a revised DEIS that is made available for public review and comment.

8. The FEIS provides an inadequate analysis of impacts on prior investments in recreation and tourism.

In our previous comments we noted that no information was provided in the DEIS regarding the millions of dollars that have been spent in the project area to develop and maintain the backcountry touring area. (SSSR et al. at 80.) No information was provided on how this loss of taxpayer dollars will be addressed and whether sufficient replacement recreation areas can feasibly be developed under current budget conditions without significant new adverse environmental effects. (*Id.*)

The FEIS includes language stating that "the public investment in the public lands that define the area is currently valued at $2.3 billon (Power 2010). Changes to the public lands that attract visitors and provide for an attractive quality of life for local residents would have the potential to decrease the public investment value of the lands as well as the sense of place that these public lands provide to residents and visitors." (FEIS at 1117.)

The USFS has failed to analyze the impact of the mine on public investments that have been made to develop and protect recreation opportunities in the project area. The agency also failed to analyze the availability of funds to develop and/or manage the recreation use that is expected to be displaced from the project area to other areas on the CNF or adjacent public and private lands in a way that both provides replacement recreation opportunities and protects the areas

that where the displaced recreationists go.

Suggested Remedies: The USFS needs provide a full analysis of the impacts of the Rosemont Mine on public investments that have already been made to develop and protect recreation opportunities in the project area, as well the availability of public funding to develop and/or manage the recreation use that is expected to be displaced from the project area, and include those analyses in a revised DEIS that is made available for public review and comment.

MINING PLAN OF OPERATIONS

1. The FEIS analysis does not accurately reflect the expected lifespan of the proposed mine.

In our previous comments we noted that the DEIS suggests the life of the proposed mine will be 20 years and evaluated impacts based on that schedule, including impacts to water resources; however, we pointed out that there are no limitations preventing this mine from operating beyond the 20 years period defined in the DEIS, and the suggested 20-year life span was suspect when compared to the life span of other existing mining operations in the region. (SSSR et al. at 39.) In light of this, we asked the USFS to identify and analyze impacts of the proposed mine with a lifespan more in line with the operational history of other mining operations in the region, or alternatively, include permit and reclamation requirements for the mine that would limit mineral production to 20 years. (*Id.*)

In response, the USFS states, "[t]he life span for the Rosemont project is the best information currently available. If the life of the project is proposed for extension, additional analysis would be triggered which would include public participation." (FEIS at Appendix G-567.) Additionally, the FEIS contains new information that the mine life is now going to be "24.5 to 30 years", a 22.5% to 50% increase from what was reported in the DEIS. (FEIS Executive Summary at xviii.)

The USFS included new information in the FEIS that was not included in DEIS. Extending the mine life with resulting cumulative impacts by 22.5% to the 50% is significant and warrants an opportunity for the public to review and comment, pursuant to NEPA. More importantly, the analysis contained in the FEIS is deficient in that it still does not accurately reflect the expected mine life of the project. It appears that the agency has accepted the proponent's representation on face value without any critical review of the production life of other US open pit copper mines. Clearly the analysis contained in the FEIS is wholly inadequate compared to the operating history of other US open pit copper mine. As a result of this significantly understated mine life in the FEIS, the analyses of the impacts of this project are correspondingly understated.

The table below provides information on the production life of other US open pit copper mines currently operating:

Mine	Country	Commodity	Type	Production Start	Production Life
Bagdad	USA	copper	open pit	1945	68
Bingham Canyon	USA	copper	open	1904	109

Mine	Country	Commodity	Type	Production Start	Production Life
			pit		
Chino	USA	copper	open pit	1910	103
Morenci	USA	copper	open pit	1937	76
Safford	USA	copper	open pit	2007	6
Sierrita	USA	copper	open pit	1957	56
Tyrone	USA	copper	open pit	1967	46
					76.3
Sources: www.infomine.com, Freeport McMoran					
Note: The Safford Mine was not included in the average because of its lack of history.					

Suggested Remedies: The USFS must revise its analysis to include more realistic projections of mine life that correspond more to the experience of the other US open pit copper mines. THe USFS must include this information in a revised DEIS and make it available for public review and comment.

2. The USFS fails to independently assess Rosemont's deposit and the viability of the project.

In our previous comments we noted concerns regarding the inhomogeneity of the Rosemont deposit. (SSSR et al. at 66.) In our comments, we explained that the deposit occurs in a sequence of varied sedimentary rocks, including limestones, intersected by faults and joints, and that the intensity of mineralization tends to be controlled by the fractures, bedding planes and rock composition. (*Id.*) With such a variety of controls, mineralization is likely to vary considerably throughout the deposit, leading to inconsistent grades and differences in mineral beneficiation properties from place to place, which in turn could have caused inaccuracies in grade and tonnage calculations and could cause difficulties in maintaining consistent metal recoveries from milling circuits. Such factors are fundamental to developing a smoothly and economically operating mine and plant, and without further information gathering and research on them, problems could arise, possibly leading to the eventual abandonment of any mine started.

In response, the USFS states in the FEIS, "The Forest has relied on publicly available information as well as Rosemont's MPO to affirm that ore reserves are present. Among these sources of information are Canadian regulation NI 43-101, which contains Standards of Disclosure for Mineral Projects for reporting and displaying information related to mineral properties owned by, or explored by, companies which report these results on stock exchanges within Canada. These requirements are rigorous and widely recognized as standards by which ore reserves can be systematically described. The Rosemont Copper Project meets the standards set forth for NI 43-101. Should the economics of the operation change so that it is no longer viable, the company would be required to close and reclaim the operation, or the Forest Service would use the reclamation bond monies to contract out the closure and reclamation." (FEIS at Appendix G #577.)

This response is dismissive of our comments and inadequate. Many engineering and geological reviewers of mining projects have the qualifications required by Canadian regulation NI 43-101; however, such experts rely on information supplied by the company to make their determinations and if given inadequate or wrongful information, their conclusions can be misleading. The USFS has done no assessment itself and given no consideration whatsoever, in the DEIS or FEIS, to the possibility that the submitted assay figures or results of preliminary milling tests, used to determine economics of a mine, might be insufficient. It is worth noting that the proponent itself has pointed out the possible discrepancies of reserve and grade estimates in its 2009 Augusta Short Form Prospectus and also states that "the Company cannot be certain that metal recoveries in small scale tests will be duplicated in large scale tests under on-site conditions or during production." (*See* Sedar at 14.) Obviously the Company was aware of some of the information shortcomings, and this information should have been made available to the public in the FEIS.

As a conclusion to the response, in the last sentence, the Forest Service seems to display an attitude of irresponsibility by stating, essentially, that if the mine turns out to be uneconomic it can be shut down and the site reclaimed. The decision to inflict irreparable damage on the site rather than do a meaningful assessment of the deposit makes no sense from an environmental or an economic perspective. It would be far preferable to investigate, in sufficient detail, the geology and milling characteristics of the mineralization before embarking on an expensive and possibly futile mining project. We reiterate our previous comments and strong objection to this failure of the USFS to adequately analyze the ore deposit and project viability and disclose that information in the FEIS.

Suggested Remedies: The USFS should assess the viability of the ore deposit and the overall project viability and disclose that information in a revised DEIS. Specifically, the USFS should divulge all drill hole locations by number on a map, all core assays, and all geological logs of the cores. Following that an independent mining engineer and geologist should review all this information along with results of metallurgical tests and give an opinion of the accuracy of the Augusta conclusions. (The USFS should also undertake this assessment in light of our objections to the agency's assuming that the proponent is "entitled" to mine and dump waste on these claims, which we discuss elsewhere in this document.)

3. New information is presented in the FEIS regarding the mining plan of operations; thus, the USFS must allow for public notice and comment through a revised DEIS.

In the period since the DEIS released for public review and comment, Rosemont Copper has drilled a few additional exploration core holes and has re-interpreted the ore reserves based on results from all drill holes and by using a lower cut-off value for copper content. Further to this, and in consultation with the USFS, they have decided to abandon the original plan to treat, by leaching, the near surface oxide mineralization for the Barrel Alternative ("the preferred alternative"). As a result of the additional work, a significantly changed mining plan of operations was devised, and a revised feasibility study that covers all aspects of the new plan was released in August 2012. (*See* Rosemont Copper Project. Updated Feasibility Study., Aug. 28, 2012) In the FEIS, the USFS adopted most of the above changes as proposed by Rosemont Copper. Significant changes from the Draft EIS involve increased sulfide ore reserves, eliminated oxide ore reserves, modified open pit design, a change from constant mining and milling rate throughout to increased rates in later years. and modified design of waste/tailings piles. We provide comments on this new information below; however, we object to it being

presented in an FEIS rather than a revised DEIS, which would have afforded the public an opportunity to review and provide comments.

Suggested Remedies: Because of these significant changes in the proposed project, the USFS must prepare a revised DEIS and release it for public review and comment.

4. Objections regarding new information in mining plan of operations.

Geology and mining: Some of the possible mining and milling problems at Rosemont are related to the geological features of the deposit and of the surrounding rocks. In summary, the mineralization proposed for mining is contained within a section of Paleozoic sedimentary rocks which have undergone varying degrees of thermal metamorphism. Probably more than half of the section is composed of limestone or, at least, calcareous rocks. The rest, to some degree interbedded with the limestones, consists of shale, siltstone, sandstone, conglomerate, and minor igneous rocks. This mineralized section is over 2,500 ft. thick and is overlain by a much thicker and varied section containing a large proportion of sandstones and conglomerates. Bedding in the mineralized beds trends north-south and dips steeply to the east. Mineralization extends for over one mile along bedding trend and for over 3,000 ft. down dip; the lower limits not having been reached by drilling, and, in any case, below the proposed limit of economic mining. The structural setting of the steeply dipping bedding has been further complicated by several steeply dipping, north trending faults with progressive downward displacement to the east, and by numerous northwest and northeast trending, high angle faults. (*See* FEIS at 166.)

Mineralization can best be described as skarn type and consists of chalcopyrite and other minor copper minerals, and minor pyrite occurring as blebs, lenses. veinlets, and disseminations controlled mainly by faults and bedding planes in calcareous lithologies. (FEIS at 163.) The structure controlled, north-south trends can be seen in Augusta's Aug. 2012 Updated Feasibility Study (Fig. 14-23). The Rosemont deposit is not a typical porphyry copper but is similar to two of the Green Valley mines.

The sulfide ore is overlain or capped by a layer, just below surface, of oxide ore, 64 million tons of which was proposed for processing in the DEIS. Mining of this easy to reach layer would have produced an early cash flow to the project to help with development costs. Now that mining the oxide has been dropped from the plan, it will be at least two years before initial sulfides are mined to start to provide initial revenue. According to the Updated Feasibility Study (at 239), the capital cost of stripping rock down to the sulfide layer would be $116.1 million. The plan is to expense 70% of this and amortize 30% of it over 5 years. No realistic plan for financing has been detailed or provided to the public, and if no loan is forthcoming the project could go bankrupt due to under-capitalization, before any ore is produced.

Suggested Remedies: In light of this, The USFS should provide information regarding the financing for this project in order to provide assurances to the public that the proponent has the necessary funds to accomplish all the required reclamation and other mitigation, and regardless ensure that the proponent provides sufficient bonding to cover such expenses.

Milling: Successful open pit mining of low grade copper and other deposits depends on a fairly uniform and predictable distribution of the economic minerals over a large volume of rock so that excessive selective mining is not required, i.e., a large volume of rock can be continuously mined and provide a constant feed to the mill. Problems that could arise in mining the

Rosemont deposit relate to its skarn nature and consequent irregular occurrence of mineralization, and the irregularity could be further complicated by the intense faulting, which causes common displacement of rock types amenable to mineralization resulting in furthering the uneven distribution of mineralization. An additional problem that would be encountered is that the proposed Rosemont pit would be approximately circular and would be mined from horizontal benches encircling the pit. Because of the strong north-south trends and steep dips of lithological contacts and faults, mined material would change character and mineral grade on frequent crossing of lithological boundaries. This could also lead to erratic changes in material reaching the mill. Because grinding and mineral separation circuits are sensitive to rock and mineral changes, these could cause time wasting stoppages of the mill to allow for adjustments to the circuits.

These problems could also lead to the need for selective, and therefore reduced rate mining, which could further upset the timely flow and constant grade of ore flowing into and out of the mill.

Suggested Remedies: The USFS must address the issues raised above and provide this information in a revised DEIS that is made available to for public review and comment.

Tailings disposal: Following extraction of copper and molybdenum bearing minerals from the ore the Company has proposed that, instead of conventional disposal of tailings in a tailings pond, they would use the newly emerging dry-stack method of disposal. This involves squeezing the tailings in filter presses to remove about 85% of the water and then stack the partially dried tailings on dry ground outside the plant. According to the literature this process is still in its infancy and still requires further study and testing. One major drawback is that the process has still only been carried out successfully in small mines. (*See* www.tailings.info/disposal/drystack.htm). The maximum found for copper processing was 34,000 tons per day, with a second one of 24,000 ton per day . In addition, the filter presses are expensive to buy, run and maintain. They are sensitive to rock type and chemistry and thus require frequent adjustments, and with a proposal for14 or 16 of the presses at the Rosemont mill, keeping them all in adjustment at the same time could be a difficult task. Commonly publicized advice is to do extensive field testing before even deciding to use the method at all.

The following is an example of precautions to be observed, excerpted from "Filtered Dry Stack Tailings - The Fundamentals. D. Michael Davies. Proceedings Tailings and Mine Waste (Vancouver, Nov. 2011)": "Determining the most cost-effective manner to obtain a filtered product consistent with the geomechanical requirements of the tailings can be a challenge. Filter suppliers are both knowledgeable and helpful in this regard but some form of pilot test(s) is essential as every tailings product will exhibit its own unique filtering behaviour. It is important to anticipate mineralogical and grind changes that could occur over the life of the project. The candidate filtering system(s) must be able to readily expand/contract with future changes at the mine with the least economical impact."

Augusta is not reported to have done any field scale filter tests. It is proposing, and the USFS is accepting, an annual mining rate much above that which has been successfully achieved in dry stack operations at copper mines. Their proposal is to either mine 75, 000 tons per day for the life of the mine (FEIS at 32), or 75,000 tons per day in years 1 through 15 and then 139,00 tons per day for years 16 through 19 (FEIS at 82). The USFS fails to explain how these high throughput figures will be achieved and how the change from 75,000 tons per day to 139,000

tons per day is to be implemented. Another chronic problem with filter presses is keeping them tuned to leave a moisture content of approximately 16%. With slightly too much moisture the tailings will slump when placed on a stack. With slightly too little moisture the tailings will not flow properly on to or off the conveyor belt. To verify their intent to go through with the filter pressing method Augusta, in August 2010, placed an order with F.L. Smith for 14 of the largest filter presses made. (*Not your father's mine*: *Rosemont Copper Mine.* Ariz. Jour. of Envl. L .and Policy, Oct. 8, 2012.) However, on a diagram of the plant site the filter plant building is shown , seemingly with 16 filter presses. (FEIS at 83.)

The USFS has not commented on any of the above problems. The agency seems to have agreed to and adopted this significantly different mining and milling plan without any independent assessment or verification, just like it did with the plan presented in the DEIS. Some aspects of the plan could temporarily stop production and greatly slow down the whole operation schedule. More seriously, the inability to provide a constant and timely feed to the mill could result in financial loss and abandonment of the project. Of even greater concern is the filter press treatment of tailings. If this, essentially experimental, process fails to work properly there is no plan for an alternative method to fall back on. Not only has there been no consideration of a conventional tailings disposal method, there would probably be insufficient space available for a tailings pond under the Barrel or any of the other alternatives, even if a conventional tailings pond could be approved.

The environmental consequence arising from the potential mining and milling problems would be, at a maximum, to leave an abandoned mine site with a partially excavated pit and piles of waste rock mixed with tailings. The reclamation bond, still to be calculated, should, with certainty, be made sufficient to cover the cost of placing soil over the waste piles and seeding it with appropriate plant varieties, removing all plant and equipment, and reclaiming the plant site and various roads. However, the original topography would be changed forever, and the pit would remain as an unsightly hole , partially filled by polluted water. The mining company in possession of the project at the time of mine abandonment may possibly go bankrupt and so the USFS would be left carrying out or supervising the reclamation.

Suggested Remedies: The USFS must address the issues raised above and provide this information in a revised DEIS that is made available to for public review and comment.

Ore reserves, mining rate: The FEIS states that the proven and probable sulfide reserve is 667.2 million tons. (FEIS at 33.) This is also the figure given in the 2012 Updated Feasibility Study. (at 6, Table 1-3.) However in Table 7, P. 82 the figure for sulfide ore to be produced is 707,471,000 tons and the same figure appears in the draft ROD and is described as the amount of sulfide ore to be mined over the life of the mine. (FEIS at 82, Table 7.) There is not any specific explanation for the 40 million ton discrepancy but elsewhere the FEIS says that oxide ore in the Barrel Alternative (the "preferred alternative") that has a "high enough" grade will be processed along with the sulfide. (FEIS at 35.) Neither the "high enough" grade nor the amount above this grade has been given. Whichever of the above tonnage figures is correct, it will represent an increase from the 546 million tons proven and probable cited in the DEIS. This increase is acceptably explained by the Company using additional drill results and a lower cut-off grade in a re-interpretation of the reserves.

However, figures for the mining and processing rate for sulfide ore are inconsistently quoted. In the Revised Feasibility Study (at 125, Table 16-3) the rate starts at 66,000 tons per day in the

first year, increases to 75,000 t/d for the next three years, gradually increases to 88,000 t/d over the next seven years, and for the last 10 years is 90,000 t/d., The average per day over this 21 year period works out at 85,400 tons.

The FEIS gives the mining rate as an average of 75,000 tons per day for 20 to 25 year. (FEIS at 32.) It also shows the anticipated production schedule for the Barrel Alternative in terms of daily mining rate per day (on a yearly basis) over the full mining period of 19 years. FEIS at 82, Table 7.) This daily rate starts at 27,920 tons in the first year, varies from 27,000 to 42,000 ton in the next 14 years, with a large jump up from 35,000 in year 2 to 42,000 in year three, and then jumps up to 51,000 tons per day in the last four years.

There is no explanation of these differing figures for total production and daily mining rate. The sudden increase in mining rate to 51,000 tons per day near then end of the production schedule is especially questionable. Such a high rate would be impossible to attain with the existing plant and equipment, and installing additional facilities at that late stage would be uneconomic and possibly not permissible under the mining permits. The above discrepancies lead to questions of how thoroughly production plans have been devised, whether mistakes have been made, or whether some aspects have been overlooked in editing the FEIS.

Suggested Remedies: As a remedy the whole production schedule should be reviewed by the Company and a corrected version produced.

Pyrite in ore and waste: The consequences of pyrite in the dry stack tailings and waste rock has caused controversy over whether it will lead to acid water drainage, and to whether any acid water produced could seep down through the waste piles and into the ground below. The FEIS states that no water should be stored on top of the waste/tailings piles after mine closure to reduce the potential for infiltration of storm water into the waste /tailings. (FEIS at 29.) The FEIS describes the grain size of tailings as "sand size". (FEIS at 33.) According to the 2012 Updated Feasibility Study (at 59), the grain size is given as 105 microns, which is actually very fine sand, and which could be permeable. The FEIS contains some contradictory and confusing statements, including that the plan is "to minimize infiltration" , "the top of the tailings facility would be relatively impervious", "that is, all precipitation would remain on top of the tailings", and again " to limit infiltration into the tailings". (FEIS at 46.) "Relatively impervious" would be better expressed as "slightly permeable." Their expression "To limit infiltration" implies that infiltration could occur, and therefore all precipitation would not remain on the surface. The fine sand grain size could also allow for permeability. The conclusion from the confusing statements is that ultimately, the tailings/waste piles could allow some meteoric water to percolate through to the ground and, in the process, could become acidic from reacting with pyrite grains in waste or tailings.

In order to counteract acid water drainage Rosemont has devised a plan that is described by the USFS in the FEIS (at 468). Studies have shown that much of the acid forming from pyrite can be neutralized by solutions that have flowed through limestones and become alkaline. The plan to neutralize the acid would be to store and then place calcareous rock waste strategically so that water flowing through it would percolate into the tailings and neutralize any acid. The text explains that limestone waste or tailings would be more than adequate to do this. However, a table of the amounts of each formation to be mined shows that the amount of calcareous rock in the form of waste and tailings, about 550 million tons, is much smaller than the amount of non-calcareous material, about 1,350 million tons, indicating that there may not be sufficient

calcareous rock for neutralization.

This plan would be complex in practice because it would require identification of all rocks mined which is very difficult visually, and require segregation of the different types into separate storage areas – an example of selective mining or rock sorting, which would be difficult to achieve in a large, fast moving operation.

Suggested Remedies: Neutralization of acid is important and the UFSS should provide more detail regarding their plans to address this issue and show that the proposed plan is feasible. The USFS should present this information in a revised DEIS that is made available for public comment and review.

Pit water: According to the FEIS, during the life of the mine 18,500 acre feet of water, representing about 18% of the mine's total lifetime consumption of 100,000 acre feet of water will be pumped from the open pit in order to keep the pit floor dry during mining operations. (FEIS at 41, 43.) The FEIS claims that this water will be of potable quality and could be used for mineral processing or dust control. However, there is no accounting for the ownership of this water or whether it has been paid for.

Suggested Remedies: Not all of the mine pit is on Rosemont's private land and that part is on Federal land and although the water may be pumped from Rosemont's part of the pit, it drains in from surrounding aquifers under land of Federal and probably private ownership. The USFS should disclose this information in a revised DEIS that is made available for public comment and review.

Trucking (incorrect information): Table 2 on Page 50 of The FEIS lists " Large-truck trip per weekday data", the number of truck trips into and out of the mine. The title of this table is misleading: It should read "trip per day", not weekday. Headings of individual columns are also wrong and misleading. "Round trips per week " should read "Round trips per day". A similar table appears in the Draft ROD Record of Decision with the same mistakes. (Draft ROD, Table A-3.)

Suggested Remedies: These mistakes could be misleading to people taking information from tables and they should be corrected and presented in a revised DEIS made available for public review and comment.

ENERGY

1. The FEIS fails to analyze the impacts of generating the energy required by this project.

With respect to the energy demands of the proposed mine, we previously stated that "the DEIS is seriously and legally deficient in failing to account for the cumulative impacts of off-site sources having to generate such a huge amount of energy." (SSSR et al. at 110.) Our concern was with the environmental impact of providing such a large amount of electrical energy - about the same as would be required for a good-sized city of 100,000 to 150,000 people. Clearly if this energy were to be generated on-site or near the mine site, the significant environmental impact would be obvious; however, even if the electrical power is generated elsewhere the environmental consequences remain, and the impacts must be included in any

assessment of the mine's impacts.

The USFS failed to provide an adequate response to our comments. The only response provided states, "it is not possible for the Forest Service to determine the source of electrical power that will power the Rosemont project." (FEIS Appendix G.569.) This is simply not appropriate if this document is to clearly delineate the actual real-life environmental impacts of the proposed project. While it is true that power purchased from the electrical grid could come from many different sources, some sources are much more likely than others. For example, a prime Arizona candidate could be the Springerville Generating Station. It would not be difficult to estimate the amount of additional coal and cooling water required at that facility to generate the necessary electrical power. In fact, this has already been accomplished in the context of oral presentations at public hearings on the proposed mine. Once these basic parameters are quantified the impact of electrical energy production on air quality, water resources and land use could be estimated. The fact that these impacts would occur at some distance from the mine is irrelevant. They are directly attributable to the mine and must be evaluated.

Suggested Remedies: At a minimum, the Forest Service should consult with Tucson Electric Power about possible sources of electrical power and provide some estimate of the impact of generating the necessary energy for this project in a revised DEIS. Since TEP has surely given some thought to the problem of providing power to what would be one of their largest customers, this consultation should be a first step and should be clearly documented. Then reasonable options for supplying this huge amount of energy could be reasonably evaluated. This analysis is absolutely essential to give the public and decision makers a realistic picture of the actual environmental impact of the proposed mine.

CULTURAL RESOURCES

1. The USFS fails to adequately analyze impacts to cultural resources or adequately mitigate those impacts.

General Observations

Many of the concerns expressed previously in our comments regarding the DEIS remain unanswered. We note that the HPTP shows an alarming lack of familiarity with up to date literature, especially regarding the protohistoric and historic periods. Along those same lines, many important references are missing, which strongly suggests lack of knowledge on the part of the authors. This lack of knowledge raises another issue, that of missing or misidentifying important resources; again this is of special importance during the protohistoric period.

During the prehistoric period, there is insufficient discussion of intra-site and inter-site exchange, and the importance of these upland sites is insufficiently emphasized. There are no other examples in southern Arizona of Colonial or Sedentary period sites associated with a ballcourt in an upland setting.

Another significant concern is poor excavation strategy – this is discussed in the prehistoric, protohistoric, and historic sections. There are also serious deficiencies in relation to tribal associations in late prehistoric and modern times. For example, there is no discussion of the relation of the Hopi and Zuni with cultures of southern Arizona. In addition, mitigation

measures are inadequate and a more comprehensive analysis of indirect impacts is needed.

There are also serious deficiencies relating to modern tribal perspectives. How and why sites have significance to modern tribal peoples needs to be discussed, as does the treatment of new cultural properties (Traditional Cultural Properties) that have yet to be identified.

Most importantly, all authors agree that, no matter how expertly the data recovery program is conducted, there is no justification for excavation of these resources. This view is shared by the 11 Native American nations and communities that participated in the Section 106 consultation process: Ak-Chin Indian Community, Gila River Indian Community, Salt-River Maricopa Indian Community, Pascua Yaqui Tribe, Hopi Tribe, Zuni Tribe, Mescalero Apache Tribe, White Mountain Apache Tribe, San Carlos Apache Tribe, Fort Still Apache Tribe, and Tohono O'odham Nation. None were willing to sign the Memorandum of Agreement. In a 13 December 2013 letter from Tohono O'odham Nation Chairman Ned Norris to Gina McCarthy, Administrator, Environmental Protection Agency, Chairman Norris wrote,

> The entire cultural landscape of Ce:wi Duag [Santa Rita Mountains] will be irrevocably altered. Tohono O'odham have frequented Ce:wi Duag for thousands of years to pray and gather traditional plants and other resources. If the proposed action is implemented, that tradition will be destroyed. The destruction of so many cultural resource sites simply cannot be mitigated.

If implemented, the data recovery program proposed by the Treatment Plan would save some and bits of knowledge from the impacted area. However, an analogy can be made to saving some of the bricks from a cathedral, while the cathedral as a whole is destroyed. If the proposed mine is permitted and the Treatment Plan becomes reality the cultural landscape that is the Rosemont Valley and the northeastern slopes of the Santa Rita Mountains will be destroyed forever. We all strongly share the perspective that it would be far better to leave the cultural resources and natural resources of the area intact.

<u>Prehistoric Period</u>
The Draft EIS states that the human remains and associated funerary objects were repatriated to the Tohono O'odham Nation in 2009 but it does not cite whether the remains received any additional analysis and documentation as is now considered mandatory by many archaeologists. The FEIS on page 1031 repeats the fact that repatriation occurred, but again, does not state whether the artifacts were documented before repatriation.

Indirect impacts to sites outside the Rosemont property were mentioned in the DEIS on page 692 but were not adequately considered nor were there studies of comparable developments and their effects. They are mentioned in the FEIS as well, with more reference to specific regions and management areas. However, there is not an adequate consideration of vandalism to cultural resources introduced to the region from increased access and traffic. Comparative studies are needed, as is a consideration of the density and types of cultural resources in the areas potentially receiving impacts, in order to adequately consider levels of indirect impacts.

FEIS, p. 1048: "The overall forecast is one of continued degradation and loss of cultural resources from land disturbance, vegetation changes, and depletion of the water table…The project area is rich in a diverse array of cultural resources and has the additional cultural significance of the open spaces, heights, and natural resources of the Santa Rita Mountains."

These are clear, true statements in the current FEIS. Lacking is a focused consideration of how the various sources of human impacts can be expected to damage and destroy cultural resources in the region. There are different expectations for different populations. For example, one of the more dangerous sources of vandalism comes from the workers of operations like mining and utility line monitoring and construction because they have heavy equipment suited to mechanized digging and the removal of things such as petroglyphs. All populations and areas of sensitive cultural resources should be educated and mapped.

The FEIS considers impacts on cultural resources within the mine footprint as originally proposed (including its alternatives). What is not considered is the possibility that once begun, the mine may, in the future, choose to expand. Should this occur over the crest of the Santa Rita Mountains, not only will many of the assumptions concerning viewsheds and economic impacts be negated, but a range of additional cultural resources will be affected that have yet to be surveyed. If the mine is accepted as is, such expansion will be much easier to push through than it would be now. Such expansion possibilities should be openly discussed at this stage.

The FEIS mentions the fact that the resources in the mine's footprint are potentially unusual but this point is not really emphasized adequately. At present, there are no other known concentrations of early Hohokam settlement dating to the Colonial and Sedentary periods that are centered on a ballcourt site known in an upland area in southern Arizona. One other upland ballcourt is known in far southeastern Arizona, but little is known of its context. The unique aspect of the resources at Rosemont demand preservation, not destruction.

There are serious deficiencies in the research design in Exhibit B. Previously, questions were raised regarding the DEIS because its summary of the culture history was out-of-date and showed a lack of knowledge of the area. The current research design has similar problems. It is roughly 10-15 years out of date as is clear if one looks at the references cited in many sections. For example, under the discussion of social organization on pgs. 70-71, there is no consideration of how villages are organized around plazas. This is vitally important in this case because the Ballcourt Site probably has a plaza and critical research questions pertain to activities in this portion of the site, how the site is related to the plaza, and so forth. A concern with the plaza and research related to it was previously raised but is not addressed in the FEIS. A second example concerns Research Theme 4, Exchange on pp. 71-72 in Exhibit B. The very brief consideration of this complex topic fails to recognize the significance of the large body of recent research on ceramic exchange in the Tucson region and the potential for understanding intra- and inter-regional exchange relationships and how they affect other aspects of life in this upland zone.

Another serious deficiency in Appendix B is the lack of a specific plan for the excavation of the plaza area at the Ballcourt Site, should that site be subject to impacts. Also, the planned ceramic stylistic analysis cited on page 98 of Appendix B, is out of date and does not consider recent critiques of this approach.

Suggested Remedies:

A. It is suggested that a more comprehensive analysis of indirect impacts of the proposed actions be undertaken that considers types of potential impacts, sources of those impacts, magnitude of the impacts, and models the degree of such impacts that can be expected.

B. A detailed analysis of potential expansion areas of the mine property should be provided and available for current consideration.

C. There should be a clear statement regarding whether the repatriated remains were analyzed and documented prior to repatriation.
D. The research design in Exhibit B requires significant overhaul.

Protohistoric Period
The FEIS and the Historic Properties Resource Treatment Plan are, unfortunately, deficient in a variety of ways. The documents provided for review do not even attempt to address the comments previously provided on the protohistoric and historic Native American resources. The treatment plan is significantly and materially out of date. The information missing from the culture history or presented inaccurately suggests that the authors are unaware of new and important interpretations of the protohistoric period. This is significant in that substantial and far-reaching discoveries have been made regarding the protohistoric and Native American historic period over the past decade.

In assessing whether comments are substantive it is critical for the evaluator to understand the role various portions of the FEIS and Treatment plans (HPTP) play with respect to cultural resources. Significant and material differences in understanding of the protohistoric and historic Native American periods have emerged over the last decade. We can now recognize material evidence of the various groups (Apache, O'odham, Jocome, Jano), distinguish between sites related to each of these groups, and partition their evidence from underlying Hohokam and Archaic in multiple component situations. We could not do this a decade ago. This is one reason it is so critical to be up to date on the most current literature. The culture histories, research questions, themes, and data requirements presented in the HPTP do not demonstrate this familiarity.

Culture histories are written to demonstrate that the contractor is familiar with the cultural resources expected in the area and to make it clear that the authors will know how to recognize the resources, assess their importance, and therefore appropriately mitigate impacts to them. This document demonstrates just the opposite. The contractors clearly do not know the types of resources to expect for the protohistoric and Native American historic period nor have they reasonably presented expectations for what will be found. In fact, their comments suggest that they will be keying in on the wrong material culture signatures and are, thus, likely to miss important field cues. Even after providing an extensive list of references (in the response to the DEIS) that address specific culture groups expected or known to have lived in the area, the contractors continues to demonstrate that they have not updated their knowledge base, culture histories, and research questions along with data requirements. We have learned a significant amount of new information in the last decade. This information has significantly altered what we know about the groups that occupied the area and how they can be recognized in the field. It is critical that the contractors understand this or else they will be squandering resources. The documents do not cite the newest material. This lack of familiarity with the newest understandings has resulted in inadequate and inappropriate research questions and data expectations. This nullifies the research design and treatment plan. Moreover, most contractors discover evidence of this period in the fills of sites, after the upper layers have been scraped off or excavated through to access the more recognized components. This is likely to happen here because it is appears that these contractors have little idea what the protohistoric and Native American Historic period resources look like.

The other reason to provide an up-to-date and thorough culture history is to show that legitimate research questions will be asked and that appropriate data will be gathered using

appropriate techniques and methodologies. These requirements have not been demonstrated in the FEIS or Treatment Plan. In fact, just the opposite has been demonstrated. Proposing legitimate, up-to-date, and well-founded research questions is how archaeologists justify destroying limited nonrenewable cultural resources. Archaeologists are required to state what information content these resources have and how this information will be addressed in order to justify and offset their destruction. Archaeologists state what is significant about the specific resource, what information it contains, how it relates to important research themes and how information will be extracted. Unfortunately, this has not occurred here.

Thus, the destruction of the resources cannot be justified. The impacts are not being offset. The information content has not been adequately identified. Significant impacts will occur to the cultural resources and the mitigation measures are inadequate to offset those impacts on this basis alone. This is the foundation of cultural resource management and the NEPA process.

Because the documents demonstrate a lack of familiarity with current literature, relevant research questions, and current methodologies it is expected that the efforts to evaluate the significant aspects of the record will be inappropriate. Significance assessments of cultural resources cannot be adequately assessed and their treatment of these sites and components is insufficient.

Destruction of significant cultural resources, when evaluated as eligible under Criterion D, must be offset with efforts that increase knowledge. Again, because the contractor's information is outdated, it is unlikely that a meaningful understanding of resources of this time period will result. It is particularly unfortunate that the components and sites that will be destroyed relate directly to the decedent populations who are participating in this process.

Examples follow (HPTP, p. 28): "Seymour (2002:10) wrote that 'as semi-sedentary agriculturalists the Sobaípuri were newcomers to southern Arizona, perhaps arriving in the Santa Cruz and San Pedro river drainages in the Pueblo Revolt time frame [1680].' If so, the Sobaípuri were in southeastern Arizona only a decade or so before Kino's recording of their villages."

This perspective has changed in the last decade with no fewer than a dozen journal articles and a book. First, chronometric evidence available over three years ago demonstrates that the Sobaipuri were in the area at least as early as A.D. 1400, and in the past couple of years information has been advanced that the adaptation shows up much earlier. Dates for the O'odham in this region are as early as the A.D. 1200s.

Second, abundant and ample evidence has been presented that the Sobaipuri were not semi-sedentary but rather resided in well planned, highly organized long-term settlements. New evidence found in several publications (books and refereed articles, newsletters, etc), many of which are available on-line, clarifies these misconceptions as well as new advances in knowledge.

Here and throughout, outdated references are used; for example, Spicer (1962) is cited as an authority. The accepted scholarly reference on the Sobaipuri O'odham is "Where the Earth and Sky are Sewn Together" (Seymour 2011), which is not cited in this discussion.

This error is repeated in the FEIS page 1030 where the authors define the protohistoric period

beginning in A.D. 1450. This is a much outdated notion of this period. New evidence shows that the adaptation relative to these groups (Apache and O'odham and Jano/Jocome) began at least 100 years earlier.

The inadequacies were noted in the original EIS with regard to the Apache and non-Apache mobile peoples (Jano and Jocome). These have not been corrected.

An example (HPTP, p. 29): "Forbes (1971:281–285) and Goodwin (1969:66–69) believed the nomadic people that the Coronado expedition encountered were Apaches. Spicer (1962:231–235) suggested that the people identified as Jócomes and Janos were Chiricahua Apache, whereas Schroeder (1974:26) thought that no Apaches actually occupied the region south of the Gila River before 1680. Some archaeologists place the entry of Apache groups in the Southwest as early as the 1400s. This would make them contemporary with the latest prehistoric settlements, and it raises the old issue of Apache predations as a cause of abandonment.
Baldwin (1997:3–6) has also argued that traits such as the sinew-backed bow are Athapaskan traits that appeared in the Pueblo Southwest in the 1400s."

A significant amount of new material has been published on the Coronado expedition through southern Arizona including new information on the indigenous groups he encountered. None of this is cited or included in the discussion.

In addition, a significant amount of new material has been published on the Jocome and Jano groups. This has not been incorporated into this discussion or taken into account in these documents. The archaeological signature of these groups has been identified, which suggests they were not Athabascans. Contractors seem unaware of this distinction, making it unlikely that they could detect the differences in the field.

Significantly more new material has been published on the Apache than the authors of the HPTP indicate. The Apache archaeological signature has also been identified and discussed extensively in the literature. This has also not been acknowledged or discussed, despite having been brought to the contractors' attention in the DEIS comments.

The HPTP also fails to acknowledge new information obtained on the Jano, Jocome, Manso and Suma. References specifically addressing the archaeological signature of these groups have not been included in the overview nor is new information about them included in discussions. Consequently we are left with the impression that the archaeologists are unaware of and therefore would not be able to distinguish these groups in the field. The project area is in their homeland. There is no indication that the contractors would know to distinguish the sites of these groups. For example, Canutillo complex materials have been routinely mistaken for Archaic and Sobaipuri evidence.

The HPTP includes many errors and misstatements including the following:

(HPTP, p. 29) "Scholars are unsure which Apache groups occupied southern Arizona, the territories they called their own, or the timing of their entry."

"The documentary evidence indicates that although Athapaskan speakers may have been in New Mexico and the Great Plains as much as a hundred years earlier, there is no indisputable

evidence of their appearance in southern Arizona before the last quarter of the seventeenth century."

These statements are simply not true. Recent publications in referred journal articles and books provide strong evidence for the presence of Athapaskan speakers in southern Arizona in the A.D. 1300s, that is, 300 years before the date the authors of the HPTP acknowledge. This oversight and lack of familiarity will undoubtedly have consequences with respect to the ability to identify such resources in the field and to adequately address the research value and importance to descendant groups. At a minimum those conducting this project should be aware of the most current information and its relevance to this project.

The following statement is not true (HPTP, p. 30): Documentary evidence indicates that the O'odham peoples of southern Arizona lived in ranchería settlements of randomly spaced, oval or round, brush-and-pole or pole-and-mat structures"

The Sobaipuri-O'odham, whose sites and components occur in the project area, did not live in ranchería type settlements and houses were not randomly spaced. Houses were neither round nor oval. This has been discussed in detail in books and articles.

A statement that is not up to date (HPTP, p. 30): "the remaining Sobaípuri abandoned the San Pedro River valley for Tucson"

And FEIS p. 1032: "Sobaípuri O'odham, who were living in the area at the time of Spanish contact until the 1760s."

A recent publication has debunked the idea that all the Sobaipuri left the San Pedro and this publication should be cited. Archaeological and documentary historic evidence are clear on this matter. Consequently, the notion that the Sobaipuri-O'odham were not in this area after 1760 is false, creates false expectations, and is likely to result in data being missed and evidence being misinterpreted.

Another statement that is not true, (HPTP p. 31): "Unfortunately, there is little overlap between the documentary records and the archaeological evidence of early historical Native American occupation. Information compiled to date consists largely of isolated finds, problematic associations, and conflicting data. It is striking that so little evidence has remained of the large O'odham villages along the Santa Cruz River, and information …."

There is considerable overlap between the documentary records and the archaeological evidence of early historical Native American occupation. There is considerably more evidence than isolated finds and problematic associations and there are numerous large O'odham villages along the Santa Cruz that have been identified, documented, studied, and published.

This again demonstrates a lack of familiarity with current understandings and knowledge of this period. All of the sites cited in support of this discussion in the HPTP come from decades-old information. Literally dozens of O'odham villages (80 or so) are now known and more than a dozen have been recently excavated and reported. All of the reports cited are decades out of date while dozens published in the last decade have not been cited, and the new understandings and data have not been incorporated.

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Another incorrect statement, (HPTP p. 32): "It is curious that so little evidence of Apache occupation has been found in southern Arizona, given that the Chiricahua Apache homeland was southeastern Arizona…" This demonstrates a gross misunderstanding of the period and its resources. Publications note that dozens of Apache sites have been recorded in this region. Our notions regarding the Apache in this region are significantly different than conveyed in this document. Another incorrect statement, (HPTP p. 32): "The Garden Canyon Pictograph Site with Apache rock art is the only definitive evidence of an Apache presence (Meighan 1993:1–11)." More recently the Apache affiliation of this rock art has been seriously questioned. Moreover, there is considerably better evidence for the Apache in the region.

HPTP pgs. 156-158, 162-164, 172-174, 174-175, 265-266: The Sobaipuri sites found in the Rosemont project area have been discussed more recently than the authors indicate. These sources discuss their research value. There is no reason to question their Sobaipuri affiliation as has been done on pages 156 and 162 of the HPTP. HPTP p. 163: More recent references discuss the remaining information value of these sites.

Mitigation of the potential impacts of the new trail and waste rock pile to AZ EE:2:80, AZ EE:2:83, AZ EE:2:93, AZ EE:2:95, and AZ EE:2:541 are not adequate. First, because of the wide spacing of Sobaipuri housing and features it would be inappropriate to restrict work to a 3 m wide area. It is also inappropriate to restrict excavations to the feature interiors as much of the household information occurs in the zone surrounding the houses, as has been discussed in the published literature. These sites cannot be excavated like prehistoric ceramic period sites. The need for approaches more appropriate to these types of resources has been discussed in numerous publications. To adequately address impacts, broad areas must be exposed to effectively retrieve information content from these sites. The spatial relationships between features and work areas must be understood to effectively extract information. Test units will be ineffective if these relationships are not taken into account. Also, there is no discussion of how these sites will be approached compared with sites from other periods. Numerous published discussions note how one cannot use the same tools, methods, or approaches in the excavation of these sites as are used on Hohokam sites. There is no indication the authors understand this and, consequently, rather than retrieving useful information, the sites will be damaged and information will be lost. The mitigation measures are inadequate to offset impacts and potential impacts.

Moreover, it is not sufficient to monitor the sites. The trail must be sufficiently far from site boundaries so that there is no chance of impacts. Even minor impacts to these thin, shallowly buried deposits will damage them irreparably. There is very little information to begin with and retrieving it takes painstaking effort. Thus, if these sites are impacted, the effects will be far greater than on sites of other periods. The trail should be at least 100 meters from the site.

Again, this is factually inaccurate (HPTP p. 61): "Although it has been little discussed, there are also similarities between Apache and "Sobaípuri" architecture and material culture. Protohistoric Western Apache sites of east-central Arizona are characterized by rock foundations for wickiups. The rock-ringed huts on Fort Bliss that Seymour (2002: Figures 7.38 and 7.39) illustrates differ from the Sobaípuri houses of southern Arizona primarily in the size of the cobbles, easily viewed as a function of the local geology. Whetstone Plain (identified as Sobaipuri) and Apache Plain pottery share several attributes including thin vessel walls, sand inclusions, a "folded rim" or rim coil, and stuccoed, scraped, or wiped surfaces."

It is not true that there are similarities between Apache and Sobaipuri architecture. From an archaeological standpoint they are very different and the fact that this document states that there is a similarity illustrates the lack of familiarity with the resources and literature. For example, rocks outlining Sobaipuri structures are embedded; rocks outlining Apache structures are not. Sobaipuri houses are elongate; Apache houses are often circular, but can take on a variety of impromptu shapes. The published literature clearly states that Sobaipuri architecture is unique; no other group made similar housing or had a similar village layout.

Apache Plain and Whetstone Plain are not the same. Moreover, the attributes just cited for Apache Plain and Whetstone Plain are not included in their HPTP type descriptions. The authors are mixing attributes from other historic pottery types with these. For example, Whetstone Plain does not have folded rims, nor is it stuccoed. These attributes specifically identify a different pottery type.

Again, this is factually inaccurate: (HPTP p. 61): "Yavapai projectile points (also called Cottonwood Triangle and Desert Side-Notched points) are much like Sobaípuri points, although the latter typically lack side-notching. Small, concave-based, finely serrated points characterize the Cerro Rojo and Canutillo flaked stone tools that Seymour (2002:385) attributes to Apache and Mansos, and Seymour (2002:267) recognizes their similarity to Sobaípuri points…"

The Sobaipuri did not make side-notched points; it is not that their points "typically" lacked side-notches, they never had side notches.

HPTP pgs. 61-62: Because the authors are not aware of the current literature and research advances they are asking questions that have already been answered. Any work they do will be redundant and will result in damage to the resources with no commensurate contribution to knowledge. This is apparent in their discussion of research questions in the HPTP on pages 61-62. The issue of ethnic identity has been addressed in detail in numerous books and articles. Without this material as a baseline for study, the currently proposed work duplicates work already done and will not likely make additional advances. Considerable effort has already been invested in these questions and the authors need to build on this previous work.

An example: "What parallels can be drawn with the architecture, material culture, or lifeways of other Protohistoric period peoples? Is there closer similarity to Apache or O'odham?"

These questions are far too general, thus, there is little expectation that they can be addressed. In addition, they do not illustrate ways in which they will build on past research. Moreover, we have moved far beyond these basic research questions, to more interesting ones. There is no point in squandering the resources to redo work that has already been done.

HPTP Pgs. 68: Another example of redundancy stemming from lack of knowledge of the recent literature and advances involves architecture. This following suggestion has already been accomplished for the Sobaipuri. *"Archaeologists should develop strong criteria for identifying habitation structures, storage structures, and special-purpose structures. The number and types of outdoor facilities can provide information about resource processing and cooking, as well as the probable size of the group who used them (e.g., household or larger groups)."*

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In summary, the cultural overview in the treatment plan does not address the concerns previously raised. It does not fix the flaws that were pointed out in the DEIS. In addition, the treatment plan does not incorporate new knowledge and information on approaches to excavation provided in recent publications.

Historic Period

The Rosement area was extensively used during the historic period, beginning with resource collecting, primarily timber, during the Spanish and Mexican periods (circa 1700-1856); and timber harvesting, mining, and ranching during the American Territorial and Statehood periods (1856 to present). These activities have left behind cultural resources (landscapes, sites, features, and artifacts) that will be destroyed or damaged by the activities at the Rosemont Mine. A review of the historic period cultural resources portion of the Draft Environmental Impact Statement noted four specific problems with the DEIS (SSSR et al. p. 100):

A. it did not include recent historical and archaeological literature. The background research relied on decades-old research, with little indication that the persons preparing it were aware of or had examined the large amount of research that has been conducted in southern Arizona since the mid-1990s.

B. It provided vague information on the status of the historic period sites. The DEIS failed to provide detailed information on each of the sites that were potentially to be affected by the mine.

C. The Santa Rita Mountains have been used by Hispanic individuals including but not limited to cowboys for generations, but the DEIS ignored their presence and failed to discuss what sorts of cultural resources these individuals might have left behind.

D. Individuals died and were buried at the historic period sites on the eastern side of the Santa Rita Mountains. Previously, the grave of one individual was located and exhumed. The likelihood is high that other individuals are buried at the historic period sites. It was suggested that archival research would help identify these burials.

These objections were largely ignored in the FEIS. Some of the comments appear to have been incorporated into the Historic Properties Treatment Plan (HPTP) prepared by SWCA Environmental Consultants (2013).

Suggested Remedies:

A. The FEIS incorporates some recent archaeological literature references, primarily survey reports prepared for the Rosemont project (FEIS 2013:1028-1030). However, the protohistoric and hstoric period cultural overview in the FEIS contains only one literature reference, from 1984, for 600 years of history. It is unclear why the relevant archaeological and historical literature was ignored. The cultural overview should include relevant references to historical and archaeological literature or should at least direct readers to the relevant project documents that provide this information.

A review of the SWCA HPTP indicates that it also has little data from recent historical and archaeological publications (SWCA 2013:10-42). While a small number of post-2000 references are present in the Historic Period section of the Plan, these do not adequately address the fieldwork that has taken place at historic period sites in Southern Arizona in the last

20 years. Several sections refer to projects without providing references. As examples, on page 34 a discussion of work at Missions in southern Arizona and the Tucson Presidio lacks references, as does the discussion on page 41 noting work at Statehood period sites.

The HPTP Research Domains section contains very few references. As an example, Theme 3: Ethnic and Cultural Groups in the Mines notes the presence of Chinese at the mines and fails to provide references to the pertinent literature discussing the Chinese presence in southern Arizona and the archaeological signature of these immigrants (e.g., Diehl et al. 1998; Lister and Lister 1989; Thiel 1997; Thiel and Mabry 2006) (SWCA 2013:77-78).

B. The FEIS contains basic counts on the number of sites that would be affected by the various action alternatives (Table 201, 2013:1037-1038). However, very little detailed information is provided and readers must refer to the SWCA HPTP, which is not readily available to the public. A review of the HPTP indicates that it provides detailed information on the status of the historic period sites (SWCA 2013), although it is unclear whether this document contains information on every affected site. The FEIS describes the Helvetia townsite as being within a utility corridor, but the HPTP does not mention this important site.

C. "Cowboy culture" and Hispanic traditional use of the area was not addressed in either the FEIS or the HPTP. It is known that Mexican residents of Tucson were collecting timber in the Santa Rita Mountains in the 1820s through 1840s. During this time span, two meteorites were located and taken to Tucson for use as anvils. They are currently on display at the Smithsonian Institution (Willey 1987). Pine beams used in some of the oldest houses in Tucson are believed to originate in the Santa Ritas and in one case have been tree ring-dated to 1849 (Robinson 1990). It is unclear whether the eastern side of the Santa Ritas was utilized during this time period, and it is unclear whether the various surveys that have taken place would recognize the signatures of such activity.

The SWCA HPTP does lay out a plan for examining ranching (cowboy culture) (2013:81-84). I note that the HPTP states the Mexican period ends in 1854 in one place (p. 41) and 1856 in another (p.12).

D. The FEIS fails to discuss strategies for identifying and locating historic period human burials (FEIS 2013:1039-1040). The Mitigation and Monitoring Plan in the FEIS focuses only on prehistoric burials (Volume 5, page B-70). There is no discussion of the consultation process and the determination of likely descendant claimants for historic period burials in the FEIS.

The FEIS and the HPTP provide conflicting information on the number of previously exhumed burials and the number of possible burial features located during the recent survey work. During the ANAMAX archaeological project either one or two historic period burials were located (see FEIS 2013:1027, 1040; SWCA 2013:110, 359). It is known that the body of Warner J. Pfenniger at site EE:2:68 was exhumed (SWCA 2013:126, referred to in the text as Warren Pfenniger). It is not known why this discrepancy is present in the two documents. The recent archaeological surveys located either two (SWCA 2013:359) or three (FEIS 2013:1040) possible burial features. The sloppy reporting on these two issues needs to be resolved.

In addition, oral histories collected from former Helvetia residents suggest the presence of an unmarked cemetery and a Chinese cemetery besides the existing fenced Helvetia Cemetery

(Buckles 2013). The FEIS indicates that the Helvetia townsite is going to be affected by the utility corridor (FEIS 2013:1038), but I could not locate a discussion of mitigation of this portion of Helvetia in the HPTP.

As noted in our DEIS comments, government records (death certificates available on the internet) and contemporary newspaper accounts describe deaths and burials that took place at Rosemont area mining camps and settlements. (SSSR et al. at 100.) It was recommended that systematic archival research be conducted to identify the historic period burials in the Rosemont mining area. Specifically, this would entail a complete review of death certificates posted on the az.genealogy.gov website and a search of newspaper articles using keywords (e.g., Rosemont + burial, etc). Many Arizona newspapers are searchable by keyword at three websites: Newspaperarchive.com, genealogybank.com, and the Library of Congress' Chronicling America. This should provide a list of likely burials in the Rosemont area. This recommendation was not followed in either the FEIS or the HPTP.

The HPTP states: "If a historic property known to contain human remains is within the projects security fence and likely to be completely adversely affected, the entire site and a 15-m (50-foot) buffer will be monitored during construction, to detect any additional human remains that might not have been detected during data recovery" (SWCA 2013:117). Any historic period burials present will likely be destroyed by the heavy earth moving machinery utilized during construction. A more conservative approach would be to strip the entire sites using a backhoe to ensure the discovery of human burials during archaeological data recovery.

In reviewing the SWCA draft final *Historic Properties Treatment Plan for the Proposed Rosemont Copper Project* it became apparent that the data recovery methods section for historic period sites was not prepared by a historical archaeologist. The use of the English Standard measuring system (feet and inches) for surface collection and test units is atypical (historical archaeologists now use the metric system during fieldwork) and presents the problems of how to collect the three sites that include both prehistoric and historic period resources (SWCA 2013:105-106). The use of the term "potter's mark" also suggests that a prehistoric archaeologist prepared this section, since historical archaeologists use the terms "maker's mark" or "manufacturer's mark" (SWCA 2013:107)

SWCA recommends the use of an artifact analysis program developed for the Cresson Project (SWCA 2013:107). The functional categories presented do not correspond with those reported in any of the major historical archaeology projects in Arizona, which typically rely on versions based on Stanley South's functional categories (South 1977). If the Cresson Project categories are used, it will be difficult to compare the results of the project to previous archaeological work in southern Arizona.

<u>Ranching and mining</u>
In relation to ranching and mining (HPTP p. 41-42), the treatment plan fails to identify the importance of ranching and mining activities in Native American socio-economics, specifically O'odham, and the contributions Native American groups made to these industries during the Historical Period. In addition to working as laborers for these industries, O'odham families used to travel from the reservation at San Xavier, as far as Bisbee to sell pottery to the miners.

In relation to site visits during excavations (HPTP p. 52), a sentence reads "A concerted effort will be made to encourage these viewings within 48 hours after excavations are complete, to

allow tribal elders and other representatives to view significant or unique items in floor context." Other archaeological contexts besides the "floor context" are important to tribes because they often revisit areas to leave offerings. The treatment plan needs to include greater involvement of Indian tribes throughout excavation and analysis processes.

Regarding the research design for archaeological sites (HPTP p. 55-72), the treatment plan needs to include research questions that address contemporary Native American connections to past archaeological sites, including: how and why these sites are important to people in the past and present; and whether archaeological sites have ongoing functions or roles for contemporary Native Americans, even after original inhabitants left.

Regarding Native American interaction with the Santa Rita Mountains (HPTP p. 74), research questions should be extended to include sites before the Historical Period and research questions should be given additional attention and context in the Cultural Setting section of the Treatment Plan, especially those about Native American connections to mining, travel, ceramic manufacture, and collecting. Native American connections to ranching and mining industries played an important role in expanding the identities of Native American groups, and are important in Native American histories. In addition, Hopi and Zuni cultural associations with the project area date ancestral occupation prior to 1691. This component of Native American use is not addressed in the treatment plan.

Regarding new interviews with tribal research participants (HPTP p.75), it is quite likely that Interviews with tribal research participants during the data recovery phase of the project will result in the identification of historic properties that may be eligible for the National Register of Historic Places as traditional cultural places. How historic properties newly identified during ethnographic interviews will be managed and treated is not addressed in the treatment plan.

Chapter 5, "Data Recovery" (HPTP p. 88) fails to identify sensitivities that Native Americans may have to specific types of artifacts, sites, and features prior to excavation.

In Chapter 6, "Historic Property Eligibility Determinations" (HPTP p. 113) the treatment plan needs to include Native American perspectives on NRHP eligibility and recommendations for mitigation of adverse effects.

Also in chapter 6, "Historic Property Eligibility Determinations" (HPTP p. 116), the critical role of tribal members in evaluating traditional cultural properties is not made explicit. This role needs definition for traditional cultural properties that may be identified during new ethnographic research during data recovery. In addition, in the same chapter, the information presented about the Hopi, Zuni, and Pascua Yaqui cultural landscape within the project area (HPTP, p. 317-318) raises the issue of whether these landscapes contain traditional cultural properties that were not identified during the EIS. The treatment plan fails to explicitly address how the eligibility of traditional cultural properties identified during the data recovery phase of the project will be determined and how potential adverse effects on those historic properties will be assessed and treated.

In the discussion entitled "Plan for Treatment of Human Remains" (HPTP p. 358, para. 4) the Zuni are identified as a culturally affiliated tribe, but the Zuni are not included as a tribe having cultural affinity to Hohokam and Ancestral Hohokam burials. This is illogical.

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Finally, in the "Discovery Plan for Unanticipated Resources" (HPTP p. 365), the following statement is made. Cultural resources "…encountered during ground-disturbing activities after the mitigation treatments have been completed …" The treatment plan needs to address how historic properties identified during ethnographic research or consultation with Indian tribes during the data recovery phase of the project will be handled.

SOCIOECONOMICS

1. The FEIS introduces new socioeconomic studies; thus, the USFS must allow for public review and comment through a revised DEIS.

The Coalition criticized the USFS DEIS for not making use of the results of USDA and USFS economists' research on the economic importance of natural landscape amenities and other sources of environmental services and for doing no economic impact analysis itself. In particular the Coalition criticized the DEIS for:

- "Ignoring or misinterpreting the empirical economic research findings of the U.S. Department of Agriculture Forest Service (USFS) researchers who have documented the important economic role that landscape amenities play, including, specifically, in the American desert southwest.
- Relying uncritically on economic impact modeling funded by Rosemont and based on Rosemont-specified assumptions and commissioned by a local economic development group. The Coronado National Forest did no economic impact modeling of its own nor did it commission and supervise any economic impact modeling for the DEIS. The USFS did not even inquire about the assumptions and methods used in that outside economic impact modeling before the DEIS embraced it as its own." (p. 104)

The USFS responded by asking a USFS economist (Krista Gebert) to review the Rosemont-funded economic impact analysis (Applied Economics, 2011) and do her own economic impact modeling; in addition, the USFS hired an economic consulting firm (BBC Research & Consulting, 2013) to research and analyze three socioeconomic issues associated with the Rosemont Mine. (FEIS at 1053.)That consulting firm selectively drew on an extensive environmental economics literature developed by USFS and other economists; the result of which was five new pieces of socioeconomic research released in the FEIS:

i A critique of the Applied Economics Rosemont economic impact analysis and new modeling of those economic impacts. (Krista Gebert, Regional Economists, Northern Region, USFS, "Comparison of Economic Impact Results for the Proposed Rosemont Copper Mine, n.d. [2011]).

ii Tourism and Recreation-related Economy (BBC Research & Consulting, Chapter II, 2013)

iii Residential and Business Location Choices (Amenity-based Migration) (BBC Research & Consulting, Chapter III, 2013)

iv Potential Effects on Property Values and Property Tax Revenues (BBC Research & Consulting, Chapter IV, 2013).

v Potential Effects on the Astronomy-related Economy (BBC Research & Consulting, Chapter V, 2013)

This new socioeconomic analysis made heavy use of a variety of other studies and data sources and the USFS in the FEIS interpreted both their consultants' analysis and the literature and data on which they relied.

The FEIS *does* incorporate analysis of the economic impacts associated with the damage the Rosemont Mine would do to the natural landscape and social and natural amenities. The USFS hired a consulting firm (BBC Research and Consulting) to provide research and analysis of how degrading protected public lands, landscapes, and scenic highways would harm the local economy. BBC submitted a report to the USFS entitled "Additional Socioeconomic Evaluations: Rosemont Copper Project Environmental Impact Statement. (May 14, 2013)" As the title makes clear, this consultants' report was providing "additional" socioeconomic analysis that was not in the DEIS.

However, this analysis and the research and data sources on which it relies were not circulated to the general public in advance of the FEIS and Draft ROD, and the public has not had an opportunity to review and comment on this information, including review of the new modeling and analysis and its assumptions, data sources, methods, etc.

This new scientific material should have been released in a supplemental or revised DEIS as we stated in our previous comments. That would have allowed the USFS to evaluate the reliability of these consultants' analysis and results. Instead, the USFS has incorporated that analysis into the FEIS without any public review, precluding adequate review of this new material. This undermines the very purpose of a Draft EIS being circulated so that its data, methods, analysis, and conclusions can be thoroughly tested before being used as the basis for an important USFS decision.

Because this new socioeconomic material was not subjected to a reasonable public review, those new analyses should not be treated as reliable information that can safely inform the USFS decision on the proposed Rosemont Mine.

Suggested Remedies: The USFS must prepare a revised DEIS containing, among other things, a new socioeconomic section; and provide an adequate public comment period following its release. This will allow the USFS to prepare a professional and reliable socioeconomic section that will not mislead or confuse USFS decision-makers as they rule on the proposed project.

2. The FEIS analysis inappropriately treats landscape amenities as social, cultural, or aesthetic problems while ignoring their economic importance.

The Coalition criticized the socioeconomic section of the DEIS for "[t]reating landscape amenities and their degradation as primarily cultural, social, or aesthetic problems with no significant economic implications. [and] [i]gnoring or misinterpreting the empirical economic research findings of the (USFS) researchers who have documented the important economic role that landscape amenities play, including, specifically, in the American desert southwest." (SSSR et al. at 104.)

In response, the FEIS states, "environmental amenities associated with the Coronado National Forest contribute to the region's identity, as well as area quality of life. Specific to this discussion, these same amenity characteristics, along with a variety of other characteristics (location, area land and housing prices, area wages, number of bedrooms, bathrooms, etc.), can also influence where people live (migration) and property values (Hand et al. 2008b)." (FEIS at 1069.) The FEIS goes on to say, "Whatever the specific characteristics are, analysis of property values in the environmental consequences discussion later in this section assumes that people value proximity to the forest and its resources and that the existence of an open-pit copper mine

could result in negative impacts on values to neighboring properties." (FEIS at 1069.)

In its analysis, the USFS heavily emphasizes the social aspect of these "Social Benefits of Amenities on the Coronado National Forest," and notes that "[e]nvironmental amenities associated with the Coronado National Forest contribute to the region's identity, as well as its quality of life. As previously discussed, regional population growth has brought significant changes in the local and regional quality of life over the past 2 decades; extensive population growth has driven increased demand on forest resources. The region is shifting from a solely commodity-based lifestyle toward a more recreation- and tourism-based way of life." (FEIS at 1091, emphasis added.)

The FEIS goes on to say, "Measuring the **social costs** of mining is challenging because of the absence of quantitative values for **social conditions**. Estimating changes in property values is one approach to measuring **social changes**, as it reflects changes in structural attributes of homes and neighborhood quality. To date, there has been limited research completed on open-pit mining operations, especially in the southwestern United States. In order to assess potential impacts to property values, other open-pit mining studies and reported impacts from industrial sites (such as demolition dumps, waste sites, hazardous manufacturing facilities, freight facilities, etc.), landfills, and large-scale feed operations are discussed in the analysis of the proposed mine's potential impacts."(FEIS at 1105, emphasis added.)

As illustrated by the above passages, the USFS in the FEIS continues to treat landscape amenities and their degradation as well as quality of life and its deterioration as "social" concerns. It does not title a section the "Economic Benefits of Amenities on the Coronado National Forest," instead it limits itself to talking about the "social benefits or amenities," "the region's identity, as well as quality of life," "influence where people live," and "lifestyle."

While USFS economic research was documenting the economic importance of national forest amenities and the ways those amenities contribute to local economic vitality and economic well-being, the USFS in the FEIS translates this research into social, cultural, and aesthetic concern. Where it focuses on economic impacts, the results are stated not in terms of reduction in economic well-being but in terms of slight reductions in property values and, as a result, relatively trivial declines in the property tax revenues that local and state governments collect. (FEIS at 1069, 1107-1108.)

The USFS's studies and other studies (e.g. the Hand et al. 2008b study cited by the FEIS) were of the economic impact of landscape amenities and environmental services of local economic vitality and economic well-being. In these studies, the impacts on property values was developed in an effort to derive the economic value of landscape amenities from peoples participation in a particular market, the market for land for residential and some commercial uses. The purpose is not to determine how much property tax revenue is gained or lost or how home values change. The purpose is to get a quantitative estimate of the value of various qualitative aspects of a particular location as a place to live and do business.

The USFS refusal to recognize the purpose of these economic studies ultimately trivializes the results of this economic research rather than providing insight into the size, distribution, and dynamic importance of these environmental-economic values. For that reason the conclusions from the new "studies" should be ignored until they have undergone the normal critical public review.

Suggested Remedies: If the USFS had circulated these new studies of the role of natural landscapes and degradations of them on surrounding people, families, and communities as part of a revised or supplemental DEIS as required by NEPA, the USFS could have avoided this gross misuse and misinterpretation of the work of the USFS's own economic researchers. The new socioeconomic material should be circulated in a revised DEIS to which the public can respond. This will allow the USFS to prepare a professional and reliable socioeconomic section that will not mislead or confuse USFS decision-makers as they rule on the proposed Rosemont Mine.

3. The FEIS analysis is inadequate because it concentrates the analysis of the economic values associated with protecting natural landscapes on visitors or new in-migrants while ignoring the value of those landscapes to the existing million-plus residents of the three-county study area.

In our previous comments we stated, "The primary conclusion that follows from this review of the DEIS socioeconomic analysis is that it systematically exaggerates the economic benefits while just as systematically dismissing or ignoring the economic costs of the Rosemont Mine. As a result of a series of errors in economic analysis, the DEIS describes the Rosemont proposal as having large economic benefits but no or negligible economic costs. Those economic errors include: Ignoring the economic role that the landscape amenities of the Greater Tucson area play in supporting local economic wellbeing and vitality…." (SSSR et al. at 103.)

We went on to note, "U.S. Department of Agriculture and USFS economic research has demonstrated the economic importance of landscape amenities to local economic vitality. That research has also warned about the negative consequences on local economic vitality and wellbeing associated with commercial development that damages or degrades those landscape amenities. That knowledge developed, over the last several decades, not only by USDA and USFS but many other economists, should serve as part of the foundation for any socioeconomic impact analysis written by the USFS." (SSSR et al. at 106)

In the FEIS, the USFS has made use of the work of several economists from both the USFS and the U.S. Department of Agriculture. The USFS and its consultants for the FEIS also made use of several studies by other economists who have recognized and attempted to quantify the connections between protected natural landscapes and the local economy. The primary economic links on which the FEIS focused were the economic impacts of the degradation of natural landscapes on

i recreation and tourism; (FEIS at 1109-13)
ii the in-migration of new residents and businesses; (FEIS at 1119-22) and
iii property values and property tax revenues. (FEIS at 1105-09.)

Although the USFS did not provide the new socioeconomic analyses in a DEIS to allow for adequate public comment and review, including review of the appropriateness of the application of the economic literature, the reliability of the data, and the accuracy of the calculations, we have identified serious general conceptual problems with those analyses that indicate that they cannot be relied upon in making a decision on the propose Rosemont Mine.

Where the FEIS has treated natural landscape degradation as having economic implications, the focus has been on impacts on the level of commercial economic activity in the study

region, i.e. on the level of local economic vitality rather than on the contribution those natural landscapes and other environmental qualities make directly to the well-being of visitors, new in-migrants, or existing citizens. In addition, the FEIS has largely ignored the direct contribution the natural landscapes make to existing residents and focuses instead on visitors to the region and new in-migrants. In that sense, the ongoing contribution that those natural landscapes make to the economic well-being of residents, day-in and day-out and across the years is ignored.

One of the new analyses that the USFS incorporated into the FEIS, the hedonic analysis of the impact of degraded landscapes on property values, if done correctly *could* have shed some light on this question but the FEIS interpreted that analysis as primarily identifying the reduction in property tax revenues to governments. From an economic point of view (as opposed to a real estate point of view), what hedonic analysis seeks to uncover is the economic value to residents of the environmental qualities associated with a particular location. But that is not how the USFS interpreted the hedonic analysis in the FEIS.

The "entry price" that residents pay to gain access to an area with high environmental quality can take several forms. One is that land values in those locations will be higher ("high rent neighborhoods"). Another is that because the area draws more workers who want to enjoy the higher quality of life, wages are likely to be depressed. The "entry price" is the acceptance of a lower wage than could be earned elsewhere. By studying these sacrifices that residents make to gain access to areas with especially attractive environmental qualities, economists can determine the value of those environmental qualities to residents.

The FEIS largely ignores the value of the protected landscapes that characterize the Greater Tucson Area and the direct contribution those landscapes make to the well-being of the region's million-plus residents. Instead the FEIS socioeconomic section focuses on visitors and in-migrants as if those protected landscapes are valuable only to them and not to existing residents. This reverses reality: The primary beneficiaries of those protected landscapes and victims of degradation of those landscapes are the existing residents, not the visitors or newcomers. In addition what is important is not just the level of commercial economic activity. The natural, social, and cultural environments and institutions are also a vital source of local economic well-being.

This inappropriate focus on impacts on visitors, in-migrants, and only commercial economic values represents a serious bias in the new studies that indicates that the conclusions of new socioeconomic analyses should be ignored until these studies have undergone the usual critical public review.

Suggested Remedies: The USFS must provide the new socioeconomic analysis first circulated in the FEIS as part of a revised DEIS with an appropriate review and comment period so that the public can help the USFS correct errors, confusion, and misinterpretations before the USFS uses the socioeconomic analysis in finalizing the EIS and making a decision on the Rosemont Mine.

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4. The USFS inappropriately uses a Rosemont-sponsored economic impact analysis study, the details of which the USFS refused to make public.

In our previous comments we stated, "The USFS relied uncritically on economic impact modeling funded by Rosemont and based on Rosemont-specified assumptions, and commissioned by a local economic development group. The Coronado National Forest did no economic impact modeling of its own nor did it commission and supervise any economic impact modeling for the DEIS. The USFS did not even inquire about the assumptions and methods used in that outside economic impact modeling before the DEIS embraced it as its own. … When during the DEIS comment period the USFS did seek additional information from Applied Economics, Rosemont, and TREO on the assumptions and methods behind the economic impact modeling on which the DEIS relied, the USFS was not willing to share that information with the public despite repeated requests." (SSSR et al. at 103.)

In addition we noted, "credible review and comment of the economic analysis presented in the DEIS has been hindered by the inability of members of the public to obtain the data and assumptions that were given by Rosemont to Applied Economics to use in IMPLAN modeling. This modeling was the basis for the report released by the Tucson Regional Economic Opportunities (TREO), "Economic Impacts of the Rosemont Copper project on Pima County, Arizona. The results of that report have been widely distributed as well as being used in the DEIS and they differ significantly from other analyses about the economic effects of the proposed mine. Further information about attempts to obtain this data is presented in Appendix E." (SSSR et al. at 106-107.)

In response to these concerns, the FEIS states, "The Coronado also conducted an internal review of the economic model used in the DEIS. The results of this internal review have been incorporated into this section (see "Analysis Methodology, Assumptions, Uncertain and Unknown Information" in this resource section)." (DEIS at 1053.) That USFS "internal review" was carried out by USFS Region 1 economist, Krista Gebert in a report entitled "Comparison of Economic Impact Results for the Proposed Rosemont Copper Mine" (Gebert n.d. [2011]). "This report was prepared internally by the Coronado in response to public concerns over the estimated economic impacts expressed in a study by Applied Economics (2011). The additional analysis was meant to provide an increased understanding of the impacts published in the DEIS." (FEIS at 1056.)

The USFS, Applied Economics, TREO, and Rosemont never made public the background information that was provided to the Applied Economics consulting company so that it could proceed with its economic impact modeling. As the USFS response in the FEIS makes clear, the USFS did use this Rosemont sponsored economic impact modeling as "the economic model used in the DEIS." That is, the USFS endorsed and relied upon the Applied Economics modeling for the DEIS but did not seek clarification of the inputs into the modeling itself and when asked by the public to disclose the details being the modeling the USFS adopted as its own in the DEIS, it refused to provide that information. This made it impossible for the public to evaluate the reliability of the DEIS socioeconomic analysis and the reliability of modeling done by Applied Economics. The "internal review" carried out by USFS economist Krista Gebert came to dramatically different conclusions about the projected economic impacts of the Rosemont Mine: Applied Economics estimated the indirect/induced impacts of the mine would involve 1,260 jobs while Gebert estimated 512 jobs.(FEIS at 1102.) Applied Economics estimated total jobs from Rosemont of 1,694 while Gebert estimated 946.(Gebert, 2011, Table 3)

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The USFS points out "the discrepancy in these numbers" and explains it as "due to different analytical techniques and assumptions." (FEIS at 1102) Both Applied Economics and the USFS economist were using the same "analytical techniques," i.e. the IMPLAN economic impact model. The USFS does not explain the "different assumptions" that the USFS economist used compared to the assumptions made by Applied Economics. Those assumptions that Applied Economics made using Rosemont provided numbers are what the Coalition sought from the USFS and never obtained. In the USFS response in the FEIS, the USFS still does not provide that information. The USFS, however, continues to rely on Applied Economics' exaggerated positive economic impacts while refusing to reveal the basis of those impacts.

This continued refusal by the USFS to reveal the assumptions behind the IMPLAN modeling that it adopted as its own in the DEIS renders the FEIS that continues to rely on that Rosemont-sponsored study unreliable. Given that the USFS's own "internal review" revealed the gross exaggeration of the positive economic impact associated with the Rosemont Mine, those Applied Economics conclusions about the positive economic impacts of the Rosemont Mine can only mislead USFS decision-makers .

Suggested Remedies: The USFS must prepare a revised DEIS that either drops the exaggerated positive impacts contained in the Rosemont sponsored economic impact analysis or provide the background information that Rosemont provided to Applied Economics. The socioeconomic modeling of the Rosemont Mine provided in the revised DEIS should be the analysis provided by the USFS economist along with all of the information Rosemont provided for that analysis.

5. The USFS misinterpreted the results of its "internal review" of the IMPLAN modeling in the FEIS.

In our previous comments we stated, "The USFS relied uncritically on economic impact modeling funded by Rosemont and based on Rosemont-specified assumptions and commissioned by a local economic development group. The Coronado National Forest did no economic impact modeling of its own nor did it commission and supervise any economic impact modeling for the DEIS. The USFS did not even inquire about the assumptions and methods used in that outside economic impact modeling before the DEIS embraced it as its own." (SSSR et al. at 104.) We went on to note, "The economic impacts of the projected 20-year period of full production were exaggerated by assuming that most of the supplies needed to operate the mine would be produced by and purchased from local business firms. This led to estimates of indirect impacts that were 3 to 5 times too large. The result was total "multiplier" impacts that were twice as large as appropriate. (*Id.*)

In response the FEIS states, "The Coronado also conducted an internal review of the economic model used in the DEIS. The results of this internal review have been incorporated into this section (see "Analysis Methodology, Assumptions, Uncertain and Unknown Information" in this resource section)." (FEIS at 1053. That USFS "internal review" was carried out by USFS Region 1 economist Krista Gebert in a report entitled "Comparison of Economic Impact Results for the Proposed Rosemont Copper Mine" (Gebert n.d. [2011]). The FEIS notes, "This report was prepared internally by the Coronado in response to public concerns over the estimated economic impacts expressed in a study by Applied Economics (2011). The additional analysis was meant to provide an increased understanding of the impacts published

in the DEIS." (FEIS at 1056.)

The Rosemont-funded Applied Economics report focused solely on impacts to Pima County, while the Forest Service's IMPLAN report estimates impacts to the entire three-county analysis area. Thus, when describing the potential economic impacts of the proposed mine as estimated in the IMPLAN models, numbers for both Pima County and the three-county analysis area are often used in FEIS. (FEIS at 1099.) For example:

i. "Project construction would occur over an approximately 18- to 24-month period, creating an estimated annual average of 594 direct jobs in Pima County and an estimated annual average of 1,221 direct and indirect jobs in the three-county analysis area (Applied Economics 2011; Gebert n.d. [2011])"; (*Id.*)
ii. "Active mining, final reclamation, and closure would create an annual average of 434 direct jobs in the three-county analysis area (Applied Economics 2011; Gebert n.d. [2011])"; (FEIS at 1100)
iii. "Premining, which includes engineering and construction, would provide an annual average of 594 direct jobs and 443 indirect jobs in Pima County; 768 direct and 453 indirect jobs in the three-county analysis area (Applied Economics 2011; Gebert n.d. [2011])"; (FEIS at 1101)
iv. "Labor income, which includes employee wages and benefits, is estimated to be $29 million in Pima County for direct labor income and $57 million for indirect labor income during the active mining phase (Applied Economics 2011). In Pima, Santa Cruz, and Cochise Counties combined, the labor income during the active mining phase is estimated to be $29 million per year in direct labor income and $55 million per year in indirect labor income (Gebert n.d. [2011])." (FEIS at 1103.)

The four quotes above are just four examples of the USFS misinterpreting the results of its "internal review" of the IMPLAN modeling. The USFS repeatedly explains the difference between the Gebert USFS modeling and the Applied Economics modeling as being that Gebert focused on a three-county study area and Applied Economics focused on one county, Pima.

Although there *was* this difference in geographic focus, the large difference in these two differing modeling efforts on which the FEIS relies was not tied to that geographic difference. The USFS (Gebert) estimated 512 indirect/induced jobs from the Rosemont Mine and Applied Economics' estimated 1,260 indirect/induced jobs, almost two and a half times larger, for the active mining period. This difference was <u>not</u> due to three counties versus one county as the FEIS asserts. One would expect that a larger geographic area would estimate large impacts because the larger economy would be more likely to provide services to the mine and to its workers. Yet the three county indirect/induced jobs impact was 60 percent <u>smaller</u> than the one county estimate. The major difference between these two IMPLAN modeling efforts is tied to the assumptions made about the mine would purchase the goods and services it needed.

Despite the USFS internal review that confirmed the exaggerations associated with the Applied Economics IMPLAN modeling, the FEIS continues to present those Applied Economics' claims as legitimate and reliable estimates for Pima County. The USFS Gebert IMPLAN modeling results indicated that those Applied Economics' claims were <u>not</u> reasonable. But the FEIS treats them as having the same reliability and provides a false explanation for the differences between them.

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In addition, the FEIS statements in (iv.) above are simply wrong. It seems likely that the USFS did not even involve its own economist who carried out the internal review in the FEIS's interpretation of her work. The $55 million that is said to be Gebert's estimate of the indirect and induced impacts is actually her estimate of the total impact of Rosemont on labor income. Her estimated of the indirect and induced impacts was $26 million. What the FEIS should have been comparing was the Applied Economics' estimate of $57 million to Gebert's estimate $26 million for the indirect and induced impacts and Applied Economics' estimate of $81 million to Gebert's estimate of $55 million for the total impacts. In addition Applied Economics apparently assumed that the direct impact on labor income was $23 million, not the $29 million the FEIS asserted. (See Table 3 in Gebert n.d. [2011].)

The USFS in its FEIS clearly does not understand its own economist's work and, as a result has not made use of the insights provided by her analysis. As a result the FEIS continues to misuse the Rosemont-funded Applied Economics analysis and continues to significantly exaggerate the positive economic impacts of proposed mine. If the new socioeconomic analysis contained in the FEIS had been circulated as part of a supplemental or revised DEIS and public comment solicited, these USFS FEIS errors could have been avoided.

Suggested Remedies: The USFS must prepare a revised DEIS that addresses the comments above, and make it available for public review and comment. This will allow the USFS to prepare a professional and reliable socioeconomic section that will not mislead or confuse USFS decision-makers as they rule on the proposed Rosemont Mine.

6. The FEIS analysis exaggerates positive economic impacts of the Rosemont Mine by ignoring the volatility and variability copper mining jobs, income, and revenues to governments.

In our previous comments we noted, "The DEIS explicitly assumed that "[e]mployment and output projections [for the Rosemont Mine] will not fluctuate over the life of the project." (p. 704) This is a counter-factual assumption. Throughout the history of copper mining in Arizona and the United States copper mine production and employment have fluctuated substantially over periods as short as ten years or less. This DEIS assumption explicitly assumed away one of the primary economic costs associated with metal mining, the instability and disruption it brings to local employment and payroll. The net result, again, is to exaggerate the local economic benefits by assuming they will be more stable than can reasonably be expected and, as a result, higher levels of employment and payroll over time." (SSSR et al. at 104-105.)

We also stated, "If the exaggerations associated with the DEIS's modeling of the economic impacts of the Rosemont Mine are eliminated and the instability in copper mining production and employment are taken into account, the positive economic impacts associated with the proposed mine would be only a quarter to a third of what the DEIS projects." (SSSR et al. at 106.)

In response the FEIS states, "It should also be noted that the mining industry, like many industries, is affected by market forces such as supply, demand, and the rising and falling prices of mineral commodities. Thus, the estimated number of jobs created by the proposed mine may fluctuate as a result of changes in the market." (FEIS at 1103.)

This response ignores the fact that metal mining is much more volatile than most industries in the U.S. economy. Obviously *all* market-oriented economic activities are subject to the forces

of supply and demand and face market prices that change over time. But metal mining has been recognized for over a 150 years as more volatile than most other industries. The phrases "boom and bust" and "ghost towns" did not emerge to characterize clothing, restaurants, retail banking, education, government, or most other types of economic activity. Especially in the Western United States and Arizona, metal mining, or more particularly, copper mining, has been associated with very dramatically fluctuating levels of production, employment, payrolls, and payments to governments.

Our comments on the DEIS incorporated comments submitted by Tom Power, which discussed the "Instability of the Economic Impacts of Copper Mining". (SSSR et al. Appendix D.ii at 37-40.) The USFS in its DEIS simply ignored the dramatic, destabilizing, impacts that fluctuations in world metal prices have on employment, payroll, and mining revenues to governments. That instability is a widely recognized characteristic of metal mining that has plagued Arizona's copper towns, like all other metal mining communities across the U.S., for over a century.

It is completely misleading for the USFS to respond to these concerns about what the actual employment, payroll, and payments from the Rosemont Copper Mine would be as opposed to what the Rosemont Mine hopes they will be by saying that metal mining is just like many other economic activities which are subject to market fluctuations. The FEIS simply projects the Rosemont Mine's hopes of relatively stable employment, payroll, and payments to governments. But there is no reason, given past and relatively recent history, to believe that that is what will actually happen. The USFS has purposely turned a blind eye to one of the most important characteristics of metal mining in general and copper mining in particular, namely its inherent volatility that has plagued Arizona's copper towns in the past, including the recent past. That volatility and instability are the primary explanation for the relatively rundown character of Arizona's copper towns and the area surrounding them.

The USFS presentation of employment, payroll, and payments to governments being stable over two decades or more defies present and past behavior in the copper industry. There is no excuse for this misleading characterization and it certainly should not be included in a document intended to accurately inform public decision makers..

Suggested Remedies: The USFS must rewrite the socioeconomic section and provide an adequate analysis of these impacts and present this information in a revised DEIS which includes how the expected instability in the operation of the Rosemont Mine would impact employment, payrolls, and payments to governments. The impact of this instability on local communities should also be discussed. This will allow the USFS to prepare a professional and reliable socioeconomic section that will not mislead or confuse USFS decision-makers as they rule on the proposed Rosemont Mine.

7. The FEIS dramatically understates the size of the existing recreation and tourist economy in the Rosemont Mine study area.

In our previous comments we stated, "The DEIS understated the size of the visitor economy that could be negatively impacted by degrading the landscape amenities in the Greater Tucson region by focusing primarily on:

i a small area in the immediate vicinity of the mine;
ii people engaged in recreation on Coronado National Forest land;
iii people engaged in active recreation as opposed to other types of visitors to the Greater Tucson area." (SSSR et al. at 105.)

In the FEIS, the USFS incorporated new analysis of the "Tourism and Recreation-related Economy" carried out by BBC Research & Consulting. That BBC analysis was part of Chapter II of the BBC 2013 report for the CNF. (FEIS at 1053.) Although the USFS did not provide the new socioeconomic analyses in a DEIS to allow for adequate public comment and review, including review of the appropriateness of the application of the economic literature, the reliability of the data, and the accuracy of the calculations, we have identified serious general conceptual problems with those analyses that indicate that they cannot be relied upon in making a decision on the propose Rosemont Mine.

The FEIS describes the existing socioeconomic setting under the subtitle of "Affected Environment" in the first part of the FEIS section on "Socioeconomics and Environmental Justice." (FEIS at 1063-1097.) In that section it discusses the economy of and economic conditions in a three-county study area (Pima, Santa Cruz, and Cochise Counties). For instance, the FEIS discusses "Employment" across the study area including "Mine Related Employment," quantifying all of the mining employment in Arizona as well as in the three counties. It does not limit the discussion to mining activities on USFS land.

But in the section that immediately follows where "Tourism and Recreation Related Employment" are discussed, the FEIS focuses only on recreation on USFS lands. The USFS in the FEIS downplays the economic role of that recreation activity on Coronado National Forest land. It estimates the employment impacts of people recreating on all Coronado National Forest land are about 800 jobs. That, the FEIS points out, is only 0.15 percent of total jobs in the three-county study area. This leads the USFS in the FEIS to conclude that: "Although recreation activities specific to the Coronado National Forest contribute to the local economy in terms of employment, they do not account for substantial employment numbers in the three-county analysis area. (FEIS at 1072-1075, Table 213.)

After making this statement, the FEIS returns to a discussion of the "Income Characteristics" across the entire study area, not just economic activity on USFS land. But when the FEIS turns back to "Recreation Related Labor Income," it again includes only income associated with recreation on USFS lands. (FEIS at 1072-1076.) The FEIS then turns back to describing "Economic Output by Industry" across all of the industries in the existing economy without limiting the attention only to economic activity associated with USFS land.

This focus only on Coronado National Forest lands when discussing all recreation and tourism that is taking place across the entire three-county study area, directly suggests that recreation and tourism make a relatively trivial contribution to the Greater Tucson Area economy. This is startling given that the USFS's recreation and tourism consultant for the FEIS reports that: "According to a 2011 report by Dean Runyan Associates, the travel industry is the top export-oriented industry in the state in terms of Gross Domestic Product." (BBC 2013, p. II-1)

The FEIS finally points out that in the three-county study area there were 6.8 million visitors who spent $2.6 billion and directly supported more than 27,000 jobs in 2010. (FEIS at 1083.) That represented about 5 percent of total jobs and 1.6 percent of total economic output. That is a dramatic shift from the earlier emphasis on just recreation on the CNF.

The FEIS attempts to estimate the percentage of these visitors who are focused on outdoor recreation, natural areas, touring, etc., what the FEIS calls "nature-based tourism. The USFS

includes visitors who primarily were there to engage in outdoor recreation and touring and a small part of the residual "other" category. About 25 percent of visitors to the three-county Rosemont Mine study area were assumed to be such "nature-based" visitors. That led to an estimated 1.7 million overnight visitors, $684 million in direct spending, and about 7,000 direct jobs attributable to nature-based tourism in the three-county study area. (FEIS at 1086.) That, too, is relatively large compared to the earlier FEIS estimate of the employment associated with recreation on the Coronado National Forest, i.e. the Coronado National Forest recreation-related jobs were only about 11.6 percent of all employment associated with nature-based visitors in the three-county Rosemont Mine study area.

Finally, the FEIS drops its focus from the whole study area to just the Patagonia Census County Division (approximately the northeast half of Santa Cruz County). In this geographic area the number of jobs associated with nature-based visitors falls to 183 from the 7,000 in the three-county study area, 97 percent of the potential nature-based visitor jobs disappear. (FEIS at 1087, Table 225.)

The FEIS continues the pattern from the DEIS of dramatically understating the size of the visitor-related economy that that would be damaged by the industrialization of a significant part of the natural landscape and scenic highways in the Greater Tucson Area. This confused understatement of the relative importance of one of the region's most important industries, seriously distorts the information being provided to public decision-makers.

Suggested Remedies: The USFS must include the new socioeconomic analysis as part of a revised DEIS that is made available for public review and comment period. This will allow the USFS to correct, among other things, the confused and misleading discussion of the role that the natural landscapes associated with protected lands play in the existing economy of the region surrounding the proposed Rosemont Mine and allow the agency to prepare a professional and reliable socioeconomic section that will not mislead or confuse USFS decision-makers as they rule on the proposed Rosemont Mine.

8. The FEIS minimizes the negative economic impact of the Rosemont Mine on the visitor economy, nature-based recreation, and amenity-supported economic vitality by limiting its analysis to only part of the economic connections associated with high quality natural landscapes.

In our previous comment we stated, "The DEIS understated the size of the visitor economy that could be negatively impacted by degrading the landscape amenities in the Greater Tucson region by focusing primarily on:

i a small area in the immediate vicinity of the mine,
ii people engaged in recreation on Coronado National Forest land,
iii people engaged in active recreation as opposed to other types of visitors to the Greater Tucson area." (SSSR et al. at 105.)

We went on to note, "The DEIS dismisses the negative impacts of the mine on the visitor economy and amenity-supported economic development as "not substantial" (p. 736) or "negligible" (pp. 718 and 745). At the same time it characterizes the positive local economic impacts of the mine as "quite modest" (p. 740). The DEIS, however, never places the "quite modest" positive economic impacts in the same context as the "not substantial" negative economic impacts to determine the extent to which one might cancel out the other. The result is that the DEIS emphasizes and, in the process, exaggerates the positive economic impacts

despite their small size relative to the overall economy." (*Id.*)

In the FEIS the USFS added the results of new analysis of the impacts of the Rosemont Mine on that visitor economy. The USFS hired BBC Research and Consulting to carry out that analysis. One of the topics covered by this new analysis was "Recreation and Tourism." (FEIS at 1053.) The new analysis of the potential impact of the Rosemont Mine on Recreation and Tourism that had not been previously available for public review and comment is found on FEIS pages 1109 to 1113. This new analysis was not available to the public for review before the FEIS was published. Although the FEIS schedule has not allowed the Coalition (or any other parties) to analyze the reliability of the methods, data, and calculations of that BBC study, it is clear that it is seriously flawed conceptually.

This new USFS analysis for the FEIS adopts the long discredited "beauty strip" approach to environmental damage. Decades ago the USFS and other forest management agencies responded to public concerns about the clear-cutting of almost all trees from large tracts of forest land by shielding those clear-cuts from view. Along heavily used roads, strips of forest several hundred feet deep were left on either side of the road so that travelers along those roads could not see the clear-cuts. In more varied terrain, landscape architects were employed to shape the clear-cuts so that they could not be seen from many vantage points. The concept behind this effort to screen or hide what was actually being done to the land was that the public concern was not with what was actually being done to the natural landscapes but an ascetic concern about the ugliness of the clear-cuts if one happened to see them. If the degradation of the natural systems could be hidden from view, it was assumed the perceived environmental damage would be eliminated. Hence the reference to the "beauty strips" that hid the actual damage being done to natural systems.

In the new material added to the FEIS without public review, the USFS assumes that as long as the mine site cannot be seen from various locations surrounding the Rosemont Mine, there is no degradation in the experience of nature-oriented visitors and recreationists. For example, the FEIS points out that although the Rosemont Mine will be visible from portions of highway SR 83 (between 3.4 and 4.9 miles of that road) only about half of the traffic from the Tucson area uses this Scenic Highway route to the Sonoita, Patagonia, and Elgin areas. The other half of visitors arrive in these towns using Highway 82 from which the mine is not visible. In addition, the FEIS points out that the mine is not visible from these communities. (FEIS at 1110.) From this, the USFS concludes that nature-based travel and recreation will not be degraded for the half of travelers to this region who do not see the mine on the way to these destinations.

The USFS does conclude from the new studies it cites "that a perceived degradation of the scenic quality of the landscape may result in a 15 to 50 percent net reduction in tourist visits and corresponding tourist spending." (FEIS at 1110.) But, apparently, the industrialization of the landscape that is not visible to travelers has no impact on the attractiveness of that place to visitors. The USFS appears to believes that noxious facilities and degraded landscapes can be plentiful in an area (e.g. sewage disposal plants, industrial livestock facilities and slaughter houses, sprawling landfills, huge open pit mines and waste dumps, etc.) as long as they are carefully shielded from view. It they are shielded from view, such facilities will have no impact on the attractiveness of the region to visitors and potential residents and businesses. This is a trivialization of environmental concerns, treating them as simply aesthetic visual concerns with no underlying ecological, social, or cultural impacts.

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This same approach is taken by the USFS in the FEIS in analyzing the impact that the Rosemont Mine would have on the Greater Tucson Area nature-based tourism. The USFS estimates that there may be 6,800 jobs associated with that nature-base tourism. The FEIS, however, proceeds to dismiss any significant threat to this significant local industry, concluding that only 14 to 46 of these jobs, would be threatened by the Rosemont Mine (FEIS at 1112-1113, Table 233.)

The USFS arrives at this trivial impact of the Rosemont Mine on nature-based tourism by using the following assumptions:

i. Only active recreation on public lands would be affected by the Rosemont Mine. Other types of nature-based recreation can be ignored since they will not be affected.
ii. Only recreation on lands from which the mine and its waste piles are visible would be impacted.
iii. Even on lands where the mine and waste dumps were visible, the impact in terms of the degraded value of the recreation would decrease with distance from the mine. (FEIS at 1111-1112.)

This allowed the USFS to reduce the nature-based tourism jobs at risk from 6,828 to 14 to 64 jobs. The tool used by the USFS for this trivialization of damage to natural landscape in the Greater Tucson area was the "beauty strip" assumption extended to its extreme. If residents and visitors do not seen the open pit and waste dumps up close they do not care about the damage that has been done to the natural landscapes. "Out of sight, out of mind" apparently is the "scientific principle" that the USFS is adopting in its management of public lands.

Suggested Remedies: The USFS must provide its new socioeconomic analysis in a revised DEIS on which the public can comment and correct errors and misinterpretations found in the extensive new material the USFS incorporated in the FEIS for the first time. This will allow the USFS to prepare a professional and reliable socioeconomic section that will not mislead or confuse USFS decision-makers as they rule on the proposed Rosemont Mine.

9. The FEIS inadequately analyzes the impact of degraded natural landscapes on the attractiveness of the Greater Tucson Area to new residents and businesses.

In our previous comment we stated, "The DEIS ignores the fact that the negative economic impacts of the Rosemont Mine do not have to actually reduce the employment or payroll associated with the visitor economy or amenity-supported in-migration of people and businesses. Very small reductions in the growth of these sources of local economic vitality because the natural landscape amenities in the Greater Tucson area have been degraded and it is not as attractive a place to live, work, and do business as it had been, can have negative economic impacts over time that are larger than the positive economic impacts associated with the proposed mine." (SSSR et al. at 105.)

The USFS acknowledges that degradation of the natural landscapes surrounding the Greater Tucson Area could undermine the long term effort there to maintain and enhance local community vitality and well-being by protecting increasing amounts of the surrounding natural landscapes. (*See* FEIS at 1117, 1119.) The USFS in the FEIS analyzes the impact on the Rosemont Mine on the attractiveness of the Greater Tucson Area to in-migrating families and businesses by assuming that that in-migration is proportional to the amount of public land in the region available for "public use and recreation." The USFS estimates what the "footprint" of the Rosemont Copper Mine would be in terms of acres of public land. This acreage of public

land is assumed cease to be available for public use. That "lost acreage of public lands" was then entered into a model developed in a 2011 USFS study (Cordell et al. 2011). That study found a positive correlation between the per capita public land available in a region and the rate of in-migration of new residents. Since the Rosemont Mine would *reduce* the amount of public land, the FEIS using that model projected that the mine would have a negative impact on in-migration to Santa Curz County. Under the USFS preferred alternative, in-migration would fall by 43 persons a year. This would represent a 0.09 percent decline in Santa Cruz County population. (FEIS at 1120, Table 235.) That model was not applied to Pima County by the USFS in the FEIS because the model was developed for rural (non-metropolitan) counties and Pima County is a Metropolitan Area and Pima and Santa Cruz Counties are a Combined Statistical Area.

As the USFS put it in the FEIS: "Although the Forest Service model cannot be applied to Pima County, which is considered a metropolitan county, impacts anticipated on amenity migration to the greater Tucson area are expected to be negligible. In general, the economies of metropolitan areas are more dynamic and factors influencing domestic net migration more varied than in rural counties. Even if the analysis considered an application of the Forest Service model to Pima County, the impacts would likely be limited: the public land variable is measured as acres per capita, so the impact to Pima County (population 980,263) would be much smaller than the impact to Santa Cruz County; Pima County would lose a small portion of forest and/or rangeland as a result of the mine footprint, but this impact would also be small, relative to the overall population." (FEIS at 1122.)

The FEIS also points out that the model used to calculated these impact of the Rosemont mine on the attractiveness of the region to potential in-migrants was not "specific to southern Arizona, nor was it specifically designed to address land use changes from recreation to mining." (FEIS at 1122.) The FEIS explains the latter statement by saying "Whether or not there could be further negative impacts to amenity migration because these lands are not only being lost to public use and recreation but also converted into a surface mine, cannot be determined, based on a 2011 Forest Service analysis (Cordell et al. 2011)." (FEIS at 1119.)

Although the USFS did not provide the new socioeconomic analyses in a DEIS to allow for adequate public comment and review, including review of the appropriateness of the application of the economic literature, the reliability of the data, and the accuracy of the calculations, we have identified serious general conceptual problems with those analyses that indicate that they cannot be relied upon in making a decision on the propose Rosemont Mine.

As the USFS points out in the FEIS, the model that the USFS used to estimate the impact of the degraded natural landscape on in-migration that is tied to the pursuit of perceived higher quality of life cannot deal with dramatic changes in land use. That model, at best, can only deal with changes in the amount of land in a region that is in the public domain. If the USFS were to take ownership of land that previously was not in the public domain or some of the land now in the public domain were to "disappear," the model used in the FEIS might be able to suggest impacts on in-migration. Building and operating a large open pit copper mine with its massive array of waste piles is not like adding to or subtracting from a small number of the total number of acres of land in the public domain. In that sense, as the USFS admits, this is not an appropriate model to be used to evaluate the impact of degraded natural landscapes on the attractiveness of a region to amenity-seeking in-migrants. In fact this is a trivialization of the role that the protected natural landscapes surrounding the Greater Tucson Area plays in

maintaining and protecting the quality of life in the region and the contribution that quality of life makes to maintaining the economic vitality of the region and the economic well-being of its residents. The USFS approach to this issue in the FEIS is grossly inadequate to the task and should not be relied on in informing any decision with respect to the proposed Rosemont Mine.

In addition, by adopting an approach to this question that categorically excludes bulk of the population of the study area, the Tucson Metropolitan Area, the USFS in the FEIS turned its back on the population most impacted by the proposed Rosemont Mine. Government agencies in the Greater Tucson Area have put major effort and resources into protecting the unique natural landscapes surrounding this urban area. The Rosemont Mine undermines those efforts and threatens one of the major regional public policies aimed at maintaining and enhancing local economic vitality and well-being.

The importance of protecting local natural landscapes and systems in order to protect local economic vitality and well-being is widely recognized. For instance, the governments of the State of Montana, the Province of British Columbia, the U.S. Federal Government, and the Canadian Federal Government are working to protect the North Fork of the Flathead River that is on the western border of Glacier National Park in the United States but flows out of British Columbia. The North Fork region is known to contain coal and other energy resources. Yet there is wide agreement among governments and citizens that developing those coal resources in this region adjacent to many protected areas and a major wilderness river would not be wise from an economic or environmental point of view. The debate over uranium mining on lands adjacent to the Grand Canyon is another example.

The USFS in the FEIS in effects converts the Rosemont Mine into an innocuous and relatively tiny change in the amount of acreage of protected lands adjacent to Santa Cruz County. Although that allows it to calculate trivial impacts, that result flows from the initial assumption that a large open pit copper mine is a minor modification of the natural landscape. The analysis used by the USFS was built around a false premise and a grossly inappropriate model on which USFS decision-makers cannot safely rely.

Suggested Remedies: This new USFS modeling effort to measure part of the negative economic impact of the proposed Rosemont Mine should have been circulated as part of a revised DEIS so that the public could have had the opportunity to review and comment on it. The USFS also has to develop a more professional and serious approach to evaluating the impacts of degraded natural landscapes on local economic vitality and well-being before proceeding to make a decision on the proposed Rosemont Mine.

10. The FEIS inadequately analyzes the impact of the Rosemont Mine on property values.

In our previous comments we stated, "The primary conclusion that follows from this review of the DEIS socioeconomic analysis is that it systematically exaggerates the economic benefits while just as systematically dismissing or ignoring the economic costs of the Rosemont Mine. As a result of a series of errors in economic analysis, the DEIS describes the Rosemont proposal as having large economic benefits but no or negligible economic costs. Those economic errors include: Ignoring the economic role that the landscape amenities of the Greater Tucson area play in supporting local economic wellbeing and vitality." (SSSR et al. at 103-104.)

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The USFS in the FEIS recognized the Rosemont Mine, as an industrial facility that dramatically changed the natural landscape with its open pit and massive waste piles and intensive use of the existing scenic highway as a haul road, could damage the attractiveness of the region surrounding the mine as a place to live and/or operate a business. One way to measure the damage done to local amenities and economic well-being is to study the impact of noxious facilities on property values. As the USFS states, "Measuring the social costs of mining is challenging because of the absence of quantitative values for social conditions. Estimating changes in property values is one approach to measuring social changes, as it reflects changes in structural attributes of homes and neighborhood quality. To date, there has been limited research completed on open-pit mining operations, especially in the southwestern United States. In order to assess potential impacts to property values, other open-pit mining studies and reported impacts from industrial sites (such as demolition dumps, waste sites, hazardous manufacturing facilities, freight facilities, etc.), landfills, and large-scale feed operations are discussed in the analysis of the proposed mine's potential impacts."(FEIS at 1105, emphasis added.)

The FEIS goes on to state, "Although the empirical literature includes many hedonic valuation studies spanning the past several decades, very few studies have focused specifically on the impact of surface mining on surrounding property values. The previous hedonic property value study most relevant to the proposed Rosemont Copper Mine is a 1996 analysis based on the traditional approach of evaluating the sales values of individual properties. "Air Quality and View Degradations due to Copper Mining and Milling: Preliminary Analysis and Cost Estimates for Green Valley, Arizona" (Green Valley study) was published in "Nonrenewable Resources" in 1996 (Kim and Harris 1996). For the purposes of evaluating the potential effects of the Rosemont Copper Mine on nearby property values, there are several advantages in using the information from the Green Valley study. The study focuses specifically on property value effects associated with copper mining and is based on another community in Pima County, on the other side of the Santa Rita Mountains." (*Id.*)

The USFS in the FEIS used this Green Valley study to estimate the potential impact of the Rosemont Mine on property values in the vicinity of the mine. It concluded that, "In aggregate, the best estimate based on available information is that development of the mine would reduce the value of privately owned properties within 5 miles by approximately $3.2 million, or a little less than 5 percent of their current value. Properties within 1 mile would be the most affected (11 percent decrease in value), followed by those between 1 and 2 miles of the mine (9 percent decrease in value)." (FEIS at 1107, Table 230.)

Although the USFS did not provide the new socioeconomic analyses in a DEIS to allow for adequate public comment and review, including review of the appropriateness of the application of the economic literature, the reliability of the data, and the accuracy of the calculations, we have identified serious general conceptual problems with those analyses that indicate that they cannot be relied upon in making a decision on the propose Rosemont Mine.

First of all, note that the USFS in this part of the FEIS does not characterize the study of changes in property values as a study of economic impacts. It characterizes the impacts as "social." This is another example of the USFS and the FEIS ignoring or denying the economic impacts associated with degradations in natural landscapes.

Second, the USFS in the FEIS makes abundantly clear that the study that it used to estimate the

impact of the Rosemont Mine on property values was not reliable for this purpose for many reasons. To quote the FEIS and its supporting consultants' report:

i. "One important limitation of the Green Valley study is that the analysis was based on real-estate transactions over a relatively short (4-month) period. Only 20 properties in Green Valley were sold during that period, resulting in an unusually small sample for a hedonic property value study." (FEIS at 1105.)

ii. "The Green Valley study is now more than 15 years old, and the typical values of residential property in Green Valley may be quite different from typical property values in proximity to the proposed Rosemont Copper Mine." (FEIS at 1105.)

iii. "The Green Valley study found that both dust pollution and viewshed degradation decreased property values "significantly." More specifically, the impact of dust pollution on property values was determined to be greater than that caused by viewshed degradation." (FEIS at 1106.)

iv. The Green Valley situation was totally different from that presented by the proposed Rosemont Mine. In the Green Valley a retirement community was located adjacent waste piles. Homes were located so close to the waste piles that the waste piles towered over the homes often completely obscuring the view from the house. In addition wind carried dust from the waste piles some distance to neighboring properties. The "view shed degradation" was not the view of the open pit mine but the blocking of any view from backyards due to the waste piles towering over the homes.(Kim and Harris 1996; BBC Research and Consulting 2013)

v. "Applying the Green Valley study relationships between distance from the mine and property values may somewhat understate the potential effects of the Rosemont mine on property values. In addition to the distance variable, the Green Valley study also incorporated a variable to examine the additional effects on property values for homes that faced the tailings bank. This variable, also statistically significant, indicated an additional reduction in property values for properties that did face the tailings banks compared with those that faced east, away from the tailings. Overall, the magnitude of this effect was relatively small compared to the distance variable (about one-third of the distance effect in scale). However, given the limited information in the Green Valley study publication and absent access to the original data, we cannot reliably transfer this effect to potentially impacted properties in proximity to the proposed Rosemont mine." (BBC Research and Consulting, 2013, p. IV-4) That is, only part of the negative impact measured by the Green Valley study was applied in the application of this inappropriate study to the Rosemont Mine impacts.

vi. "The Green Valley study does not provide any information regarding effects on the values of more distant properties. This does not rule out the possibility that values of properties farther from the mine, such as homes or ranches in the Sonoita or Patagonia areas, could also be affected if the proposed mine is developed. The potential reduction in amenity-based migration, discussed previously in this resource section, would tend to reduce demand for housing in the area. That effect could, however, potentially be offset by new demand for housing from workers associated with the proposed mine, since an indefinite number of employees may relocate to the area." (FEIS at 1107.) The last sentence in this FEIS paragraph was previously contradicted by the FEIS in its projections that all of the workers for the mine could be found among existing residents of the Greater Tucson Area and that there would be no significant increase in the demand for housing in the vicinity of the mine. "Operation of the project is expected to have very little impact to the availability of housing because the number of workers needed for the operation of the mine and mill (average annual employment is 434

> workers) and the resulting population changes (an estimated 0.08 percent increase in the population of Tucson and the Green Valley area if most or all employees relocated) would be far below the number of vacant housing units in Pima, Santa Cruz, and Cochise Counties (more than 60,000 units). Tucson alone had more than 24,000 vacant units (U.S. Census Bureau 2010g). As a result, there would be minimal demands on the local housing supply during the operational phase of the mine. In-migration would result in beneficial long-term impacts to the local housing supply; an increase in population would help offset local housing vacancies, which are estimated to range from 11.9 to 14.3 percent." (FEIS at. 1101.)

These statements by the USFS and its consultant make clear that the transfer of values and relationships from a study of air pollution problems and towering waste piles that dominated views from the backyards of homes in a retirement community could not be reliably applied to the Rosemont Mine and the much more dispersed rural settlement that surrounds it. In addition, the USFS in the FEIS limited any impact from the mine on property values to a five mile radius. The Green Valley study limited the impacts to a 10 mile radius. As cited above, the USFS recognized that its approach in the FEIS did not deal with the impact of the industrialization of this natural landscape, including the open pit, waste piles, congestion of scenic and other highways, night lighting, dust, sound, etc. on a much broader area surrounding the mine.

Because there were only a small number of privately-owned land parcels (576) not owned by Rosemont Copper within the five-mile radius around the mine and the estimated decline in value was so small (less than 5 percent on average), the conclusion the USFS reached in the FEIS was that the degradation in the value of natural landscape amenities due to the Rosemont Mine measured by the decline in property values was exceedingly small compared to the total value of land in the study area. Again, the USFS was able to conclude that the impact of the Rosemont Mine on the landscape values and quality of life in the region surrounding the proposed mine was trivially small.

Finally, the USFS lost its focus on what the property value study was seeking to estimate, namely the degradation in the value of the natural amenities or environmental services provided by the natural landscapes that the Rosemont Mine would degrade. In the end, the USFS in the FEIS used this information to calculate the property tax revenues that would be lost because of its calculation of a small reduction in the value of some property surrounding the Rosemont Mine. (FEIS at 1108, Table 231.) In fiscal year 2010/2011, Pima County collected about $384 million in property taxes.(Pima County FY 2012/2013 Adopted Budget, p. 16-64) The USFS estimate of the decline in tax collections due to the Rosemont Mine was about $44,000 or about one-hundredth of one percent. (FEIS at Table 231.) That is an astoundingly trivial number.

The USFS acknowledges that the model it used to calculate these impacts was inappropriate and unreliable. The USFS was also clearly confused in this section of the FEIS: It lost track of what it was actually calculating and why. The result is a set of confused and misleading conclusions that should not be used in making any decision concerning the proposed Rosemont Mine.

Suggested Remedies: The new socioeconomic analysis circulated for the first time in the FEIS should be circulated as a revised DEIS so that the public can review that analysis in detail and

provide recommendations to the USFS to correct and improve the analysis before it is used by the USFS in making a decision on the Rosemont Mine. This will allow the USFS to prepare a professional and reliable socioeconomic section that will not mislead or confuse USFS decision-makers as they rule on the proposed Rosemont Mine.

11. The USFS fails to respond to multiple comments regarding missing information and inadequate analysis in the Socioeconomics section.

The USFS has failed to respond to numerous comments we previously submitted regarding the Socioeconomics section of the DEIS. In many cases, our comments were outright ignored; in other cases, the USFS provides additional information in the FEIS but still failed to provide an adequate analysis of the issue. Below we list the comments we previously submitted on this section that either received no response or an inadequate response from the USFS in the FEIS:

- ***Property values:*** In our previous comments we asked the USFS to explain how property values were determined. (*See* SSSR et al. Appendix A at 74.) However, the FEIS continues to use incomplete data or data that is not particularly relevant. Much of the analysis includes Cochise County and Pima County, and while data for Santa Cruz County includes the community of Tubac, there is no mention of property values for the town of Patagonia. (*See* FEIS at 1067-1069.) In one paragraph the FEIS states that "population movement and migration into environmentally desirable areas, like the analysis area, can be explained by the presence of, and density of, forest resources and associated environmental amenities. Additionally, in the Southwest, housing prices are higher based on overall proximity and access to forest resources." (FEIS at 1069.) The FEIS then concludes "that the existence of an open-pit copper mine could result in negative impacts on values to neighboring properties" but fails to provide any meaningful analysis of the issue. (*Id.*; emphasis added.)
    - **Suggested Remedies:** A better property values analysis should be done, specifically involving all the residential properties within the five mile proximity to the proposed mine.
- ***Impacts to local businesses:*** In our previous comments, we asked the USFS to address and quantify the impacts to local businesses when residents leave because of the mine and new residents do not replace them because of the mine in order to thoroughly understand the dynamics and possible negative ramifications of this situation. (*See* SSSR et al. Appendix A at 74.) The FEIS has failed to provide an adequate response to this comment. The USFS provides an analysis on Santa Cruz County employment but this analysis is for the entire county and does not take into consideration small businesses in the Sonoita, Elgin and Patagonia – areas that will be most negatively impacted. (*See* FEIS at 1071.) The only other quantifiable data is related to tourist spending not residents. (*See* FEIS at 1087.)
    - **Suggested Remedies:** The USFS should conduct an analysis of the impact of the proposed mine on the businesses in Elgin, Sonoita and Patagonia, and present that information for public review and comment in a revised DEIS.
- ***Survey of Forest Service visitors:*** In our previous comments we asked the USFS to identify where the agency conducted its survey of USFS Forest visitors, which according to the DEIS included surveying approximately 3,572 visitors in 2007, and what the relevance of this survey is to the proposed project. (*See* SSSR et al. Appendix A at 74.) The FEIS failed to provide an adequate response to this comment. Instead, the USFS merely repeats it and provides further explanation of the survey's purpose. (*See* FEIS at 1083.)However, no information was provided in the FEIS regarding where it was conducted or how it is relevant to the proposed.

- **Suggested Remedies:** The USFS should provide the information requested regarding the visitor survey and Respond as requested and present that information for public review and comment in a revised DEIS.

- ***Impact of copper mines on diversity of economy***: In our previous comments, we asked the USFS to explain how an open pit copper mine supports the following statement found in the DEIS: "The greater the diversity in the region, the more resilient the economy is in the face of change because the economy is more stable." (*See* SSSR et al. Appendix A at 75.) Instead of providing an adequate response to this comment, the USFS simply repeats it in the FEIS with no explanation. (*See* FEIS at 1083.)
    - **Suggested Remedies:** The USFS should provide support for this statement as requested and present that information for public review and comment in a revised DEIS.
- ***Limited knowledge of urban residents to Coronado National Forest:*** In our previous comments we asked for an explanation of the following statement found in the DEIS: "In addition, urban residents from other areas of Arizona may have limited knowledge and connection to the Coronado Forest and, therefore, have a different valuation of the forest." (*See* SSSR et al. Appendix A at 75.) Instead of providing an adequate response to this comment, the USFS simply repeats it in the FEIS with no explanation. (*See* FEIS at 1090-1091.)
    - **Suggested Remedies:** The USFS should provide an explanation of this statement as requested, including data that supports the USFS's assertion, and present that information for public review and comment in a revised DEIS.
- ***Relevance of extensive population growth on USFS demand:*** In our previous comments, we asked the USFS to explain where "extensive population growth has driven changes (increases) in demand on forest resources" and the relevance of this statement to the specific area impacted by the proposed project. (*See* SSSR et al. Appendix A at 76.) Instead of providing an adequate response to this statement, it is repeated in the FEIS without indicating the relevance to the proposed project. (*See* FEIS at 1091.)
    - **Suggested Remedies:** The USFS should provide an explanation of where this population growth has occurred and its relevance to the proposed project, and present that information for public review and comment in a revised DEIS.
- ***Impacts common to all action alternatives:*** In our previous comments, we asked the agency to explain the use of the words "if any" as to changes to each of the following stated: employment, property value, taxes and revenues, road maintenance and emergency services costs, tourism, quality of life and environmental justices. (*See* SSSR et al. Appendix A at 76.) Instead of providing an adequate response, the statement is simply repeated in the FEIS. (*See* FEIS at 1099.) The FEIS then goes on to say that "Implementation of the action alternatives and development of the proposed Rosemont Copper Mine facilities <u>could</u> have direct and indirect impacts to the three-county analysis area in terms of employment, government revenues, personal income, business sales and quality of life." (*Id.*; emphasis added.) These comments are confusing to the reader and in addition the USFS has failed to provide any meaningful analysis of what these impacts might be.
    - **Suggested Remedies:** The USFS must provide an analysis of these impacts; declaratory statements such as "if any" and "could," with no accompanying supporting data, do not provide the reader with any useful information about these impacts, and is not adequate under NEPA. The USFS should provide this

information in a revised DEIS and present that information for public review and comment in a revised DEIS.

- ***Employment data:*** In our previous comments, we asked the USFS to explain the relevance of using a 1982 supporting document to say that construction workers are willing to commute up to two hours each way. (*See* SSSR et al. Appendix A at 77.) The USFS failed to adequately respond to this comment, and instead included a similar statement in the FEIS, using the same 32-year-old data as support, without providing any explanation as to the relevance of this statement. (*See* FEIS at 1099.)
    - **Suggested Remedies:** The USFS should provide an explanation of this statement and the relevance of the data, and present that information for public review and comment in a revised DEIS.
- ***Employment data (2):*** In our previous comments we asked the USFS to provide the data, methodology, and analysis to substantiate this cursory and conclusory statement: "10% of the construction jobs would require specialty skills that could not be filled by the local workforce." (*See* SSSR et al. Appendix A at 78.) In the FEIS, the response has been altered slightly from 10% to "some of the construction jobs would require specialty skills that may not be filled by the local workforce." (FEIS at 1101.) However, the USFS has failed to provide an adequate response and has simply made the statement more vague, but has not provided any information or analysis to support this assertion.
    - **Suggested Remedies:** The USFS should provide the data, methodology, and analysis used to support this vague assertion, and present that information for public review and comment in a revised DEIS.
- ***Housing supply:*** In our previous comments we asked for clarification of the following points in the DEIS: "As a result there would be minimal demands on the local housing supply during the operational phase of the mine. In-migration would result in beneficial long-term impacts to the local housing supply." (SSSR et al. Appendix A at 78.) We pointed out that this statement is one of many examples where the USFS uses broad and conclusory statements that are not supported by data or justified by a clear analysis. (*Id.*) The FEIS includes this same statement with only minimal additional information stating that even if most of the employees did relocate to the area, the impact on housing is still expected to be minimal given the level of vacant housing in the analysis area and the fact that the relocating employees would represent an estimated 0.1 percent increase in the population of Tucson and Green Valley. (*See* FEIS at 1100.) This response is inadequate as it still does not provide information on the data used.
    - **Suggested Remedies:** The USFS should provide information regarding the data used to support this assertion, and present that information for public review and comment in a revised DEIS.
- ***Recreational Employment***: In our previous comments, we asked the USFS To explain why recreational related employment is not expected to change to a measurable degree, and to provide the data, methodology, and analysis to justify this conclusion; in particular, we wanted to know where the recreation related employment occurs and why or why not it will be impacted by the proposed project. (*See* SSSR et al. Appendix A at 78.) The FEIS has failed to provide an adequate response to this comment. Instead, the statement is repeated in the FEIS and now includes this information: ". . the number of jobs and associated labor income (approximately 800 jobs attributed to recreation on the Coronado National Forest within the three-county analysis area) are not expected to change during mine construction." (FEIS at 1102.)

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- **Suggested Remedies:** The USFS failed to address the original request for data, methodology and analysis to justify this statement. The USFS should provide information regarding the data used to support this assertion, and present that information for public review and comment in a revised DEIS.

- ***Implementation of reclamation plan:*** In our previous comments we questioned the assertion in the DEIS that "no employees of Rosemont Copper are expected during the final 2 years of closure" asked the USFS to clarify who will be doing the reclamation plan and what are the employee needs will be during the implementation of that plan, as that information was not provided in the DEIS. (*See* SSSR et al. Appendix A at 78.) As we pointed out, reclamation procedures and the final outcome will have a significant impact on the surrounding environment and residents, and information regarding who will be doing the reclamation and the reclamation plan needs to be clearly stated in order to determine impacts and costs to the area during mine closure and beyond. (*Id.*) This comment remains unanswered in the FEIS, and the USFS has failed to provide any specific information or data on the reclamation procedures.
    - **Suggested Remedies:** The USFS must provide details on the reclamation and closure process in a revised DEIS and present that information for public review and comment in a revised DEIS.
- ***Definition of "industrial site":*** In our previous comments we stated that the term "industrial site" was undefined in the DEIS and asked that the USFS define this term in order to compare rural and urban industrial site effects, which can be very different. (*See* SSSR et al. Appendix A at 79.) As we pointed out, data from an open-pit mining site in a rural area will show significantly different impacts from an "industrial site" in an "urban" area. (*Id.*) The USFS failed to provide a response to the comment and the term "industrial site" is not clarified in the FEIS nor is it identified as an urban or rural location. (FEIS at 1106.)
    - **Suggested Remedies:** The USFS should provide a definition for this term and provide an analysis that differentiates between the impacts of an urban "industrial site" and a rural "industrial site". The USFS should present this information for public review and comment in a revised DEIS.
- ***Housing demand:*** In our previous comments, we noted that there was no data or analysis provided to support the statement in the DEIS that "the operation of the copper mine would be (sic) have little impact on housing demand." (*See* SSSR et al. Appendix A at 82.) In particularwe asked for an analysis of considerations for those who choose not to move to the area because of the mine. (*Id.*). This statement still exists in the FEIS and includes this additional information: ". . . based on the existing housing vacancy rates and the small number of workers anticipated to relocate to the area." (FEIS at 1107.) However, the FEIS has failed to provide an adequate response to this comment, as there is still no data to support this statement or regarding those who choose not to move to the area.
    - **Suggested Remedies:** The USFS should present this information for public review and comment in a revised DEIS.
- ***Impacts on domestic wells:*** In our previous comments we noted that the discussion of impacts to domestic wells in the DEIS concluded that over 500 domestic and production wells would experience draw-downs of 10 to 100 feet for wells in the immediate vicinity, and up to 10 feet for the remaining wells. (*See* SSSR et al. Appendix A at 84-85.) Yet, in terms of impacts, the DEIS only offered the simplistic and conclusory statement that "without an adequate water supply local residents may experience <u>uncertainty and discomfort</u> in their current quality of life." (*Id.*) Pointing out that this is a significant

understatement as people cannot continue to live where there is not an adequate water supply, we asked that the USFS quantify and better analyze these impacts. (*Id.*) The USFS response to this comment is wholly inadequate, as the USFS simply repeats this vague and conclusory statement without offering any meaningful analysis of what the impacts may actually be. (*See* FEIS at 1115.) Loss of an adequate water supply is not something that may simply cause "uncertainty and discomfort." It will in fact render a property uninhabitable and destroy the economic value of that property. Not only may drawdowns result in homeowners losing water but it may result in their major asset, their home, being rendered worthless. This is far more severe than the glib statement offered by the USFS.

  - **Suggested Remedy:** The USFS must conduct appropriate credible analyses using proper methodology and based on current, accurate data of the effects of well draw downs and loss of water, and provide meaningful information regarding the potential economic impacts to domestic well owners. The USFS must present this information for public review and comment in a revised DEIS.

- ***Baseline data re SR 83:*** In our previous comments we pointed out that claims in the DEIS that the three-year construction period required for the proposed action – a major industrial complex – would not result in an increased demand for public services, has no basis in fact. (*See* SSSR et al. Appendix A at 86.) We also asked the USFS to quantify maintenance costs, information that was not provided in the DEIS, and pointed out that the "lack of baseline data" is no justification for failing to conduct the analysis; the purpose of the DEIS process is to collect data, apply analytical methodology, and evaluate the various impacts and effects. *(Id.)* The USFS fails to address any of the issues we raised and provides no analysis of the likely effects that the severe increase of heavy trucks on SR 83 will have on commuter and tourism traffic, instead merely repeating its original conclusory statements and justifying the failure to address this issue due to the lack of baseline data. (*See* FEIS at 1116.)
  - **Suggested Remedies:** The USFS must conduct appropriate credible analyses using proper methodology and based on current, accurate data of the effects mine construction and then operation will have a SR 83 and its existing commuter and tourism users. The USFS must present this information for public review and comment in a revised DEIS.
- ***Fuel Tax funding:*** In our previous comments we pointed out that the assertion in the DEIS that the tax on fuel purchases related to the proposed project would lead to increase tax revenues, and the inference that these vehicle fuel taxes would provide the funding necessary for road maintenance, is purely speculative. (*See* SSSR et al. Appendix A at 87.) We asked the USFS to provide an in-depth analysis of how such costs will be covered; otherwise, the public can only conclude that it will have to pay for public service benefits that will ensure profits to a single private entity. (*Id.*) The agency failed to provide an adequate response to this comment, and instead simply repeated the statements made in the DEIS. (*See* FEIS at 1116-1117.) The only exception is that the USFS now estimates societal costs to be at $0.36 per mile while in the DEIS they were $0.33 per mile. (*Id.*) The analysis remains totally speculative and fails to address the critical issues we brought up in our previous comments.
  - **Suggested Remedies:** The USFS must conduct appropriate credible analyses using proper methodology and based on current, accurate data of the effects mine construction and then operation will have a SR 83 and its existing commuter and tourism users. The USFS must present this information for public review and comment in a revised DEIS.

- ***Social benefits of Coronado National Forest amenities:*** We noted in our previous comments that the DEIS only provided a summary discussion of the negative adverse impacts to visitors to the Coronado National Forest; notably the identification of specific impacts and the related economic costs are missing. (*See* SSSR et al. Appendix A at 89.) We asked the USFS to explicitly identify and express in quantitative terms (dollars) these impacts, so that the public and decision-makers can properly understand the magnitude of such impacts. (*Id.*) The FEIS restates this information and provides a discussion of a 2011 USFS analysis, which apparently determined that the loss of federally owned land being lost to public recreation and use but being converted into a surface mine would adversely impact amenity migration to the area but the extent to which it would do so cannot be determined. (*See* FEIS at 1119-1122.) The FEIS declares that potential impact to amenity migration in Santa Cruz County and the Patagonia Census County Division "could" be slowed but "is not projected to result in population decline." (*Id.*) The USFS then discusses population decline, change in household spending and the adverse effects this would have on demand for products and services. (*Id.*) However, the USFS has still failed to provide any quantification of these impacts, and only provides vague, conclusory statements.
    - **Suggested Remedies:** The public must be given an opportunity to review and comment on the Cordell 2011 Study and the USFS conclusions regarding amenity migration. The USFS must present this information for public review and comment in a revised DEIS.
- ***Mitigation Effectiveness:*** In our previous comments we noted that the Socioeconomics section of the DEIS contained various references to adverse economic impacts on local residents, businesses, recreation sites, public lands, etc.; however it provided no corresponding discussion regarding mitigation measures to offset adverse economic costs to various populations and users. (*See* SSSR et al. at 90.) As we pointed out, if for example private wells dry up as a result of groundwater migration into the open pit, the owners of such wells will experience adverse economic impacts, including the costs of drilling deeper wells (if possible) or the costs of selling a property that does not have an adequate water supply. (*Id.*) In both these instances, the property owners would bear the costs of "mitigating" adverse impacts of the proposed action, which is not an effective manner in which to "mitigate" adverse impacts, as it is the applicant who is responsible for mitigating such adverse effects. The FEIS points to Appendix B in the FEIS for information on mitigation measures; however, a review of Appendix B fails to discover any mitigation plans for the impacts to private landowners should this proposed project dry up their wells. This is a significant issue that requires consideration, and the absence of such constitutes a fatal flaw in the FEIS.
    - **Suggested Remedies:** The USFS must consider and establish a mitigation plan that addresses socioeconomic issues, and in particular, issues related to private wells as discussed above. The USFS must present this information for public review and comment in a revised DEIS.
- ***Irretrievable and irreversible commitment of resources:*** We noted in our previous comments that, in the DEIS section regarding irretrievable and irreversible commitment of resources, the USFS provides hopeful, but purely speculative and unsupported assertions that once the proposed project is completed, "it is possible" that various uses would return and acknowledges that some uses would be lost forever, but fails to provide any assessment of "worst case scenarios" for all phases of mine in terms of impacts to traffic, water, tourism, property values, and local and regional economies. (*See* SSSR Appendix A at 90-91.) We asked that the USFS evaluate these worst-case scenarios in terms of costs to the

environment and surrounding communities. (*Id.*)The FEIS fails to adequately respond to this comment and provide this assessment, and instead simply states that implementing any of the alternatives would result in irretrievable and irreversible commitments for every single resource impacted by the mind. (*See* FEIS at 1137.)

  - **Suggested Remedies:** The USFS must provide a meaningful analysis of the "low probability, catastrophic consequence" scenario in terms of the irretrievable and irreversible commitment of resources for each resource impacted, and present this information for public review and comment in a revised DEIS.

- ***Road construction costs:*** In our previous comments, we asked the USFS to include the costs of road construction, as well as road maintenance, as significant road construction costs will be required to provide adequate road infrastructure to support the lifetime of the proposed project. (*See* SSSR et al. Appendix A at 64.) However, the USFS only cites costs for State road maintenance in its *Factors for Alternative Comparison*. (*See* FEIS at 1054.)
  - **Suggested Remedies:** The USFS should consider and evaluate the possible costs for new road construction over the lifetime of the proposed project and provide this information for public review and comment in a revised DEIS.
- ***Explanation of terms:*** In our previous comments we asked that the temporal period "over time" be clarified, documented (*See* SSSR et al. Appendix A at 64.) and quantified. (*See* SSSR et al. at Appendix A, p. 65.) However, the USFS continues to use this term without any explanation or clarification. (*See* FEIS at 1054.)
  - **Suggested Remedies:** The USFS must explain, clarify , and quantify this term, and this information should be presented for public review and comment in a revised DEIS.
- ***Summarizing socioeconomic impacts:*** In our previous comments, we asked the USFS to summarize all socioeconomic impacts in the socioeconomics chapter including quantitative assessments of impacts discussed under other issues: noise, air quality, recreation, and visual resources. (*See* SSSR et al. Appendix A at 66.) Although the USFS has attempted to quantify impacts to recreation, summaries of the quantitative assessments of impacts for other issues have not been included in this chapter. (*See* FEIS at 1053-1130.)
  - **Suggested Remedies:** The USFS should summarize all of the proposed project's socioeconomic impacts in the socioeconomics chapter, including quantitative impacts discussed under other issues, and this information should be presented for public review and comment in a revised DEIS.
- ***Emergency Services:*** In our previous comments, we asked the USFS to address and quantify the socioeconomic impacts from increased costs of emergency services. The DEIS stated that traffic accidents along SR83 are expected to increase from 30 to 61 to 107 accidents per year with a corresponding increase in traffic fatalities. Doubling or tripling of accident rates along SR83 will result in a dramatic increase in demand on emergency services, including police, fire, and medical personnel, especially for the small communities of Patagonia, Sonoita, and Elgin. (*See* SSSR et al. Appendix A at 68.) No consideration is given for heavy traffic on SR83, the inability of emergency vehicles to get to Tucson in a timely manner, or the use of alternate resources. (*Id.*) However, *in Table 205. Summary of Effects*, the FEIS states only that "…an increase in overall traffic could lead to more accidents and an increased demand for emergency service," with no discussion of the costs of these services or their impacts on local communities. (*See* FEIS at 1060.)
  - **Suggested Remedies:** The USFS should do an analysis quantifying the costs of increased emergency services, especially analyzing the impacts on the communities

of Sonoita, Elgin and Patagonia, and present that information for public review in a revised DEIS.

- ***Ability of the alternatives to meet rural landscape and quality of life expectations as expressed by Federal, State, and local plans***: In our previous comments, we noted that there were no relevant local plans, policies, regulations, or ordinances identified in Chapter 6, Literature Cited, and no record of consultation with local governmental agencies and related organizations. We listed four public planning groups and asked that the socioeconomic section be revised to incorporate critical public plans, policies, regulations, and ordinances, and to identify all adverse impacts on such plans, regulations and ordinances resulting from the proposed mine. (*See* SSSR et al. Appendix A at 68-69.) We also noted that "quality of life expectations" is inappropriate as these local government documents are not mere hopes and wishes as implied in this statement, but the basis of enforceable local plans, policies, ordinances, and regulations which must be addressed in the DEIS. (*See* SSSR et al. Appendix A at 64.) However, in the FEIS, the USFS merely repeats the statement that "the mine operation may not conform to the quality of life expectations as expressed by the forest plan and Federal, State, and local regulations and ordinances," and there are still no references to any local regulations, ordinances, or planning groups that may be impacted by the proposed project. (*See* FEIS at 1054.)
    - **Suggested Remedies:** The USFS must provide information about local plans, regulations and ordinances that may be impacted by the proposed mine plan, and present that information for public review and comment in a revised DEIS.
- ***Revision of the "Summary of Effects" table:*** In our previous comments we asked that Table 171 be significantly revised so that it reflects all revisions embodied in the sum of the socioeconomic section comment letters. (SSSR et al. Appendix A at 68.) Although the USFS adds some new information to this table, it clearly does not include all of the revisions that should have been made in the FEIS had the USFS responded to all the socioeconomic comment letters. (*See* FEIS at 1059-1062.)
    - **Suggested Remedies:** The USFS must respond to all of the socioeconomic comment letters and incorporate pertinent facts and information from these comments in the *Summary of Effects* table as appropriate. This revised table should be presented for public review and comment in a revised DEIS.
- ***Socioeconomic impacts must be measured beyond the life of the mine:*** In our previous comments, we asked that an assessment of future economic costs beyond the life of the mine be done as part of determining the total impacts and costs of the mine. If socioeconomic impacts can be measured to year 25, it hardly seems too speculative to estimate impacts beyond that time. The reclamation done at the closure of the mine will be in place from that time forward and will continue to impact the local economy. (*See* SSSR et al. at Appendix A, p. 70.) Instead of providing an adequate response to this comment, the USFS simply repeats in the FEIS that estimating social and economic impacts post mine closure and reclamation is "too speculative." (*See* FEIS at 1055.)
    - **Suggested Remedies:** The USFS must conduct an analysis of socioeconomic impacts of the proposed mine beyond its closure and reclamation, and present that information for public review and comment in a revised DEIS.
- ***Population and demographics of the area affected by the proposed mine:*** In our previous comments, we asked the USFS to change the sequence of their analyses of the three counties that would be affected by the mine so that the county information is addressed in the order by which they would be most affected: Pima County, Santa Cruz County, Cochise County. We said that county by county data about population and demographics

was irrelevant to the issue of the project, and that data must be provided for the three areas of analyses discussed earlier: 50-mile radius (region), 20-mile radius (local community), and 5-mile radius (immediate neighborhood). (*See* SSSR et al. Appendix A at 70.) We also commented that to describe the areas of Santa Cruz County closer to the proposed mine site than Elgin and Sonoita (the closest communities) as "scattered home sites and unincorporated areas" was a stereotypical and gross misinterpretation of the area. (*See* SSSR et al. Appendix A at 70-71.) Although the USFS changed the sequence of their county by county analyses as we requested, all data is still organized by county without any mention of population and demographics regarding the three areas of analyses we requested. (*See* FEIS at 1064-1068.) The phrase "scattered home sites and unincorporated areas" remains unchanged. (*See* FEIS at 1064.)

  - **Suggested Remedies:** The USFS must do an analyses of population and demographics for the three significant areas mentioned above (50-mile radius, 20 mile radius, and 5-mile radius of the proposed mine site), as well as provide accurate and detailed descriptions of rural areas close to the proposed mine site. This information should be presented for public comment and review in a revised DEIS.

- ***Incorrect or missing information:*** In our previous comments, we asked the agency to disclose or not use data from *Table 176, Employment by Industry*, as there were seven areas in the two columns for Santa Cruz County for which the data was "not shown to avoid disclosure of confidential information." (*See* SSSR et al. Appendix A at 72.) We also noted that in *Table 180*, Santa Cruz County was listed as $0 for private hospitals, and that Nogales has a hospital which may be private, and that the rural communities of Tubac, Rio Rico, Elgin and Sonoita, should not be referred to as "urban areas." (*See* SSSR et al. Appendix A at 73.) However, in the FEIS, the USFS still uses the table lacking the Santa Cruz County information (*See* FEIS at 1073.), still lists Santa Cruz County as "$0" for private hospitals (*See* FEIS at 1079.) although Santa Cruz County does have a private hospital, and refers again to Tubac, Rio Rico, Elgin and Sonoita as "urban areas." (*See* FEIS at 1076.)
  - **Suggested Remedies:** The USFS must correct these errors and include this information for public review and comment in a revised DEIS.

TRANSPORTATION

1. The FEIS introduces a new, greatly expanded transportation plan; thus, the USFS must allow for public notice and comment through a revised DEIS.

We previously submitted extensive comments on the analysis of mine-related impacts to transportation and access provided by the DEIS. (See SSSR et al. at 111-116.) However, according to the FEIS, "In order to address uncertainty about where the mine products may be delivered, the analysis area in the FEIS has been expanded to include possible routes that mine product shipments could take from the mine site to reach the Port of Tucson, other feasible export routes, or smelters in Mexico. The ports of entry of Douglas, Naco, and Nogales are the terminus points for the expanded analysis area." (FEIS at 922.)

The analysis area delineated for the transportation analysis in the FEIS is significantly larger than the analysis area delineated in the DEIS and released for public review and comment. As compared to the DEIS, the FEIS greatly expands the roads that might bear the many truckloads of copper concentrate that would be generated by the proposed mine. The current plan now

includes the possibility of concentrate shipments to Nogales, Naco and Douglas, which significantly changes the analysis of impacts and greatly expands those impacts into new areas and communities who will be directly affected by mine traffic. The FEIS now lists ten (10) "potentially feasible analyzed copper concentrate and cathode delivery routes":

- I-10, Kolb Road to SR 10B (west end of Benson);
- SR 10B (3) from I-10 to SR 80;
- SR 80, SR 10B (3) to U.S. Route 191B;
- SR 82, SR 19 (Grand Avenue) to SR 90 (Whetstone);
- SR 83, proposed mine entrance to SR 82;
- SR 90, I-10 to SR 80;
- SR 92, SR 90 (Sierra Vista) to Naco Highway;
- U.S. Route 191B, Douglas Port of Entry to SR 80;
- Kolb Road, I-10 to the Port of Tucson (Valencia Road); and
- Naco Highway, SR 92 to Naco Port of Entry.

(FEIS at 922-923.) The impacts that will be caused by significant increases in truck traffic along these routes will be quite severe, yet these greatly increased direct, indirect, and cumulative impacts are addressed inadequately if at all in the FEIS. For example, one expanded route, from the Port of Tucson to I-10 to SR90 to SR82 to Nogales, will add significant cumulative impacts. SR82 from Nogales to SR90 is already used as a shortcut to I-10 by Nogales commercial trucks and mining concentrate trucks hauling concentrate to Nogales. Sonoita, Elgin and Patagonia residents have tried to discourage large Nogales trucks from using two lane SR 82 as a short cut to I-10 and there is signage in Nogales discouraging such usage. In addition, the Town of Patagonia would have an additional 50 daily round trips of concentrate trucks passing through the center of town. None of these impacts are adequately addressed in the FEIS.

In fact, SR83 and SR82 would be impacted two fold, with mine concentrate trucks on <u>both</u> local highways, leaving no alternative highway for residents of Patagonia, Sonoita, and Elgin to travel in order to avoid Rosemont Mine truck traffic, which they could potentially do by traveling to Sierra Vista or Nogales for basic needs. Patagonia also has potential mines looming in the Patagonia Mountains, where exploration drilling is underway. Heavy trucks involved in these projects are currently impacting residents and tourists, thus having a cumulative effect with possible Rosemont concentrate shipments.

By presenting information regarding the significantly expanded analysis area to the public for the first time in the FEIS, the USFS is denying the public the opportunity to review it and provide comments. Most egregiously, it denies those who will be directly impacted by this new transportation plan the opportunity to weigh in on this issue. The greatly expanded analysis area used to analyze transportation impacts represents "substantial changes in the proposed action that are relevant to environmental concerns" and thus NEPA implementing regulations require the USFS to prepare a supplemental or revised DEIS and provide the public with an opportunity to review and comment on this information. 40 CFR § 1502.9(c)(1).

In addition, the USFS's "uncertainty about where the mine products may be delivered" highlights a critical flaw of the FEIS and the mining plan generally. The FEIS states, "the Coronado has expanded the analysis area to include possible copper concentrate and cathode haul truck delivery routes from the mine site to the Port of Tucson at the intersection of Kolb

Road and Valencia Road, or copper concentrate haul truck deliveries or to smelters or feasible export locations in Mexico using the ports of entry at Douglas, Naco, and Nogales as the terminus points." (FEIS at 925.) This is, quite literally, all over the map and this new information and uncertainty indicates, in addition to gross NEPA violations, an incomplete and unreasonable mining plan of operations.

The release of this new plan at this stage in the NEPA process raises numerous additional questions that need to be answered by the USFS in a revised DEIS, including:

1. Why is this "uncertainty" regarding where mine products are going to be delivered only being revealed to the public now? What is the impetus for this new uncertainty?

2. If the potential destination is the Port of Guaymas, why are shipments to Naco and Douglas being investigated when the most direct route to is through Nogales?

3. If the concentrate is to go to Nogales by truck, why was a route through I-19 and Sahuarita Road - likely the quickest and most economical route - not considered?

4. Assuming that the goal is still to ship concentrate by rail to Mexico, why is there is no mention of the environmental impact of the construction of transshipment facilities in Nogales, Naco, or Douglas?

5. One of the suggested routes from the mine is to Nogales through Sonoita and Patagonia along a State Highway 82, currently designated as a scenic highway. At its southern terminus in Nogales a sign is posted by the Arizona Department of Transportation (ADOT) which states: "TRUCKS USE I-19 - SR 82 NOT RECOMMENDED." Why is this route being considered when apparently ADOT does not recommend that trucks use this route?

6. With respect to the city of Nogales, the route through or around the city is critical, yet it has not been addressed. Will trucks travel down Grand Avenue which is already very congested? Or will they bypass downtown via South River Road on roads that are narrow, curvy and residential. Who will finance any necessary changes in local roads?

7. Has consideration been given to the additional negative economic impacts to the tourist-based economies of Sonoita and Patagonia, already at risk due to the proposed mine?

8. There are 30 road segments listed in Table 168 of the FEIS (at 938). One segment received a failing grade of "E", three others have a grade of "D", thus "prompting efforts at road upgrades", and ten more are in the "C" category, which could easily fall to a "D" with the added truck traffic. This sounds like a prescription for a very large expenditure of public funds. Why is there no estimate of the financial consequences for local city and county governments?

9. Has the USFS informed local elected officials of this change in the mining plan or asked for their comments and advice on this proposal? There is no mention of the position of the Boards of Supervisors of Santa Cruz and Cochise Counties or the City Councils of Patagonia, Nogales, Benson, Tombstone, Sierra Vista, Bisbee or Douglas. We know from personal communications that no information regarding this change had been provided to the Santa Cruz County Supervisor who represents Patagonia and Sonoita prior to the release of the FEIS.

10. In the section dealing with railroad shipments of concentrate from Tucson to Nogales it is stated that it "would take 5 days of mine production to make 1 full train of copper concentrate. Therefore, up to 84 trains per year (7 trains per month) would be attributable to copper concentrate rail shipments through the Nogales port of entry." (FEIS at 953.) Considering that the empty concentrate cars would need to be returned from Mexico to the USA, the actual number of trains might be somewhat higher, depending on whether the empty cars could be added to the normal flow of train traffic to the USA. If the concentrate cars are simply emptied and returned, then the actual number of additional trains would be twice the numbers listed above. Why is this consideration not included in the FEIS?

11. As all residents of Nogales know, east-west auto traffic stops in downtown for an extended period of time when a train enters or leaves the USA. This leads to regular traffic jams along Grand Avenue, the main thoroughfare, with resultant air pollution, driver aggravation and problems for public safety vehicles. Why are the environmental and social consequences of these traffic delays caused by train traffic not addressed in the FEIS?

This preliminary list of questions raised by this substantial change in the proposed action clearly illustrates the need for more thorough consideration of this change, and the public must be given a meaningful opportunity to review and comment on this information.

Suggested Remedies: The USFS must provide information regarding the new transportation plan and an analysis of the impacts in a revised DEIS that is released for public review and comment, in accordance with NEPA. The USFS must also ensure that the mining plan of operations is in fact reasonable and complete and provides all necessary information regarding where these mining products are going to be delivered prior to even considering the plan for approval.

2. The FEIS provides a flawed and inadequate analysis of impacts to State Highway 83.

In our previous comments, we noted that "most of the discussion in the DEIS centers around impacts to users of SR 83. Thorough analysis of these impacts is indeed vital because it is an important rural connector serving the Elgin, Patagonia, and Sonoita region. Indeed, it is the lifeline between rural residents in this area and Tucson, where many people need to commute to work, go for medical appointments, business meetings, shopping and other needs. SR 83 is also the road that the Arizona Department of Transportation (ADOT) routes people to in case a segment of I-10 is shut down. Traffic congestion, increased travel time and reduced safety caused by the Rosemont Mine traffic would negatively impact the region. However, the DEIS discussion is incomplete and inadequate regarding transportation. Traffic impacts are incomplete and were created with unsupported assumptions, improper methodology, and inaccurate data. The analysis also suffers significantly from technical errors, overly narrow bounds of analysis and failure to identify appropriate mitigation." (SSSR et al. at 111.)

The USFS fails to adequately respond to these issues, and the agency also failed to respond to the issue of whether SR83 should be analyzed as a Class I highway rather than a Class II, used in the DEIS and for all level of service (LOS) traffic studies. In our previous comments we note, "the classification was predicated in part on the mistaken premise that the public will accept increased percent of time following. It also fails to consider average travel speed when determining if a roadway will maintain acceptable levels of service. Commuters who regularly

use SR 83 to travel to Tucson expect a reasonable travel period." (*Id.*)

According to the FEIS, the April 2009 and April 2011 Tetra Tech traffic analysis reports for the Rosemont Copper project utilized the Transportation Research Board (TRB) Highway Capacity Manual (2000) to determine highway classification. (FEIS at 925.) The Manual states: "The classes of two lane roads closely relate to their functions. Most arterials are considered Class I and most collectors and local roads are considered Class II however, the primary determinant of a facilities classification in an operational analysis is the motorist's expectations which might not agree with the functional classification." (TRB Highway Capacity Manual (2000) at Ch. 12, p. 13; emphasis added.) It also states, "On Class I highways efficient mobility is paramount and LOS is defined in terms of both percent time spent following and average travel speed." (*Id.* at Ch. 20, p. 3.)

Based on the TRB Manual, there is no justification for finding SR83 a Class II roadway. It is not a "collector" or "local road"; it is a highway, or an "arterial", most of which are considered Class I. In addition, a majority of motorists traveling SR 83 expect higher travel speeds and will not tolerate higher levels of a percent of time following. Most people do not follow on SR83 – they pass – and many driver speeds are 60+ mph when the speed limit is 55 mph. Passing opportunities are limited and drivers can become impatient sometimes passing when unsafe especially when traveling southbound following a slow vehicle. In fact, the most favored passing area is the straight stretch of road exactly where Rosemont's access road would be constructed, thus eliminating that area for passing slow moving vehicles.

The classification of SR 83 as a Class II highway improves the LOS in the traffic study when travel speed is not considered, leading to false conclusions and a LOS rating that benefits Rosemont Mine by avoiding the need to make changes to the road in order to elevate the LOS rating to an acceptable range (better than D). Rosemont Copper would likely bear the cost of such changes so the benefit is theirs and the safety and well being of the traveling public is compromised.

Suggested Remedies: The USFS must provide an adequate analysis that properly considers this highway a Class I roadway, and it must revise its analysis and disclose the potential impacts using this more appropriate classification. The agency must also consider reasonable mitigation for these impacts, which includes road improvements that incorporate additional passing lanes, at a minimum. This information must be provided in a revised DEIS that is made available for public review and comment.

3. The FEIS fails to adequately analyze or identify mitigation measures to address the numerous significant concerns related to highway safety.

In our previous comments on the DEIS, we highlighted several concerns with the proposed project's transportation plan and impacts to public safety. We noted the many substandard roadway elements identified in the 2009 Tetra Tech assessment, including lack of shoulders, substandard guardrails, insufficient recovery zones, limited sight distance, lack of school bus pull-offs, and lack of passing lanes and passing opportunities. Additionally, we pointed out significant issues with the deceleration lane, or "Right Turn Pocket", at the proposed "T" intersection of the primary access road with SR83, noting that it is of questionable length to afford a safe braking distance for trucks that need to safely navigate the turn. We also highlighted other concerns regarding bicyclist safety, in light of the increased heavy truck

traffic, curvy nature of the road, and lack of shoulders for bicyclists to escape to in the event trucks traveling in opposite directions need to take up all of the lane spaces in each direction.

We also highlighted significant concerns regarding the impact this mine will have on emergency response and emergency service expenses. We noted that the DEIS suggested the mine will not impact emergency service expenses and it did not identify who will pay for the increase in emergency response, despite the fact that accident frequency is expected to increase from 200%-400% and accident fatalities are expected to increase 600%. Finally, we pointed out that no mitigation measures aimed at reduce accidents on SR83 were documented in the DEIS, despite these multiple and significant safety concerns.

Our previous comments related to traffic safety are not adequately addressed in the FEIS. The FEIS states that during the pre-mining or construction phase there will be 37 buses running from a staging area near Houghton and I-10 to take construction works to the mine site. (FEIS at 951.) This will congest that area and add larger vehicle traffic immediately on highway 83. During the active mining phase the proposed car-pooling and bus shuttles will be discontinued and individual vehicles will operate; approximately 85 % commuting from Tucson and 15% from the Sonoita area. (FEIS at 952.) To further attempt to reduce traffic the FEIS indicates that Rosemont will voluntarily restrict delivery truck schedules during prime commute hours, but there is no mention if this correlates with school bus running times or exactly what impact this would have, particularly considering it is voluntary. (FEIS at 1013).

It is now estimated that there will be a total of 100 to 120 round trips of related truck traffic per day.(FEIS at 951.) The FEIS acknowledges an increase in road traffic, yet states that in most instances the level of service will not likely go below level C (indicating 55 to 70 % of a driver's time will be spent following a vehicle or vehicles). (FEIS 944.). Despite acknowledging the degradation in service, the FEIS fails to indicate any degradation of safety or emergency response.

Regarding mitigation, the agency points to mitigation required by ADOT, including a 3-inch pavement overlay from I-10 to the intersection of the primary access road; striping; raising of guardrails and signs to match new pavement height; and paving three existing bus pullouts for school bus use. (FEIS at 956.) However, these measures would do virtually nothing to mitigate safety issues. The FEIS itself states, "these mitigation measures would generally benefit socioeconomic resources (i.e., Rosemont Copper would be funding roadway improvements that would otherwise be funded by taxpayers) more than they would reduce impacts from mine traffic. (FEIS at 956.) There is nothing at all of substance regarding mitigating impacts to emergency medical services or transport, except a disingenuous statement that emergency response agencies are sponsored by local governments and thus Rosemont will be contributing to funding for this indirectly through taxes.

The USFS has completely ignored our grave concerns regarding the safety of the "T" intersection, and has failed to identify and analyze the inadequate design for the proposed intersection from the perspective of traffic moving north on SR83. Analysis of the risks of this design along with appropriate mitigation must be provided.

Finally, the FEIS fails to provide a detailed transportation plan, with the USFS promising such a plan sometime in the future. (FEIS at 955-956.) However the FEIS greatly expands the analysis area for transportation impacts, reflecting a significant change in the proposed action

that was not previously available for public review and comment. (FEIS at 922.) This could have major cumulative effects on highway safety (to be discussed in Item Two below), and will likely adversely affect traffic issues, accidents and mortality.

The FEIS offers no meaningful mitigation to support traffic safety or help emergency response traffic, which will be severely impacted by the increased slow traffic patterns from ore trucks and delivery trucks. In fact, the school bus pullout measure, apparently thought to speed up traffic flow around stopped school buses, may potentially cause increased accidents by adding to the confusion of drivers. There are currently eight school bus stops, but only three are planned to be expanded and paved. This could result in increased accidents if cars become impatient and are confused about whether the bus stop is a pull-out or a highway stop, and attempt to pass a stopped bus. (FEIS at 956: saying bus stop would improve safety.)

The only area to receive the three-inch overlay is from I-10 to the new Rosemont access road, which does nothing for the road use and deterioration on the other areas. The buses running from a staging area near Houghton and I-10 to take construction works to the mine site will congest that area and add larger vehicle traffic immediately to SR83. The FEIS points to a voluntary mitigation measure indicating that delivery truck schedules will be restricted during prime commute hours in attempt to reduce traffic, but there is no mention if this correlates with school bus running times or exactly what impact this would have; in fact, the times mentioned are the same as school bus peak traffic. Though the FEIS acknowledge a degradation of highway service to "C" level, it does not address degradation of safety or emergency response traffic, and the few highway updates noted above that are promised to be negotiated with Rosemont and ADOT do nothing for high way traffic service times and safety. This is unacceptable and unreasonable for this highway.

The FEIS is woefully inadequate as it pertains to traffic highway safety and emergency plans for response and transport. The likely impacts will be to surface and air evacuation, health care worker transit times, and railroad crossing delays impacting emergency trips. Because highway S 83 is winding, hilly, and narrow, multiple highway safety issues exist, none of which are adequately addressed in the FEIS. The potential for massive traffic tie-ups causing potential delays in emergency response and transport to emergency facilities is great. Because prompt arrival at the scene, stabilization and prompt transport are critical for survival, what happens during the first hour after a life threatening emergency such as a motor vehicle accident is referred to as the "golden hour". What happens in this critical hour after an accident, heart attack, stroke or other emergency determines whether or not a victim survives. The traffic situation on all of the routes under study in the original and the expanded area will cause the deterioration of the response time and the ability to meet acceptable emergency responder standards, and mortality rates will likely increase because of delays. This will impact all residents with emergency needs in all of the local communities within the analysis area.

Currently there are many times when medical personnel, doctors, EMTs and other emergency responders have to call in helicopters for evacuation because of the time involved in surface transport. Emergency transport is very expensive, with ambulance trips potentially costing $1200 to $1500 and air evacuations potentially costing $12,000 to $15,000. The emergency medical teams that serve this area are already concerned about transport times and costs, and there is no plan in the FEIS to address these increased needs and costs. Molly Farr, MD, the only medical doctor living in the area, has expressed grave concerns about the situation that

exists now and that would surely get worse if mining traffic trips were to occur. The roads in this area are not built for frequent, heavy duty, large vehicle traffic.

The safety impacts will be compounded if the additional routes going south on SR83 to SR82 and then on to Nogales were to be utilized. This will like cause a sharp rise in necessary air evacuations within the area, and will also impact health care workers who live in Sonoita and Patagonia and commute to health care facilities in Nogales. In addition, the numerous railroad crossings within the analysis area guarantee delays in transit times for emergency vehicles. (FEIS at 953-954.) Trains regularly block crossings with no overpasses such as on Old Nogales Highway, Quail Creek and Whitehouse Canyon Road in Green Valley, and several roads in Nogales, Sonora. The frequent blocking of these routes can seriously add to increased travel time for emergency vehicles, lead to increased mortality for patients being transported.

The current road system is inadequate and unsuitable for mining truck traffic unless it is significantly upgraded, including complete replacement of several major sections, yet the USFS points to only minor changes required by ADOT, and is requiring nothing itself. The USFS fails to offer any meaningful mitigation for the greatly increased emergency response needs and impacts to emergency response and travel times other than a lame reference to Rosemont "indirectly" contributing to emergency services through taxes. This is an important and glaring omission and underscores the lack of adequate study of the transportation plans. Finally, the USFS fails to provide a comprehensive transportation plan, precluding the public from reviewing and commenting on it as required under NEPA. Absent major changes the roads will be damaged, tax payers will have to pay for the repairs, and mortality from highway accidents and medical emergencies will increase to unacceptable levels.

Suggested Remedies: The USFS must provide an adequate analysis of the significant transportation safety impacts resulting from this project, and must also identify meaningful, adequate mitigation that addresses all of the above issues, such as the building of a railroad spur to the area, rather than relying on the existing, inadequate roadway system. The USFS must also provide the promised "comprehensive transportation plan" so that the public has an opportunity to review and comment on it. The USFS must provide all this information in a revised DEIS that is made available for public review and comment.

PUBLIC INVESTMENT IN CONSERVATION

1. The FEIS provides inadequate analysis of impacts to the Sonoran Desert Conservation Plan.

Our previous comments on the DEIS stated that the USFS analysis of the proposed Rosemont Mine's impacts to the Sonoran Desert Conservation Plan (SDCP) were inadequate. (SSSR et al. at 81-82.) The SDCP's biological goal is to ensure the long-term survival of the full spectrum of plants and animals that are indigenous to Pima County through maintaining or improving the ecosystem structures and functions necessary for their survival. The SDCP is implemented through a variety of measures throughout Pima County and significant public monies and resources have been spent over the last 15 years towards its implementation and success. Our comments outlined six specific objectives of the SDCP and described how the proposed Rosemont Mine is in conflict with these objectives. (*Id.*)

The USFS did not adequately respond to this comment in the FEIS. The FEIS does not, as

requested, contain any specific analysis, either qualitative or quantitative, of impacts to the SDCP by the proposed Rosemont Mine. The FEIS does contain general verbiage about how there will be impacts to the SDCP but very little in the way of detailed analysis. (*See* FEIS at 1148.) Instead, the FEIS simply directs the reader to other sections of the FEIS, making it very difficult for the reader to adequately assess whether impacts to the SDCP have actually been addressed. For instance, the FEIS states,

> "There are many areas of overlap between the conservation principles of the "Sonoran Desert Conservation Plan" and the issues addressed in the FEIS. For instance, biological corridors and critical habitat for a wide variety of species are addressed in the "Biological Resources" resource section of this chapter. Potential impacts to riparian resources are addressed in the "Seeps, Springs, and Riparian Areas," groundwater, and surface water resource sections of this chapter. Other potential impacts that are relevant to the objectives of the "Sonoran Desert Conservation Plan" are well described in the FEIS in the various resource sections. As stated in the resource sections in chapter 3 of the FEIS, impacts have been mitigated to the degree practicable; however, conflicts with aspects of the "Sonoran Desert Conservation Plan" would remain."

(*Id.*)

Statements such as, "Other potential impacts that are relevant to the objectives of the 'Sonoran Desert Conservation Plan' are well described in the FEIS in the various resource sections," are especially problematic and make it impossible for the reader to understand what those potential impacts will be.

Suggested Remedies: The FEIS should either reiterate the analysis of all the potential impacts to the SDCP in this section, collating them together, or give the reader specific reference page numbers. Otherwise, it is impossible to assess whether impacts to the SDCP have been adequately addressed. We cannot emphasize enough how important the SDCP is to conservation in Pima County and the amount of community resources and support, public dollars, and other public investments have been made into making the SDCP a reality. The Rosemont Mine's impacts on this nationally recognized regional conservation plan would no doubt be extensive and these impacts need to be outlined in detail. The agency must provide this information in a revised DEIS that is released for public review and comment.

2. The FEIS provides inadequate analysis of impacts to ranch conservation in Pima County.

Our previous comments stated that the USFS analysis of the proposed Rosemont Mine's impacts to the ranch conservation in Pima County was inadequate. (SSSR et al. at 82-83.) Pima County has spent over $44 million to purchase four local ranches (Empirita Ranch, Bar V Ranch, Sands Ranch, and Clyne Ranch) in the vicinity of the project area, all of which will suffer negative impacts from mine operations. We requested that the FEIS provide analysis of the environmental, social, and economic effects of the proposed Rosemont Mine on ranch conservation, including but not limited to ground and surface water reductions, loss of creek flows and riparian vegetation, loss of springs, seeps and shallow ground water areas, water and air pollution, visual impacts, noise and light pollution, loss of connectivity for wildlife, and reduced recreation and hunting opportunities. (*Id.*)

The USFS did not adequately respond to this comment in the FEIS. In fact, as far as we can

tell, the agency provided no response at all. The USFS states, "Of the five elements of the [Sonoran Desert Conservation Plan], the four that are most relevant to biological resources in the analysis area are Critical Habitat and Biological Corridors, Riparian Restoration, Mountain Parks, and Ranch Conservation." (FEIS at 590.) However, we could not find any discussion at all of impacts to the four ranches that Pima County has explicitly purchased for conservation purposes.

Suggested Remedies: The USFS must conduct a detailed analysis of the impacts of the proposed Rosemont Mine to Pima County's ranch conservation lands and provide this information in a revised DEIS that is released for public review and comment.

3. The FEIS provides inadequate analysis of impacts to Cienega Creek Natural Preserve.

Our previous comments described the general history of Pima County's Cienega Creek Natural Preserve, a 4000-acre preserve in the lower Cienega Creek area that contains rare riparian habitat and has populations of the endangered Gila topminnow and Gila chub. (SSSR et al. at 83-84.) Pima County has invested heavily in the preserve, including purchasing nearby lands as part of its open space program and conducting regular monitoring of streamflow, groundwater, and water quality. In our DEIS comments, we stated that the cumulative impacts analyses in the FEIS should address human impacts from illegal entrance and uses of the preserve, invasive and exotic species from adjacent residential development and state lands, construction impacts from utility lines that cross the preserve, and nearby proposed development that could impact perennial flow from aquifer depletion or contamination. (*Id.*) Our comments also stated that the FEIS should contain more detailed analysis of the impacts from a reduction in sediment yield in Davidson Canyon. (*Id.*) Finally, we disagreed with the statements in the DEIS that modeled decreases in groundwater are unlikely to cause large changes in riparian vegetation extent or health in Cienega Creek Natural Preserve; indeed, we believe that even small changes in riparian vegetation extent or health, flow, sediment yield, aquifer height and spring systems will have a large impact to the overall ecosystem of the preserve. (*Id.*)

The FEIS continues to contend that the impacts of a reduction in groundwater quantity in Davidson Canyon will have minimal impacts on groundwater quantity in Lower Cienega Creek, and by inference, Cienega Creek Natural Preserve. (FEIS at 548.) Per our previous comments, we continue to disagree with this assertion. The FEIS also states that:

> "The ecological, recreation, and cultural importance of Cienega Creek is tied irrevocably to its hydrology. Cienega Creek is valuable because it is a perennial riparian corridor. Predictions of impact to Cienega Creek are less certain than those for Empire Gulch and encompass a wide range of possibilities, from no impact at all, to extensive dewatering and drying. The timing is also uncertain, with possible changes occurring many decades or hundreds of years in the future. Changes in the hydrology severe enough to cause dewatering of Cienega Creek are one possible outcome of the mine, and the likelihood of mine effects becoming severe enough to dewater Cienega Creek also increases with climate change and increased groundwater demand within the basin. If these severe effects were to occur, much of the value of Cienega Creek for recreation, wildlife habitat, scenic beauty, and cultural importance would be lost."

(FEIS at 547.)

Despite this acknowledgement of the critical importance of Cienega Creek, there does not seem to be any direct response to concerns regarding the impacts of Cienega Creek Natural Preserve and its management, and there does not seem to be any meaningful analysis of the impacts to this Preserve.

Suggested Remedies: The USFS must thoroughly analyze impacts to Cienega Creek Natural Preserve, and provide that information in a revised DEIS that is made available for public review and comment.

4. The FEIS provides inadequate analysis of impacts to Colossal Cave Mountain Park.

Our previous comments stated that the USFS analysis of the proposed Rosemont Mine's impacts to Colossal Cave Mountain Park in Pima County was inadequate. (SSSR et al. at 84-85.) We requested further analysis of impacts on visual resources and air quality, along with impacts due to blasting. (*Id.*)

The FEIS did not address this comment at all. The only mention of Colossal Cave Mountain Park occurs in the FEIS discussion of existing conditions of known nearby cave resources. (*See* FEIS at 171.)

Suggested Remedies: The USFS must conduct a detailed analysis of the impacts of the proposed Rosemont Mine to Colossal Cave Mountain Park, with a focus on: 1) impacts due to blasting, 2) visual resources, and 3) air quality at the park. The agency must provide this information in a revised DEIS that is made available for public review and comment.

5. The FEIS provides inadequate analysis of impacts to Kartchner Caverns State Park.

Our previous comments stated that the USFS analysis of the proposed Rosemont Mine's impacts to Kartchner Caverns State Park was inadequate. (SSSR et al. at 85.) We requested an analysis of whether blasting at the Rosemont site might impact this world-class state park. (*Id.*)

The FEIS did not address this comment at all. The only mention of Kartchner Caverns State Park was found in the FEIS discussion of existing conditions of known nearby cave resources and in a table outlining analyzed transportation study segments. (*See* FEIS at 171, 936.)

Suggested Remedies: The USFS must conduct a detailed analysis of the impacts of the proposed Rosemont Mine to Kartchner Caverns State Park, with a focus on the impacts due to blasting, and provide this information in a revised DEIS that is released for public review and comment.

6. The FEIS provides inadequate discussion of mitigation measures for impacts to Pima County's Conservation Lands System.

Our previous comments stated that the USFS analysis of the proposed Rosemont Mine's mitigation measures for impacts to Pima County's Conservation Lands System (CLS) was inadequate. (SSSR et al. at 85-86.) The CLS is the backbone of Pima County's Sonoran Desert Conservation Plan and consists of a map identifying various categories of environmentally-sensitive lands and an associated set of open space preservation guidelines for new development projects that require a discretionary action of Pima County's Board of Supervisors. We requested more detailed mitigation measures for these impacts. (*Id.*)

While the FEIS does provide a table outlining quantitative impacts to the CLS resulting from each action alternative and related actions, there is no discussion at all of any proposed mitigation measures. (FEIS at 699-700, Table 126.)

Suggested Remedies: The USFS must provide a discussion of reasonable mitigation measures for impacts to the Conservation Lands System and include this information in a revised DEIS that is released for public review and comment.

7. The FEIS provides inadequate analysis of impacts to biological corridors and critical habitat in the project area.

Our previous comments stated that the USFS analysis of the proposed Rosemont Mine's impacts to biological corridors and connectivity, including impacts through road mortality, was inadequate. (SSSR et al. at 86-87.) We also requested a thorough discussion of mitigation measures proposed for these impacts. (*Id.*) Our comments also discussed the importance of biological corridors (called "animal movement corridors" in the FEIS and "wildlife linkages" elsewhere) in the project area, why they are crucial for healthy wildlife populations, and the negative impacts to wildlife and wildlife habitat when biological corridors are fragmented and dis-connected. (*Id.*)

The FEIS does state that there will be some permanent impacts to some wildlife species due to impacts to biological corridors. The FEIS states, "It is not possible to predict how animals would or would not use the project area after closure, except to say that the landscape would be significantly altered from existing conditions due to the actions associated with the mine, and the movement throughout the area would be severely compromised for some species." (FEIS at 668.) The FEIS also includes a series of tables that state acreage impacts to modeled wildlife linkages and riparian corridors for each action alternative. (*Id.*)

Although the FEIS has an extensive section of background information about how roads impact wildlife, there is inadequate analysis of how increased traffic on roads such as SR 83 will impact road mortality. The FEIS states, "It can be assumed that similar impacts from roads within the project area and associated traffic to these types of species already exist and that the increase in traffic on SR 83 and other roads would likely continue to result in negative (and possibly increase) impacts to the first group of species types and could continue to result in positive impacts to the second group of species types." (FEIS at 671.)

As far as we can tell, there are four proposed mitigation measures for impacts to biological corridors by the proposed Rosemont Mine. These are: 1) $50,000 contributed by Rosemont Copper to Arizona Game and Fish Department for camera studies of large predators (FEIS at 716); 2) the installation of wildlife crossing signs for jaguar on mine access roads (FEIS at 719); 3) roadkill monitoring for jaguar, ocelot, and the jaguar prey-base through regular field surveys (FEIS at 719); and 4) developing a comprehensive transportation plan that would possibly install and maintain wildlife crossings on mine access roads (FEIS at 721).

Unfortunately, these mitigation measures will not adequately mitigate for impacts to biological corridors. For example, $50,000 will not fund a robust camera study of large predators, especially for the length of time the mine would be in operation. Furthermore, there is no stated time frame for the study. Without more details on how this study will be designed and implemented, it is impossible to adequately evaluate its effectiveness as a mitigation measure.

And lastly, although the FEIS states that this money will be given to AGFD to conduct the camera study, the FEIS simply states that the money will be given to a "suitable entity approved by the Coronado." (FEIS Appendix B at B-36.) This discrepancy should be corrected as well. The other mitigation measures are also inadequate and lack sufficient detail for evaluation.

Suggested Remedies: The USFS must provide a more detailed analysis of potential impacts to wildlife from road mortality near the proposed mine. The agency also needs to outline more robust and effective mitigation measures for impacts to biological corridors generally. The USFS must provide this information in a revised DEIS that is released for public review and comment.

8. The FEIS provides inadequate analysis of impacts to Las Cienegas National Conservation Area.

Our previous comments stated that the analysis in the DEIS of Las Cienegas National Conservation Area (LCNCA) was inadequate. (SSSR et al. at 87-88.) Specifically, we stated that the DEIS was inadequate in its assessment of impacts to other resource values and landscape elements on the LCNCA such as displaced recreation, fire, invasive species, traffic, etc. and the impacts to the wild nature of the Sonoita Valley from large-scale industrial development. (*Id.*) Finally, our comments requested an evaluation of possible impacts to the ranch headquarters in LCNCA due to blasting from the proposed Rosemont Mine. We noted:

> "Over 25,000 people visit LCNCA annually and they will be impacted by the noise, lights, traffic and loss of riparian areas. The DEIS also is inadequate as it does not address any other potential impacts to other resource values or landscape elements on the LCNCA such as displaced recreation, fire, invasive species, traffic, etc and the impacts to the wild nature of the Sonoita Valley from large-scale industrial development. … Also, the ranch headquarters' adobe structures, listed on the National Register of Historic Places, are located seven miles from the proposed mine, and according to a professional structural evaluation, are at risk from the impacts of blasting described in the Mine Plan of Operation for the proposed Rosemont Mine."

(SSSR et al. at 88.)

The FEIS does not analyze any impacts to the ranch headquarters in LCNCA. The USFS did not respond to concerns about possible damage from ground or air vibrations to the historic structures at the Empire Ranch headquarters by conducting requested additional studies by independent experts. Rather, they chose to accept the very limited study of airborne and ground vibrations conducted by a Rosemont contractor, Tetra Tech: "Airborne and ground vibrations caused by blasting were also modeled. Subsonic vibrations are of concern only with respect to property damage; therefore, results are compared only with the nearest residential receptor to the southeast (House A) and northeast (House H)…" (FEIS at 984.)

The USFS also ignored our mitigation request for set-aside funds for repairs to these historic structures should damage occur: "Impacts to historical structures at Empire Ranch are not anticipated. Please refer to the Noise section in Chapter 3 of the FEIS for more detailed information. Because the proposed project is not expected to impact these structures, there is not any mitigation for restoration required." (USFS Appendix G #322.)

The FEIS fails to acknowledge the legitimate concern of the possible impact on the historic adobe structures of the Empire Ranch. Rosemont contractor, Tetra Tech, only analyzed the airborne and ground vibrations at two sites and modeled results on this extremely limited data. As stated in the FEIS, "…geological conditions have a strong influence on the distance at which ground vibrations can be felt…" (FEIS at 963.) The two sites analyzed lie north and west of the Empire Ranch buildings and no determination or comparison of the geologic conditions of these sites and the Empire Ranch site was made.

Further, as stated in the FEIS, "At a high enough level, airborne vibrations can rattle loose objects or windows. At even higher intensities, the potential exists for cosmetic damage, such as cracks in stucco, paint, or plaster." (FEIS at 963.) The very limited analysis conducted does not take into account the potential impact of adobe structures that are over 140 years old.

The USFS failure to consider reasonable mitigation such as a bond or some other financial instrument that assures that there will be funds available for repairs is significant. The USFS claims that "[b]ecause the proposed project is not expected to impact these structures, there is not any mitigation for restoration required." (FEIS Appendix G #322.) Yet, based on expert analysis provided during public comment and the USFS recognition in the FEIS that proposed activities can in fact result in the deterioration of the historic structures on the Empire Ranch, not requiring financial assurance from the proponent is a significant deficiency.

Suggested Remedies: The USFS must provide a more robust analysis of noise impacts to humans, facilities and structures, livestock, and wildlife over a wider analysis area, and discuss appropriate mitigation measures to reduce those impacts. The agency must analyze potential impacts to the historic ranch headquarters in LCNCA, including impacts caused by blasting and other proposed activities. The agency must discuss reasonable measures that would mitigate these impacts, including additional mitigation and preservation measures for cultural sites, and describe how applicable federal laws would be met.

In addition, the agency should require Rosemont Copper to provide adequate bonding or some other financial instrument that guarantees that there will be funds available for repairs to the historic structures. The funds must be administered by a neutral, third party, nonprofit organization. The USFS must provide all this information in a revised DEIS that is released for public review and comment.

9. The FEIS provides inadequate analysis of impacts to the direct economic value of public lands in the project area.

Our previous comments contained an analysis of the direct economic value of public lands within a 50-mile radius of the proposed project site. (SSSR et al. at 88-90.) This included specifically lands owned by the State of Arizona, Coronado National Forest lands, Las Cienegas National Conservation Area lands, lands owned by Pima County, and other public lands. We requested additional analysis in the FEIS that addressed the diminution in value of all public, as well as private, lands adversely impacted by the proposed project. (*Id.*)

While the FEIS does contain an analysis of impacts to property values within an established radius of the proposed project site, the only types of lands it calls out specifically are lands owned by the State of Arizona and private lands. (FEIS at 1105-1109.) Given the incredible amount of local public investment in conservation lands within a 50-mile radius of the proposed project site, we found this analysis wholly inadequate. The FEIS also only addressed

impacts to property values and did not address other aspects of the economic value of public lands.

Suggested Remedies: The USFS must to provide a more comprehensive analysis of the diminution in value of all public lands adversely impacted by the proposed project, and include this information in a revised DEIS that is available for public review and comment.

RECLAMATION AND REVEGETATION

1. The FEIS fails to provide a final revegetation plan and lacks any meaningful information regarding how revegetation of the site will be achieved.

In our previous comments we questioned the adequacy and efficacy of proposed revegetation efforts. We objected to the revegetation plan in the DEIS for a number of reasons, including the lack of detail and missing information regarding the site seed list that was included in the DEIS, including the list itself and information regarding germination requirements, planting rates, irrigation frequency, and other measures that need to be taken in order to ensure revegetation of the site will actually occur. (SSSR et al. at 71-72; Appendix A at 3.) We also questioned whether the minimum of one foot of growth media cover over final waste rock is enough to establish sustainable vegetation on the site, and noted that no rationale was provided for this decision. (*Id.*; Appendix A at 4.) Finally we pointed out that, regarding soil and revegetation, the agency "must analyze the interacting factors of increasing temperatures particularly including increasing daytime high temperatures, changes in timing and intensity of precipitation and increasing soil aridity due to climate change when analyzing the impacts of lost soil and lost soil productivity on reclamation and revegetation activities." (SSSR et al. Appendix A at 8-9.)

In response to concerns regarding the DEIS's description of revegetation plans, the FEIS states, "Expected revegetation success has been approached in the final environmental impact statement (FEIS) in the following way, which differs from the DEIS. First, the reclamation techniques and revegetation concepts currently proposed by Rosemont Copper are disclosed, including soil salvage techniques and stockpile locations, surface preparation and treatment, and seed application techniques. Second, the available greenhouse studies and onsite reclamation test plot results are reviewed to provide pertinent information about the demonstrated outcome of revegetation attempts. Finally, the Coronado's purpose and goals of revegetation are discussed." (FEIS at 178; parentheses omitted.)

However, the FEIS also states, "The ultimate outcome of revegetation efforts depends entirely on the selected techniques, adaptive management approaches, and success criteria, which would only be fully identified in the final reclamation and closure plan submitted with the final MPO." (*Id.*) ...Predictions of revegetation success and monitoring requirements will be addressed in a final revegetation plan, to be approved by the Coronado prior to approval of the final MPO. However, general information on desired conditions for vegetation has been included in the "Environmental Consequences" part of this resource section. This information is intended to disclose the best professional judgment of Coronado specialists regarding the expected outcome of revegetation activities" (*Id.*)

According to the FEIS, "The final reclamation and closure plan would provide further detail on the techniques to be employed, as well as monitoring and success criteria for approval by the

Coronado. The monitoring plan would identify selected reference sites, protocols for tracking survivorship and growth in terms of both amount and type of vegetation, and protocols for tracking soil stability and erosion. The final reclamation and closure plan would also identify adaptive management strategies to meet these success criteria. The adaptive management strategy would be based on quantitative monitoring data from reference plots, test plots, previously revegetated areas, and scientific literature." (FEIS at 203.)

The agency's response to our concerns is completely inadequate. The FEIS provides no specific information regarding the proposed approaches to revegetation and their effectiveness, and does not include any meaningful information regarding the actual revegetation plan for this project, in violation of NEPA. The FEIS also fails to provide any meaningful assurances such as bonding that will ensure Rosemont Copper actually carries out revegetation activities as described.

Suggested Remedies: A final reclamation and closure plan must be developed that includes all pertinent and detailed information regarding how revegetation will be achieved at the site. The USFS must present this information in a revised DEIS that is made available for public review and comment.

2. The FEIS fails to provide adequate information regarding how revegetation will be monitored and maintained post-closure.

In our previous comments, we expressed concerns regarding the method of spreading a one foot thick layer of soil over the waste piles and questioned how this soil will be seeded, how trees can thrive in a thin layer of soil overlying broken rock, and how soil will be prevented from blowing or being washed away before vegetation becomes established. (SSSR et al. at 71-72.) We also pointed out the absence of any plan to irrigate new plantings during or after mining, emphasizing the importance of the period after mine closure when lack of moisture could lead to the loss of young vegetation. (*Id.*)

The FEIS still does not specifically address the issue of irrigation during mining or after mine closure and fails to address our concerns regarding the long-term success of site revegetation. (FEIS Appendix G #644.) Stating that the project "has been designed with the intent of minimizing long-term maintenance and monitoring," the FEIS goes on to say that "it is recognized that the potential exists for continued monitoring of postmine conditions beyond the final reclamation and closure phase." (FEIS at 97.) The document outlines a plan to monitor all reclaimed sites at least twice a year "for a period to be determined" and promises that "any areas not meeting reclamation goals would be analyzed to determine the underlying problems, which would be addressed with a modified plan." (*Id.*)

This "plan' for postclosure monitoring is inadequate and instead of addressing our concerns, it has only heightened them. The FEIS fails to provide information regarding how long the monitoring will continue, who will devise the "modified plan" should one be necessary, who will implement the plan, or who will pay for it. In addition, monitoring only twice a year is too infrequent to salvage plants suffering from lack of moisture during long dry spells.

In addition, the plan may be continued for only a few years. The USFS emphasizes the minimization of post closure maintenance and one of the listed general USFS objectives is "to the extent practicable, reclaimed NFS land shall be free of long-term maintenance requirements." (FEIS at 186.) However without adequate irrigation, it is likely that portions of

the new vegetation cover will die and leave bare patches on the new artificial hillsides made from the waste piles. It would appear to be common sense that long term maintenance of newly seeded or planted vegetation would be required because of the need for occasional irrigation, replacement of non-surviving plants, the removal of unwanted invasive weeds, and the possible repair of rain or wind damage to soil, newly laid over waste rock piles.

Suggested Remedies: The USFS should seek the advice of botanists familiar with this difficult type of revegetation in order to determine how long the maintenance must be continued and what it should entail, and a detailed plan containing these recommendations should be developed as part of the reclamation directives for this project. The USFS must include this information in a revised DEIS that is released for public review and comment.

3. The FEIS fails to ensure sufficient soil resources for reclamation at all phases of mine operations.

We previously commented that the DEIS failed to provide enough information to determine whether there would be sufficient medium for plant growth and revegetation. (SSSR et al. at 71-72.) The DEIS described a plan to mix salvaged soil from disturbed areas with waste rock; however, it did not specify the ratio of the two, it did not explain the method that would be used for spreading the medium evenly on the steep faces of the waste rock piles, nor did it give any indication that the amount of available soil has even been estimated. (*Id.*) We noted several problems with the plan outlined in the DEIS as it pertains to revegetation and soil cover, including the lack of requirement to replant should the revegetation effort fail to reach established goals, the issue of deeply rooted native plants that will likely not do well over time in the one-foot soil cover, or the issue of transported soil cover washing or blowing away before any vegetation becomes established. (*Id.*)

In response, the FEIS states, "At soil salvage locations, pits would be dug to verify removal depth of salvage soils. … Soil stockpiles would be managed to reduce potential erosion, designed to reduce potential for compaction to maintain air circulation and drainage, and if anticipated to be in existence for at least 1 year, would have vegetative cover using a broadcast seed mix and possibly stabilizers like straw mulch with tackifier." (FEIS at 194-195.) The FEIS also states, "No mechanical manipulation of the salvaged soil or creating soil by crushing waste rock has been proposed. Soil has not been proposed to be salvaged from any areas that would not ultimately be disturbed by the mine operations, and no offsite borrow pits are planned. (*Id.*)

Despite this response, the FEIS still fails to provide adequate information regarding how soil salvage will be effectively achieved. The document outlines vague promises such as, "Soil stockpiles would be managed to reduce potential erosion, designed to reduce potential for compaction to maintain air circulation and drainage, and if anticipated to be in existence for at least 1 year, would have vegetative cover using a broadcast seed mix and possibly stabilizers like straw mulch with tackifier." (*Id.*) However, it fails to provide any information regarding how soil stockpiles will be managed to reduce potential erosion; how they will be designed to reduce potential for compaction; or how exactly they will produce vegetative cover on those stockpiles anticipated to last a year or more. It also fails to provide adequate answers to our specific comments regarding providing estimates of the amount of soil available or how it would be spread over the steep slopes of the waste rock piles.

The agency should establish appropriate methods and necessary criteria to ensure that soil resources are sufficient for reclamation at all phases of mine operations. The criteria should calculate the minimum amounts of soil needed for reclamation and ensure that all available soil material is salvaged. The use of soil pits can be beneficial for estimating available salvageable soil but the agency should require that all 'a', 'b', and 'c' horizon soils are salvaged, separately to the extent practicable (as determined by depth of each horizon which will determine whether machinery operators can reasonably separate them). Where horizons can reasonably be separately salvaged then it should be required that the horizons are separately salvaged, separately stored, and separately replaced to mimic natural horizons as closely as possible.

Finally, it should be the regulatory agencies that establish this specific criteria, not Rosemont Copper's mining plan of operations.

Suggested Remedies: The agency must provide a detailed analysis of available soil materials for salvage which should include a reasonable breakdown by a, b, and c horizons. The analysis should include potential undisturbed areas to ensure that it provides a meaningful estimate of what is actually needed for reclamation and not merely based on what materials are available. This information must be included in a revised DEIS and made available for public review and comment.

LIVESTOCK AND GRAZING

1. The FEIS fails to fully consider impacts to nearby ranching operations and associated risks to public health resulting from the proposed mining operations.

In our previous comments, we stated that the agency should analyze the impacts to livestock raised and grazed in pastures under use or lease by copper mine companies that contain tailings and waste rock. (SSSR et al. at 90.) We also stated that the agency should consider alternative designated zones of safety for ranches and neighboring allotments in close proximity that could be impacted by fine particulate airborne dust particles and toxic residues, affecting the soil, air, water, grass, seeds, livestock feed, and buildings, especially important considering the high winds in the affected area of southern Arizona. (*Id.*)

The FEIS fails to address these concerns, as its scope in this regard is limited to the fence line and fails to take into consideration broader impacts beyond the specific footprint of the site, particularly on grazing and grazing operations, and the resulting impacts to food supply. This affects the economics of individual ranching plus has much broader implications to public health.
The FEIS fails to adequately address livestock health and cumulative safety of livestock grazing on the directly and indirectly affected allotments, and does not address short-term or long-term cumulative impacts on human consumption of livestock meat from herds affected by copper mining. Finally, the FEIS fails to take into consideration the significant research on impacts to human health, particularly from mining related activities, and does not address our comments regarding whether, due to the potential of affected toxic residues impacting ranchland resources, there should be designated zones of risk or safety for ranches and neighboring allotments in close proximity; for example, considering 1-mile, 3-mile, 5-mile, and 10-mile perimeters or more. The

Neither the USFS nor the proponent indemnifies neighboring ranchers or allotments in proximity to the proposed mine from liability that might be sought by individuals or consumers whose health may be impacted from direct or indirect cumulative exposure from consumption of meat produced from livestock affected by the mine.

Suggested remedy: The USFS must prepare an analysis of the impacts to livestock grazing beyond the specific footprint of the project, and include the potential risks to neighboring ranches as well risks to public health risk from consuming meat produced on lands surrounding this mine site.

SEEPS, SPRINGS, & RIPARIAN AREAS

1. The FEIS fails to adequately analyze impacts to seeps, springs, and riparian areas, including reasonably likely impacts to Outstanding Arizona Waters.

The Coalition commented that groundwater pumping and the hydraulic sink effects of the proposed open pit mine could reduce the base flow of local streams and cause reductions in discharges from local springs and seeps. (*See* SSSR et. al at 47.) The Coalition commented that dewatering of regional aquifers on the eastern side of the Santa Rita Mountains by the Rosemont Copper Project would cause significant degradation and/or potential elimination of hundreds of acres of critically important riparian habitat along Cienega Creek, Davidson Canyon, Empire Gulch, and Gardener Canyon. (*Id.*) In the case of Cienega Creek and Davidson Canyon, the loss of base flow and losses or reductions in discharges from seeps and springs could impact Outstanding Arizona Waters (OAWs) designations and result in the violation of anti-degradation provisions of Arizona surface water quality standards rules applicable to OAWs (*Id.*) The Coalition commented that allowing such adverse impacts to the flow of streams, seeps, springs, and riparian habitats constituted a violation of USFS duties under the Organic Act to maintain and protect fisheries and wildlife and to minimize adverse environmental impacts to surface water resources on the Coronado National Forest. (*Id.* at 48.) The incomplete USFS analyses also violate USFS obligations under NEPA do the "necessary work" to obtain groundwater and surface water information necessary to predict impacts to local springs, seeps, and riparian areas. (*Id.*)

The USFS identified impacts to seeps, springs, and riparian areas and effects on perennial waters and Outstanding Arizona Water as major issues to be addressed in the FEIS. The USFS stated that potential impacts on seeps, springs, and associated riparian vegetation could result from the alteration of surface and subsurface hydrology by the Rosemont mine pit and other Rosemont Copper Project facilities. (*See* FEIS Executive Summary at xi; FEIS at 487.)

The USFS appropriately included within the analysis area all geographic areas within which seeps, springs, riparian vegetation, perennial stream flow, or Outstanding Arizona Waters may be impacted by the Rosemont Copper Project. (*Id.* at 488.) The temporal analysis period was 1,000 years into the future. (*Id.*)

Potential impacts include reductions or elimination of flows from seeps and springs and the loss of or change in riparian area function. (FEIS Executive Summary at xi.) The USFS acknowledges that construction and operation of the mine pit, tailings, waste rock, and leach facilities have the potential to change surface water flows in Davidson Canyon and Cienega Creek, portions of which have been designated as Outstanding Arizona Waters. (*See* FEIS

Executive Summary at xi.)

The USFS states that under the proposed alternative and all of the action alternatives, groundwater drawdown and changes in surface water flow have the potential to impact riparian resources. (*See* FEIS Executive Summary at xxxi.) While acknowledging uncertainty involved with making predictions based on the available groundwater flow models, the USFS was able to predict that a total of 76 springs would be directly or indirectly impacted by groundwater drawdown caused by the Rosemont Copper Project (as compared to the estimated 19 springs that were unlikely to be affected by the project). (*Id.*)

The USFS estimates that 686 acres of riparian habitat would be directly disturbed by the Rosemont Copper Project (*Id.*) The USFS catalogs indirect impacts to riparian habitat (with varying levels of certainty) and estimates that approximately 1,071 acres of hydroriparian, mesoriparian, and xeroriparian habitat in Barrel Canyon, Empire Gulch, and Davidson Canyon would be affected. (FEIS Executive Summary at xxxii.) Predictions on impacts to flowing streams are described as "mixed" although the USFS concludes that it is likely that Empire Gulch would change from a perennial stream to an ephemeral stream. Similarly, Cienega Creek and Gardner Canyon would "likely remain perennial at least 150 years after project closure" but may change to intermittent or ephemeral streams between 150 years and 1,000 years after mine closure (*Id.*)

The groundwater models used to assess impacts to regional aquifers predict a more than 100-foot drawdown of the water table near the mine pit within several years (*See* FEIS at 316.) Springs in close proximity to the mine pit would experience over 10 feet of drawdown of the water table during active mining operations (*Id.*) The USFS states that "distant" surface waters, including Gardner Canyon, Davidson Canyon, and Cienega Creek are "unlikely to experience substantial drawdown over any time period, with the exception of Empire Gulch which could experience several feet of drawdown beginning 50 years or more after closure of the mine." (*Id.*)

The USFS identified other changes to riparian area function resulting from the development of the Rosemont Copper Project, including transitions from hydroriparian habitat to mesoriparian or xeroriparian habitat or to lesser quality riparian habitats. The USFS also states that there would be losses of vitality, areal coverage, and the health of riparian areas. (*Id.*)

The USFS defends the groundwater modeling approach it used to predict impacts in the DEIS and says that it undertook "additional technical investigations" in order to determine that the groundwater flow models the USFS used were reasonable with respect to prediction of impacts on water resources. (*See* FEIS at 290.) These additional investigations apparently consist of the USFS posing questions to USFS contractors and convening a panel of experts to discuss various groundwater issues. The USFS also requested additional information from the Rosemont Copper Company on groundwater boundary conditions. (*Id.*) After these "additional technical investigations," the USFS concluded that: "[O]verall, the Forest Service specialists, their contracted experts, and the Forest Service decision-maker found that the models used in the FEIS were valid, reasonable, and acceptable for predicting impacts related to this project." (*Id.*) In reaching this conclusion, the USFS specifically acknowledged that the groundwater models used by the USFS did not have the ability to predict impacts on Cienega Creek, Davidson Canyon, and Gardner Canyon where impacts were the result of small groundwater changes over very long time periods (*Id.*) Peer review of the groundwater flow models was

provided by SRK Consulting.

The USFS acknowledges that the results of groundwater modeling in the Davidson Canyon / Cienega Basin indicate that the mine pit would create a permanent drawdown of the water table (*See* FEIS at 339.) The USFS states that groundwater is expected to flow toward the mine pit "in perpetuity" from the time excavation of the mine pit intersects the underlying water table. (*Id.*) After mine closure, the mine pit is expected to fill with groundwater creating a mine pit lake that will function as a "permanent hydraulic sink" in the region. (*Id.*) Pumping of the mine pit during active mining operations and the hydraulic sink effects of the mine pit lake after mine closure are expected to create a cone of depression that will function to remove groundwater from the regional aquifer "in perpetuity." (*Id.*) The USFS, in an incredible understatement, acknowledges that the boundaries of this cone of depression "would migrate outward for a very long period of time until they eventually reach equilibrium", estimated to occur sometime between 700 and 7,000 years in the future. (*Id.*) "The flow of groundwater toward the mine pit would be a permanent feature of the regional aquifer." (*Id.*)

The USFS presents modeled groundwater drawdowns resulting from the hydraulic sink effects of the mine pit at the end of active mining and at 20, 50, 150 and 1,000 years after mine closure. (*See* FEIS at 339 to 345, Figures 54-58.) The USFS also presents modeled groundwater drawdowns at 15 representative springs and selected geographic locations of specific concern (for example, the confluence of Davidson Canyon and Cienega Creek, Reach 2 Spring on Davidson Canyon, perennial and intermittent reaches of Cienega Creek). (*See* FEIS at 340.) The USFS acknowledges differences in the groundwater drawdown contours from the models and the drawdowns presented for the 15 representative springs. (*Id.* at 346.)

There are many inconsistencies in the modeled groundwater drawdown results presented in the FEIS. For example, the modeled groundwater results from the Montgomery Mine Site model indicate a risk of a 5-foot drawdown of the water table extending to the Reach 2 Spring in Davidson Canyon and almost all of the way to the confluence of Davidson Canyon and Cienega Creek within 1,000 years after mine closure. (*See* FEIS at 345, Figure 58.) The 5-foot groundwater drawdown contour result is inconsistent with the predicted groundwater drawdown results for the same Reach 2 Spring from the Montgomery Mine Site model after 1,000 years (1 foot with a possible predicted drawdown of < 0.1 foot to 4 feet). The predicted range of modeled groundwater drawdown of < 0.1 feet to 5 feet at the Reach 2 Spring location makes it difficult for the USFS to make reliable predictions of the impact on dewatering on Davidson Canyon or for members of the public to have any confidence in the described impacts.

The USFS modeled groundwater drawdown results is inconsistent with the USFS discussion of the effect of reductions in groundwater discharge in Davidson Canyon. (*See* FEIS at 354.) The USFS makes the surprising admission that the details of this hydrogeologic connection (i.e., the groundwater / surface water connection) "…are not fully analyzed in any of the modeling reports…." For Davidson Canyon (*Id.*) Despite the absence of detailed hydrologic analysis, the USFS presents the most optimistic groundwater drawdown scenario for impacts to Davidson Canyon, stating:

> "With respect to drawdown in the regional aquifer; the weight of the available evidence suggests that it is unlikely that flows in lower Davidson Canyon are connected to the regional aquifer that would be impacted by the mine site [citations omitted]….drawdown at Reach 2

> Spring in lower Davidson Canyon even after 1,000 years is modeled to be 0.3 foot or less, and drawdown at the confluence of Davidson Canyon and Cienega Creek is modeled to be 0.1 foot or less."

(*See* FEIS at 355.)

This USFS prediction ignores other information presented in the same FEIS regarding the geographic extent of the 5-foot groundwater drawdown at the Reach 2 Spring after 1,000 year that flatly contradicts the "rosy" picture of potential groundwater drawdown in Davidson Canyon that the USFS would have the public believe. This cherry-picking of data illustrates a problem that is repeated in many places throughout the FEIS. The USFS consistently reaches the most optimistic conclusions by emphasizing and selectively presenting data and information in the FEIS that minimizes and downplays the potential impacts of the Rosemont Copper Project.

The USFS responses to Coalition comments on the impact of groundwater drawdowns of regional aquifers are inadequate. While the USFS identifies impacts of the Rosemont Copper Project to seeps, springs, and riparian areas as a major issue to be addressed in the FEIS, the USFS responses to public comments in the FEIS remain inadequate. The USFS states that it conducted additional technical investigations in response to public comment, but fails to discuss the results of these additional investigations in the FEIS with enough detail or specificity for members of the public to evaluate the validity of any conclusions reached by the USFS as a result of the additional technical investigations.

We particularly object to USFS continued reliance on groundwater models contracted by technical consultants for the Rosemont Copper Company, the proponent of the Rosemont Copper Project . Two of the three groundwater flow models, the Montgomery and Tetra Tech Mine Site models were completed by technical consultants for Rosemont (*See* FEIS at 296.)

Because of high levels of scientific uncertainty inherent in the models, the acknowledged limitations of the groundwater flow models used by the USFS, the potential subjectivity in the selection of modeling assumptions, and professional disagreements over aspects of the groundwater modeling among USFS resource specialists, experts, and modeling contractors, the USFS fails to provide an adequate analysis of impacts to seeps, springs, and riparian areas, including reasonably likely impacts to Outstanding Arizona Waters such as Davidson Canyon and Cienega Creek. In particular, the USFS has failed to adequately analyze or assess impacts to springs, seeps, and streams from small changes in groundwater levels to regional aquifers that may impact Cienega Creek and Davidson Canyon, two Outstanding Arizona Waters.

Suggested Remedies: The USFS should conduct more extensive and complete groundwater flow modeling and revise its analysis of these impacts. Additional groundwater modeling should be performed by a more independent and more objective technical consultant who has no contractual ties to the proponents of the Rosemont Copper Project, such as the U.S. Geological Survey (USGS), which has extensive experience in constructing large scale groundwater flow models. Given the permanence of potential impacts on the regional aquifer from the Rosemont Copper Project, the potential risk of groundwater drawdowns on downstream Outstanding Arizona Waters, and the potential impacts on individual well owners, the USFS should conduct additional groundwater flow modeling by a technical consultant like the USGS whose scientific credentials and objectivity would not be subject to challenge. The agency must provide this information in a revised DEIS that is released for public review and

comment.

2. The FEIS fails to adequately analyze impacts to springs and fails to consider adequate mitigation for those impacts.

In our previous comments we stated, "Springs and seeps are important features in this arid landscape and as such should be protected from impacts of the mine. In [the DEIS] the connection between springs and the aquifer is downplayed and an unproven assumption is inserted into the discussion that the springs in the area are fed by ephemeral storm flows stored subsurface. Many of the spring sites were not actually visited … and this assumption is unfounded and not supported. The EIS should include adequate analysis of all 132 springs that may be affected. …We contend that without extensive investigations into spring sites that many conclusions of no impacts because of a spring being non-perennial or fed by subsurface flows are erroneous." (SSSR et al. Appendix A at 13.)

Because of the deficiencies in the DEIS analysis we pointed out that "A full on-site analysis of all the potentially affected springs/seeps in the region must be completed" and that, for the analysis to be adequate, "at least Level Two Springs Assessments (Lawrence, et al. 2011) should be conducted on all 132 springs and more detailed geological and hydrological investigations be undertaken at the 63 spring with major impacts." (SSSR et al. at 48; Appendix A at 13.)

In response the FEIS states, "information from additional field investigations conducted since the publication of the DEIS has allowed the seeps and springs inventory to be revised. This has reduced the uncertainty associated with the analysis of expected impacts to seeps and springs." (FEIS at 486.) The FEIS describes these additional field investigations as "field surveys of 104 springs identified within the analysis area, including all springs analyzed in the DEIS" to be performed by private consultant WestLand Resources Inc." (*Id.*)

The FEIS also states, "One additional monitoring measure has been incorporated into the mitigation and monitoring plan to address uncertainty associated with impacts to seeps and springs (see appendix B for full details)." (*Id.*) The FEIS describes this measure as follows: "A suite of 25 seeps and springs has been monitored for baseline conditions since 2007 and would continue to be monitored to identify any impacts that may occur due to dewatering of the regional aquifer in the vicinity of the mine pit. Rosemont Copper has committed to enhancing or replacing up to 30 water sources to offset potential impacts to surface waters (see FS-BR-05), and the performance and success of these waters would be monitored, as well." (FEIS Appendix B at B-29.) Regarding funding, the FEIS says, "The Ciénega Creek Watershed Conservation Fund (FS-BR-16) could be used for monitoring of success of replacement or enhanced water features." (FEIS Appendix B at B-26.)

The FEIS still fails to adequately assess all potentially impacted springs, and fails to use the latest protocols for spring ecological assessments in the analysis it does provide. Further, the mitigation measures offered to offset impacts to springs are not robust, lacking clear timelines for implementation, defined temporal or spatial scales, and clear protocols. Additionally, some of the mitigation measures incorrectly identify the Ciénega Creek Watershed Conservation Fund as a source of funding for monitoring when it is expressly not an appropriate source of such funding. For example, according to the FEIS, "The Ciénega Creek Watershed Conservation Fund (FS-BR-16) could be used for <u>monitoring</u> of success of replacement or enhanced water features." (FEIS Appendix B at B-29; emphasis added.) However, the FEIS

explicitly states that Watershed Conservation Fund "[m]onies would be spent for on-the-ground restoration, rather than inventory, monitoring, and research." (FEIS Appendix B at B-43; emphasis added.).

Suggested Remedies: The USFS must provide an assessment of all the springs in the analysis area using Spring Ecosystem Assessment Protocol Levels I and II. The agency should consult with experts to determine potential impacts to springs, as well as to develop measures that could be taken to avoid, minimize, and mitigate those impacts. In light of the importance of these resources, the agency should require more robust mitigation measures, and should include springs in the "Rosemont Water Enhancement and Mitigation Plan." Finally, the agency must ensure that there is adequate funding for all proposed mitigation and monitoring activities, and must remove any references or reliance on the Ciénega Creek Watershed Conservation Fund, which expressly does not provide funding for monitoring. This information must be included in a revised DEIS that is made available for public review and comment.

3. The FEIS fails to adequately consider impacts to wetlands and fails to consider adequate mitigation for those impacts.

The FEIS states, "The BLM has also conducted wetland inventories within the Las Cienegas National Conservation Area and has identified more than 30 perennial or seasonal wetlands. Most of these occur on the Cienega Creek flood plain immediately upstream and downstream of the confluence with Empire Gulch, including named wetland complexes such as Cieneguita Wetland, Spring Water Wetland, and Cinco Ponds Wetland. Another complex, the Cold Spring Wetland, occurs upstream of the Mattie Canyon confluence on Cienega Creek. These wetland complexes all occur within the hydroriparian habitat mapped by Pima County along Cienega Creek (see figure 68). Impacts to these wetland complexes are not analyzed individually but are assumed to be part of the analysis of impacts to stream flow and riparian vegetation." (FEIS at 496.)

We object to the USFS simply assuming that impacts to wetlands are "part of the analysis of impacts to stream flow and riparian vegetation." (*Id.*) The agency fails to provide any discussion of impacts to these important landscape features. Impacts to individual wetlands must be fully analyzed and the agency must discuss reasonably mitigation measures for those impacts.

Suggested Remedies: The USFS must fully analyze impacts to individual wetlands and must discuss reasonable mitigation measures for those impacts, rather than simply "assume" that these impacts are somehow covered by other sections of the analysis. The agency must provide this information in a revised DEIS that is available for public review and comment.

WILDERNESS

1. The FEIS fails to adequately analyze impacts to designated Wilderness and Inventoried Roadless Areas, and fails to discuss reasonable mitigation for those impacts.

We provided previous comments regarding this projects' likely detrimental impacts to nearby designated Wilderness and the visitor experience in those areas, and noted that the DEIS provided an inadequate analysis of these impacts. We stated, "the proposed copper mine is

detrimental to the wilderness area and of the experience therein. A revised or supplemental DEIS should make this clear." (SSSR et al. at 81.)

Regarding impacts to Wilderness areas, the FEIS states "There would be no direct impacts to designated wilderness or roadless areas as a result of any of the action alternatives. Visitors to the Mount Wrightson Wilderness, Santa Rita Inventoried Roadless Area, and Saguaro Wilderness would have distant views of the Rosemont Copper Mine from trails and overlooks. The most affected views would be from the several trails that provide access to the Mount Wrightson summit and would afford direct, superior (from above oriented downward) and unadulterated views of the mine and associated facilities. These trails include Old Baldy Trail and Super Trail. However, a limited number of viewers make the trek to the summit of Mount Wrightson, as it is a challenging climb and is icy and dangerous in the winter months." (FEIS at 855-856.) The FEIS describes that noise from mine operations would not reach designated wilderness or roadless areas, and states, "Views of the Rosemont Copper Mine would contribute to a slightly more diminished sense of solitude and primitive setting for some wilderness visitors (see the "Visual Resources" resource section). However, due to the distance of designated wilderness from active mining (at least 4 miles or more away), the degree of impact to the solitary experience would be minimal." (*Id.*)

We object to the agency's assertion in the FEIS that there will be no direct impacts to designated Wilderness or roadless areas, and the implication that the indirect impacts are negligible. The 6,077-acre Santa Rita Inventoried Roadless Area is adjacent to the mine site, and the Mt. Wrightston Wilderness is within 8 miles. We also disagree with the agency's dismissal of the detrimental impacts this mine will have on the Wilderness visitor's experience simply because only "a limited number of viewers make the trek to the summit of Mount Wrightson, as it is a challenging climb and is icy and dangerous in the winter months." (*Id.*) This greatly diminishes the importance of designated Wilderness as expressed in the letter and spirit of the Wilderness Act. Finally, the FEIS fails to provide meaningful discussion of measures that would mitigate impacts to designated Wilderness, and it fails to acknowledge the potential for additional designated Wilderness in the Whetstone Mountains, what the impacts to that proposal might be, or discuss any mitigation for those impacts.

Suggested Remedies: The agency must adequately analyze and describe the impacts to designated Wilderness, Inventoried Roadless Areas, and other potential Wilderness areas. The agency must also propose additional mitigation for visual impacts mitigation that considers from both the existing Mt. Wrightston Wilderness and proposed Wilderness in the Whetstone Mountains. Such mitigation could include a Wilderness quality protection, restoration and management fund; and providing monetary and legislative support the designation of additional Wilderness on the Coronado National Forest.

CLIMATE CHANGE

1. FEIS fails to analyze the cumulative effects of climate change and mining operations on soils.

We previously commented on the DEIS that the ongoing and projected climate changes compound the effects of other factors on soil resources and increase the need for watershed treatments to restore degraded soils. (SSSR et al. at 18-20; *See also* Appendix A.) We stated, "The USFS recognizes that forest management and watershed function depend on

productive, porous soils. Ongoing and projected climate changes compound the effects of other factors on soil resources and increase the need for watershed treatments to restore degraded soils and stabilize sites at increased risk of erosion, loss of porosity, and loss of soil organic matter. The agency needs to consider the ongoing and projected climate changes in their analysis of impacts to soils." We asked for a revised or supplemental DEIS to analyze how these changes will affect surface water and groundwater, habitat, dust–indeed, the entire ecosystem in which these proposed mining operations would take place. (*Id.*) We also asked for further detail on how sediment control structures and other best management practices take into account the fact that flood severity is expected to increase in much of the southwest. (*Id.*)

The USFS did not adequately respond to these comments in the FEIS. The FEIS includes one paragraph at the end of the "Soils and Revegetation" section that addresses climate change and by stating revegetation will be monitored for effects of climate change and that climate change could affect the success of revegetation. (FEIS at 218.) This does not offer any further analysis of the actual effects of climate change on revegetation. It also does not address an actual effects analysis of climate change on watershed function, interaction with current uses, increased risk of erosion, stability of tailings and waste rock facilities, sediment delivery to Davidson Canyon, Cienega Creek and other streams and washes, and soil productivity.

Recent warming in the southwest is the most rapid in the Nation and significantly more than global averages in some areas. The average temperature in the southwest is projected to rise by 2.5 to 5.5 degrees Fahrenheit by 2050. (Karl, T. R., J. M. Melillo, and T. C. Peterson (eds.). 2009. *Global Climate Change Impacts in the United States*, Cambridge University Press.) Flood severity is expected to increase in much of the West because increased interannual variability in precipitation will cause increased runoff in wet years and increased rain-on-snow probability in low-elevation snowpacks. (*Id.*) In Arizona, winter precipitation is already becoming more variable with a trend toward both more frequent extremely dry and extremely wet winters. (*Id.*)

On the global and national scale, precipitation patterns are shifting with more rain falling in heavy downpours that increase the risk of flooding. Rapid landscape transition such as that which will result from the proposed Preferred Alternative and the Proposed Action, will reduce flood-buffering capacity of the landscape and exacerbate the risk of damaging flooding. The effects of climate change will not play out on pristine systems but will interact with existing stressors on the landscape and will generally exacerbate impacts to natural resources and reduce effectiveness of mitigation and reclamation that is designed without taking climate change impacts into consideration.

Yet there is no analysis provided regarding why tailings and waste rock will remain stable in the face of increasingly intense and potentially unpredictable precipitation events. There is also no analysis of how stormwater collection at tailings facilities has taken into account and planned for the potential for heavy precipitation and larger and more severe flooding events. There is no analysis of how this will affect stability of pit walls. Climate change and the issues of precipitation intensity is not even mentioned in the section on sediment delivery.

Suggested Remedies: The USFS should address this comment by providing an actual analysis of how predicted climate change will interact with other factors to affect revegetation efforts, how climate change will interact with current conditions to effect watershed health and erosion

and soil productivity, long-term stability of tailings and waste rock facilities and sediment delivery to Davidson Canyon, Cienega Creek, or other streams and washes, compared with background sediment loading. This analysis should incorporate the most up to date information on projected temperature and precipitation changes from the IPCC Working Group 1 Summary for Policy Makers. (IPCC, 2013: *Summary for Policymakers*. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* [Stocker,T.F., D. Qin, G.-K. Plattner, M. Tignor, S. K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.) Further detail needs to be provided on what best practices may be implemented, how it will be determined when these practices are needed and how sediment control structures and other best management practices take into account the fact that flood severity is expected to increase in much of the southwest. (Karl, T. R., J. M. Melillo, and T. C. Peterson (eds.). 2009. *Global Climate Change Impacts in the United States*. Cambridge University Press.)

The agency must analyze the interacting factors of increasing temperatures particularly including increasing daytime high temperatures, changes in timing and intensity of precipitation and increasing soil aridity due to climate change when analyzing the impacts of lost soil and lost soil productivity on reclamation and revegetation activities. These factors will interact with changes to the soil, such as compaction and contamination to create more difficult growing conditions.

The agency must provide this information in a revised DEIS that is released for public review and comment.

2. The FEIS fails to analyze the effects of emissions resulting from impacts on carbon sinks such as forests and soils.

We previously commented that the DEIS should address emissions resulting form impacts on carbon sinks such as soils and forests, in addition to impacts on emissions from the mining process. (SSSR et al. at 18-20; *See also* Appendix A.)

The USFS did not respond to this comment in the FEIS. The "Air Quality and Climate Change" section contains no mention of carbon sinks nor does Appendix G, where the USFS responses to public comments are allegedly located.

Suggested Remedies: The USFS should provide an actual analysis of how destruction of the habitat in the proposed Rosemont mine footprint will affect carbon sinks such as forests and soils and include this information in a revised DEIS that is available for public review and comment.

3. The FEIS fails to analyze the cumulative effects of climate change and mining operations on air quality.

We previously commented that the air quality impacts analyses should address the impacts of climate change including increased extreme weather events, greater temperature variations and water shortages. (SSSR et al. at 20; *See also* Appendix A.) The USFS failed to respond to this comment in the FEIS.

Suggested Remedies: The USFS should address how climate change contributes to cumulative effects on air quality by providing an actual analysis of these effects and including this

information in a revised DEIS that is released for public review and comment.

4. The FEIS fails to analyze the cumulative effects of climate change and mining operations on public health and safety.

We previously commented that the DEIS failed to take into account the increased intensity of storms and wind, and therefore, increased emissions of particulate matter due to climate changes. (SSSR et al. at 20; *See also* Appendix A.)

The USFS did not adequately respond to this comment in the FEIS. It simply states that climate change will have no effect on public health and safety. As much as rising temperatures and increased aridity are expected to effect ecosystems, they are also expected to effect human health.

Suggested Remedies: The USFS should address how climate change contributes to cumulative effects on public health and safety and provide this information in a revised DEIS that is released for public review and comment.

5. The FEIS fails to adequately analyze the effects of climate change on groundwater and surface water quality due to seepage.

We previously commented that the DEIS does not define the "normal climatic conditions" under which the potential for seepage from waste rock storage could occur. (SSSR et al. at 37; *See also* Appendix A.) We also commented that the DEIS does not quantify the quantity of runoff expected to be produced by the "100-year, 24-hour storm event" and that such an event should adequately represent modeled potential precipitation events due to climate change. (*Id.*)

The USFS did not adequately respond to this comment in the FEIS. There is still no explanation of "normal climatic conditions" and no analysis of the effects of climate change on seepage which will subsequently effect ground and surface water. There is no indication that the analysis included climate change considerations. Adding the word "climate" to the discussion of the scenarios is not sufficient.

Suggested Remedies: The USFS should address how climate change and resulting changes in intensity and timing of precipitation events may affect seepage and provide this information in a revised DEIS that is released for public review and comment.

6. The FEIS inadequately characterizes the blast process for ore release and fails to accurately analyze the impact of blasting on climate change.

The FEIS states that, "The potential for the presence of residue from the use of nitrogen-based explosives has been well documented in the literature (Ferguson and Leask 1988; Forsyth et al. n.d. [1995]; Morin and Hutt 2009; Pommen 1983; Revey 1996). The explosive reaction that occurs involving ammonium nitrate and fuel oil ideally generates only water, carbon dioxide gas, nitrogen gas, and heat. It is the rapid release and expansion of these gases that creates the explosive power of the mixture. However, the reaction is seldom completely efficient, and nitrogen can remain as a residue in waste rock and in the blast zone." (FEIS at 384.) This is new information in the FEIS not previously subject to public comment.

First, because the reaction is not "ideal" and is not "completely efficient" the blast products include carbon monoxide, methane and ammonia, three products not mentioned in the FEIS.

The emissions inventory submitted by Rosemont to ADEQ as part of its documentation for the air quality permit listed the carbon monoxide and methane, but did not mention ammonia.

Second, the FEIS does not address the consequences of the "efficiency" of the blast process with respect to the production by chemical reaction in the blast of toxic and hazardous air pollutants. The Second Law of Thermodynamics limits the efficiencies of the blast process, often to a range of 30-60% because of the temperatures at which the blast occurs. Because of this inefficiency, the blast products include carbon monoxide and methane which can further react with ore constituents to generate toxic and hazardous air pollutants. Among them are the previously mentioned gaseous pollutants phosphene and arsene. The heat produced by the blast provides energy to overcome any chemical kinetic and energy barriers to these reactions. The amounts of carbon monoxide and methane released that can react with ore constituents in the blast far exceed the stoichiometric amounts needed to generate exceedances of the toxic substances air pollutant emissions produced from chemical reactions under Section 112 of the Clean Air Act of 10tpy of a single hazardous air pollutants and 25tpy of a combination of them.

Third, carbon dioxide, methane and nitrous oxide are greenhouse gases. While the amounts of carbon dioxide generated overwhelm mass-wise the other two, the FEIS should have acknowledged that their small amounts are not unimportant in spite of the order of magnitude argument being made in the FEIS.

Fourth, production of neutral nitrogen gas is the product least favored thermodynamically in the blast reactions. In fact, it is almost safe to assume that so little nitrogen gas is produced by the use of AMFO that the formation of this product is negligible, and thus all nitrogen products are compounds like nitrous oxide, ammonia, nitrogen dioxide, and are technically "residues" as used in the FEIS. The release of ammonia is also significant with respect to stream chemistry and toxicity to plants and aquatic organisms.

Fifth, several of the cited references refer to coal mines, and copper ore and coal are not comparable chemical materials. The discussions of calculations based on EPA manual AP-42 must be evaluated in the context of the actual materials being exploited rather than depending on the reference exclusively for default positions.

Suggested Remedies: The USFS must prepare a revised DEIS that assesses the blast process for ore release and its implications for climate change, as well as the release of toxic and hazardous air pollutants resulting from the blast, and provide this information in a revised DEIS that is made available for public comment and review.

DARK SKIES

1. The FEIS fails to adequately analyze the impacts of night lighting or provide adequate mitigation for those impacts.

In our previous comments we stated that the DEIS failed to provide an adequate analysis of the impacts of night lighting and said that "the CNF (and SWCA) needs to either conduct night lighting testing at the proposed site and report the results accordingly, or provide some form of pictorial visual simulation. It is insufficient to merely describe the fact that there will be night illumination." (SSSR et al. Appendix A at 51.)

We also noted that the DEIS failed to determine mitigation measures to reduce sky glow and regional pollution due to the applicability of Mine Safety and Health Administration requirements and nighttime mine operational needs. (SSSR et al. Appendix A at 40.) We stated, "If the effect of the mitigation measures 'cannot be determined' because of lighting requirements from the Mine Safety and Health Administration, then those requirements need to be a part of the DEIS." (*Id.*)

Our previous comments also pointed out that while the DEIS mentioned the adverse impacts to the world-class astronomy research facilities located nearby, it failed to quantify these impacts. (*See* SSSRR et al. Appendix A at 83.) We pointed out that the DEIS analysis did not contain a full analysis of the adverse economic impacts on dark sky observatories in the area, but merely provided aggregate numbers from a 2007 report that does not specifically address this project. (SSSR et al. Appendix A at 87.)

In addition, we noted that the DEIS also failed "to address adverse impacts to landscapes and persons other than CNF lands and visitors. This discussion must be expanded accordingly to address impacts to all lands, all visitors, and all residents within the impacted area." (SSSR Appendix A at 53.)

In response, the USFS states in the FEIS that "[a] number of updates have taken place regarding the impact to night skies and the astronomy industry since the DEIS was released." (FEIS Appendix G #497.) These updates include a revised Lighting Plan from the proponent "as well as applying various lighting mitigation, in order to reduce the amount of lumens produced and thus the impact on night sky brightness. The result is a substantially reduced amount of night brightness from the mine." (*Id.*) Yet all this statement says is that the current plan's negative effects are less than the previous plan's effects. Using an indisputably deficient earlier plan to serve as a benchmark is misleading.

The FEIS also states that "the Socioeconomic analysis has been updated to better address the economic impact of the mine on the astronomy industry in southern Arizona." (*Id.*) According to the FEIS, the Socioeconomic analysis now incorporates "several independent studies to provide a more detailed and accurate estimation of the economic impacts of the Rosemont Copper Project on Pima, Santa Cruz, and Cochise counties. The updated analysis includes estimates of potential impacts to tourism, natural amenities, amenity migration, the astronomy industry, property values, etc." (FEIS at Appendix G #497.)

In response to comments raised during the public comment period for the DEIS, the USFS commissioned BBC Research and Consulting (BBC) to undertake additional economic analysis. (FEIS at Appendix G #703.) With respect to astronomy, both the FEIS and the BBC report provide a general discussion of the socioeconomic impacts of the Rosemont Mining Project on the astronomy industry.

Neither the BBC report nor the FEIS present any specific quantification of the economic impacts to astronomy. The BBC report covers four economic sectors: 1) Nature-based Tourism; 2) Amenity-based Migration; 3) Property Values and Taxation; and 4) Astronomy Industry.
(FEIS at Appendix G, #703; *See also* BBC Research and Consulting, Additional Socioeconomic Evaluations Rosemont Copper Project EIS, May 14, 2013.)

The BBC report does provide specific estimates of economic impacts of the mine on three of the sectors, excluding only astronomy. (BBC Research and Consulting, Additional Socioeconomic Evaluations Rosemont Copper Project EIS, May 14, 2013.) The BBC report does note the competitive climate facing the Fred Lawrence Whipple Observatory (Whipple), saying, "[t]he greater concern, however, is the perception associated with the development of a copper mine in close proximity to the observatory". (BBC Research at 5.) However, BBC suggests that the "perceived" impact of the mine is likely to be as important as any actual physical impact and that the impact cannot be reliably projected. (*Id.*) The BBC report also suggests the possibility of complete shut down of Whipple from "a thousand small cuts". (*Id.*)

Given the current economic significance of Whipple as noted by the BBC report, if the mine were to result in only 5% to 10% adverse economic impacts, it is comparable to the impacts on the other sectors analyzed by BBC. If Whipple were to completely cease operations, the economic impact would surpass the other 3 sectors combined.

The BBC report presents specific estimates of the economic impact of the Rosemont mine on the other three economic sectors, but for the astronomy industry its states that economic impacts risk of the proposed mine "cannot be reliable quantified." (FEIS at 1115.) This is a significant omission given the economic significance of the astronomical research.

The USFS responds that the outdoor lighting plan included in the FEIS "substantially reduced amount of night brightness from the mine." (FEIS at 751.) That statement, however, fails to recognize that this project's potential impact on the night sky will still result in unacceptable significant adverse impacts that are not adequately mitigated. These impacts and socio-economic costs are not adequately reflected in the FEIS.

According to the FEIS, the proposed Rosemont mine will still emit over 6 million lumens and will result in "a 524% increase in sky brightness at horizon." FEIS at 756. Comparing it to the proposed 21 million lumen plan referenced in the DEIS and declaring it an improvement is disingenuous at best. It is important to note that no artificial light is currently emitted from the Rosemont site.

However, the FEIS confusingly says that "the original lighting plan would apply to the proposed action only." (FEIS at 760.)

The FEIS and draft ROD anticipates relaxation of the of the lighting plan requirements at what appears to be the complete and sole discretion of Rosemont Copper. For example the draft ROD says, "the intent is to fully comply with the Pima County Outdoor Lighting Code; however, deviations may be required to comply with Mine Safety and Health Administration (MSHA) regulations. If deviations are required to comply with MSHA regulations, then Rosemont Copper will work to minimize the impact of these deviations." (FEIS Appendix B at B-57.)

Moreover, the revised plan (Monrad et al. 2012b) is inadequate to meet the long-term monitoring required to ensure that light from the proposed Rosemont Mine does not excessively astronomy conducted at Whipple on Mount Hopkins. It fails to address critical issues:

1) The monitoring called for in the plan doesn't direct measurements of sky brightness from

Mount Hopkins;

2) Whipple personnel won't have access to the data and therefore cannot provide an Observatory assessment of the impact;
3) The plan does not provide continuous monitoring. Aside from a 4-week maintenance period in the summer, Whipple operates every night of the year. As a result, it is essential that both occasional and sustained increases in sky brightness are detected by continuous monitoring.
4) The plan relies heavily on the longevity of a single small private contractor, STEM Laboratory, Inc. for data collection for the entire life 25-30 lifespan of the mine. This function would be better handled by Whipple given that significance of sky condition to the function of the observatory instead of a small private sector firm.
5) The plan does not specify criteria for triggering a violation or a protocol for reporting and correction of any violation.
6) A calibration plan was not provided. Calibration is critical to ensuring that changes in sky brightness can be identified.

The FEIS points out that several light pollution mitigation plans have been prepared for the proposed Rosemont mine subsequent to the DEIS; however, the public has not had the opportunity to review and comment on these updated light pollution mitigation plans.

It is estimated that state and federal government have invested more than $40 million in developing these state of the art observatories that are threatened by the potential existence of the mine. In fact, the observatories have noted that "anecdotal evidence" of the mine's potential impact is the fact that none of the $700 million in next generation astronomical research facilities have gone to Arizona astronomy organizations.

Suggested Remedies: The public must have the opportunity to review, analyze and comment on these new lighting plans and light pollution mitigation plans in a revised DEIS, including quantified estimates of the economic impacts of the Rosemont mine on the astronomy industry similar to what has been undertaken for other economic sectors.

The USFS should require direct measurements of sky brightness from Mount Hopkins; provide Whipple personnel access to the monitoring data; provide continuous monitoring of sky brightness; allow Whipple staff to be responsible for data collection particularly as it relates to Whipple; specify criteria for triggering a violation, provide a protocol for reporting and correction of any violation; and include calibration plan so that changes in sky brightness can be identified.

The revised DEIS must clarify that the new light pollution mitigation plan (Monrad et al. 2012b) applies to the proposed action, and must include language indicating that in the event deviations in the light pollution mitigation plan are needed to accommodate MSHA regulations, those changes would only be implemented after consultation with affected stakeholders including the Whipple Observatory and the USFS. Additionally, the public should be given the opportunity to comment on these changes. Finally, the revised DEIS must disclose that the project's potential impact on the night sky will result in unacceptable significant adverse impacts that are not adequately mitigated.

The agency must provide this information in a revised DEIS that is released for public review and comment.

The USFS Provides An Inadequate Statement Of Purpose And Need.

As our previous comments stated, the DEIS's, and now FEIS's, articulation of purpose and need is far too narrow to suffice as an adequate purpose and need statement for the public's review and comment. The statement that the USFS is required to "process Rosemont Copper's MPO," FEIS at ix,reduces the purpose and need to a description of the administrative responsibilities of the agency.

This articulation fails to describe the purpose and need of the actual proposed project here in southern Arizona. First, as discussed in detail herein, the FEIS and Draft RODneed to be revised or supplemented to determine whether Rosemont's claims are valid under existing law. If and when that threshold determination is made, a new purpose and need discussion should include an analysis of how the development of these copper deposits contributes to a need for copper in the United States, especially in light of publicly available information stating that a significant percentage of the copper concentrates is already committed to overseas investors. In light of that fact, the FEIS should also discuss whether development of these copper deposits now, if they are determined to be valid, contribute to the development of minerals in southern Arizona or whether they are best left in reserve for domestic use.

While the FEIS acknowledges that, on the one hand, part of the goal of the CNF's management plan is to "support environmentally sound . . . mineral development and reclamation" and that, on the other hand, this particular proposed mine would be inconsistent with numerous, important aspects of the forest plan, the purpose and need statement fails to make any judgment on the dichotomy between these two statements. Instead, the text jumps to the procedural "fix" of amending the Forest Plan without credible analysis as whether the purpose and need of the project warrants such a significant amendment to the Forest Plan. To credibly evaluate the purpose and need for this project and associated features of it, the entire section needs to be rewritten following determination of the legal status of Rosemont's claims.

Also, as noted herein, the FEIS and Draft ROD fundamentally misconstrues the USFS's authority over mining and illegally abdicates its authority over Rosemont's operations and its impacts. As such, the "purpose and need" does not adequately comply with NEPA.

Under NEPA, "an agency cannot restrict its analysis to those 'alternative means by which a particular applicant can reach his goals,'[...] requiring instead that agencies have 'the duty under NEPA to exercise a degree of skepticism in dealing with self-serving statements from a prime beneficiary of the project.'" Simmons v. United States Army Corps of Eng'rs, 120 F.3d 664, 669 (7th Cir. Ill. 1997). "One obvious way for an agency to slip past the structures of NEPA is to contrive a purpose so slender as to define competing 'reasonable alternatives' out of consideration (and even out of existence)." *Id.* at 666, quoted by Davis v. Mineta, 302 F.3d 1104, 1119 (10th Cir. 2002). An unlawfully stated purpose and need is a NEPA violation independent of the other violations that may flow from a contrived purpose. Id.

According to the FEIS, the USFS is merely responding to the applicant's request for PoO approval for the Rosemont Project and presumes it can adhere to the limited scope of

analysis conducted by the third-party NEPA contractor. Yet, as detailed herein, federal agencies cannot operate with such blinders on, and must instead exercise skepticism regarding statements of the project proponent, particularly where a third-party contractor prepares the NEPA document. Here, even a cursory review of published documents reveal that Augusta/Rosemont's true purpose and need is to gain federal approval of a mine complex to produce salable copper (and other minerals) concentrate for the commercial market. As such, extracting federal minerals for production and sale in the global marketplace is the underlying "purpose and need" for this privately promoted project.

The USFS Provides An Inadequate Identification And Analysis Of Alternatives.

As noted in the January 27, 2012 comments, the DEIS, and now the FEIS as noted herein, fails to fully review all reasonable alternatives. NEPA requires the agency to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. § 4332(E); *see also* 40 C.F.R. § 1508.9(b). It must "rigorously explore and objectively evaluate all reasonable alternatives" to the proposed action. 40 CFR § 1502.14(a). *See* City of Tenakee Springs v. Clough, 915 F.2d 1308, 1310 (9th Cir. 1990); Center for Biological Diversity v. Nat'l Hwy Traffic Safety Admin., 538 F.3d 1172, 1217 (9th Cir. 2008). The FEIS failed to adequately respond to, and failed to correct the legal and factual errors noted within, the January 27, 2012 comments, at pp. 8-13 (incorporated by reference herein).

In addition, the FEIS failed to fully review the reasonable alternatives noted herein. For example, the FEIS failed to analyze the alternative of imposing the mitigation measures discussed herein to prevent or minimize adverse environmental impacts. These include, but are not limited to, measures such as pumping/treating to prevent the formation of the contaminated pit lake, otherwise treating the pit lake to avoid the contamination, Project configuration and oversight that would comply with all laws as noted herein, and other alternative Project operations noted herein.

Also as noted in our January 27, 2012 comments and herein, the DEIS and now FEIS and Draft ROD fail to properly analyze and consider the no-action alternative, as the USFS incorrectly viewed its authorities over mining as noted herein.

The USFS Fails To Obtain Adequate Baseline Information.

As noted herein, the FEIS defers the gathering of critical baseline data and information until after the ROD is issued and long-after the close of the public NEPA process – in violation of NEPA. For example, for the consideration of groundwater impacts, the FEIS admits that critical baseline information has yet to be obtained:

> The Coronado has provided Rosemont Copper with a potential list of monitoring wells, piezometers, and boreholes that may be able to be sampled. Rosemont Copper would conduct field investigations to determine the ability to collect applicable and pertinent water samples from these locations, and based on these results, the Coronado would determine a final monitoring list. The final monitoring list must have appropriate geographic coverage sufficient to monitor changes in the quality of Coronado National

> Forest groundwater resources. **The Coronado would coordinate with Rosemont Copper to produce a detailed sampling plan, including**: (1) quality assurance protocol, (2) sampling protocol, (3) detailed analyte list, (4) sampling frequency and criteria for future reduction or modification of sampling frequency, (5) **criteria for defining baseline or ambient groundwater quality,** (6) definition of non-regulatory water quality thresholds with which to compare results, (7) reporting requirements, (8) protocol to be followed in the event that a water quality threshold is exceeded (i.e., increased sampling frequency, other investigative approaches, or remedial action), (9) criteria for determining conclusion of monitoring, and (10) a procedure for reviewing and requesting changes to the level of monitoring.
>
> **Effectiveness:** Rosemont Copper would conduct groundwater sampling at the specified wells and springs. Samples would only be required from flowing springs and from wells able to be sampled (i.e., not dry, obstructed, etc.). Frequency would be determined in detailed sampling plan. A likely scenario would be to require quarterly sampling **to establish baseline or ambient groundwater quality**, which would also take into account existing water quality samples already collected by Rosemont Copper, followed by annual sampling at wells and semiannual sampling at springs, unless major changes in water quality occur associated with observed water table drawdown or reduced flow in springs. Specific analytes would be determined in the detailed sampling plan but in general would include metals and inorganic analytes. Rosemont Copper would report results of sampling annually to the Coronado as a part of the annual reporting.

FEIS at Appendix B-18 (emphasis added). *See also, e.g.,* discussion herein on lack of complete baseline analysis for wildlife, surface and ground water quality and quantity, air quality, etc..

By delaying the collection of information needed to "establish baseline or ambient groundwater quality," the agency violates NEPA. Under NEPA, the USFS must "describe the environment of the areas to be affected or created by the alternatives under consideration." 40 C.F.R. § 1502.15. "Without establishing the baseline conditions . . . there is simply no way to determine what effect the [action] will have on the environment, and consequently, no way to comply with NEPA." Half Moon Bay Fisherman's Mktg. Ass'n v. Carlucci, 857 F.2d 505, 510 (9th Cir. 1988). "In analyzing the affected environment, NEPA requires the agency to set forth the baseline conditions." Western Watersheds Project v. BLM, 552 F. Supp. 2d 1113, 1126 (D. Nev. 2008). The lack of an adequate baseline analysis fatally flaws an EIS. "[O]nce a project begins, the pre-project environment becomes a thing of the past and evaluation of the project's effect becomes simply impossible." Northern Plains, 668 F.3d at 1083. "[W]ithout [baseline] data, an agency cannot carefully consider information about significant environment impacts. Thus, the agency fail[s] to consider an important aspect of the problem, resulting in an arbitrary and capricious decision." Id. at 1085.

In Idaho Conservation League, 2012 WL 3758161 (D. Idaho 2012), the Idaho district court concluded that the Forest Service acted arbitrarily and capriciously by authorizing exploratory hardrock mineral drilling without adequately analyzing the baseline groundwater and hydrology. Id. at *17. Such analysis should include "a baseline hydrogeologic study to examine the existing density and extent of bedrock fractures, the hydraulic conductivity of the local geologic formations, and [measures of] the local groundwater levels to estimate

groundwater flow directions." Idaho Conservation League, 2012 WL 3758161, at *16. The court in Shoshone-Bannock Tribes of Fort Hall Reservation v. U.S. Dept. of Interior, 2011 WL 1743656, at *10 (D. Idaho 2011), reached a similar conclusion. There, the impact of a new mine waste dump was "highly uncertain" because BLM permitted it without studying groundwater "flows and potential contamination," even though there was evidence indicating the possibility of groundwater impacts. Id.

"NEPA requires that the agency provide the data on which it bases its environmental analysis. Such analyses must occur *before the proposed action is approved*, not afterward." Northern Plains, 668 F.3d at 1083 (emphasis added) (internal citations omitted) (concluding that an agency's "plans to conduct surveys and studies as part of its post-approval mitigation measures," in the absence of baseline data, indicate failure to take the requisite "hard look" at environmental impacts).

In addition, without a complete baseline analysis, it is impossible for the agency to gauge the effectiveness of any mitigation measure. For example, because the groundwater sampling plan has yet to be submitted, and is relied upon by the FEIS as part of the mitigation plan, the public has been precluded from commenting and thus has no way to ascertain the effectiveness of the plan.

Further, the lack of a complete baseline analysis for all potentially affected resources violates the NEPA requirement that all essential information be obtained during the public NEPA process. *See* 40 CFR § 1502.22. "If there is 'essential' information at the plan- or site-specific development and production stage, [the agency] will be required to perform the analysis under § 1502.22(b)." Native Village of Point Hope v. Jewell, --- F.3d ----, 2014 WL 223716, *7 (9th Cir. 2014).

Thus the admitted lack of a complete baseline analysis fatally flaws the FEIS. As such, the FEIS must be remanded to the Coronado to prepare a revised/supplemental Draft EIS subject to full public review that contains the required information. No ROD can be finalized or issued until such compliance is obtained.

V. CONCLUSION

In conclusion, as detailed above, the FEIS and Draft ROD fail to fully comply with numerous federal and state laws, regulations, policies and other requirements. As such, the Regional Forester must remand both documents to the Coronado National Forest to correct all errors noted herein. At a minimum, a revised Draft or Supplemental Draft EIS must be prepared. The USFS cannot approve any of the action alternatives described in the FEIS (including the proposed Barrel Alternative), or any alternative at all that Augusta/Rosemont may propose, unless and until all laws, etc., noted herein are satisfied.

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