Rosemont Copper Mine

Objection Review

Objection # (s): 0011-CKestler; 0048-RBarthelson; 0117-CienegaWatershedPartnership

Resource Area(s): Climate Change – General (CC-1)

Objection Issue:

- 0048-2: A more critical consideration of the impacts of climate change and the attendant drought and higher temperatures would bring the realization that surface water flows of any amount may be critical to the survival of species suffering the loss of viable habitat.
- 0011-10: Many of the negative impacts will be exacerbated by mega drought, increased storm intensity and other impacts resulting from ongoing climate change.
- 0117-7: Climate change impacts did not receive sufficiently analysis.

Remedy Supplied by Objector (if any):

0011-10: Deny Rosemont Copper's permit application.

0117-7: Prepare a comprehensive mitigation and monitoring plan that includes elements identified by EPA, ACOE, and PAG regarding monitoring for evapo-transpiration.

Law, Regulation and/or Policy: Council on Environmental Quality (CEQ) Regulations at 40 CFR 1500-1508; Executive Order 13514

Review Team Member Response:

Climate change in the Southwest is predicted to bring higher mean annual temperatures over the next 100 years, along with less winter precipitation, an increase in extreme rainstorms and flooding; and longer periods in drought. The extent to which these predictions will occur is uncertain [PR 047511_3, p. 437] and the overall precipitation is difficult to quantify. Predicted changes in weather patterns could have an effect on the quantity of storm water that is stored at the surface and is available for beneficial use. A decrease in winter rainfall would mean a decrease in the volume of surface water flow and resulting surface water storage. However, it is possible an increase in more extreme rainstorms would create higher volumes of surface flow passing through the ephemeral channels in a shorter period of time, thus limiting the occurrences of low, steady flows that would be more conducive to surface storage. Potentially, higher temperatures and longer periods of drought, ephemeral surface water would be more likely to evaporate and dry up faster [PR 047511_3, p. 439].

The impacts of climate change (i.e., increased annual temperature, decrease precipitation, increased drought, and increased evapotranspiration) are a threat to many species [PR 047511_4, p. 713]. Climate change trends are likely to continue and the impacts on species will likely be

complicated by interactions with other factors (e.g., interactions with nonnative species and disease). A number of mitigation measures and monitoring activities have been developed to avoid or reduce impacts to native biological plant communities, wildlife habitat, and wildlife species from the construction and operations of the proposed mine and connected actions [PR 047511_4, p. 713].

The June 2012 Biological Assessment contains a detailed discussion of the likely effects of climate change [PR 047511_7, p. 258]. There is high confidence the Southwest will experience exceptional, decades-long droughts, and they will be hotter than historical droughts. To maintain the present water balance with warmer temperatures and all other biotic and abiotic factors constant, precipitation will need to increase to keep pace with the increased evaporation and transpiration caused by warmer temperatures. Extreme events such as drought, fires, and floods are predicted to occur more frequently because of climate change. It is anticipated that an increase in extreme events will most likely affect populations living at the edge of their physiological tolerances. The predicted increases in extreme temperature and precipitation events may lead to dramatic changes in the distribution of species or to their extirpation or extinction [PR 047511_7, p. 259]. The most at-risk group of threatened, endangered and sensitive species on the Coronado National Forest are those associated with aquatic environments. Although there are many threats that affect aquatic organisms, climate change has been shown to be a causative agent in population declines [PR 047511_7, p. 262].

Anticipated changes in the climate of southern Arizona are not expected to contribute to or compound any effects on public health and safety associated with the mine and associated activities [PR 047511_4, p. 1011].

Mitigation measures that address climate change (greenhouse gasses) are described in FEIS Appendix B [PR 045711_6], and include OA-AQ-08 (p. B-81); OA-AQ-09 (p. B-81 - B-82); and RC-AQ-01 (p. B-91).

Recommended Remedy by Review Team Member (if any): The remedies suggested by the objectors are not warranted. No remedy is required.

Review Team Member: Wayne Robbie, Ecosystem Analysis and Planning/Watershed & Air

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Objection Review

Objection # (s): 0084-SSSR

Resource Area(s): Climate Change – Effects (CC-5)

Objection Issue:

- 0084-108: FEIS fails to analyze the cumulative effects of climate change and mining operations on soils.

Remedy Supplied by Objector (if any):

0084-108: Address this comment by providing an actual analysis of how predicted climate change will interact with other factors to affect vegetation 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.

Law, Regulation and/or Policy: Council on Environmental Quality (CEQ) Regulations at 40 CFR 1500-1508; Executive Order 13514

Review Team Member Response:

The discussion in regards to the cumulative effect of climate change on soils is well documented in the FEIS [PR 047511_3, pp. 214-216]. The analysis clearly discloses that climate change could have an effect on the revegetation success rate and ultimately long-term soil stability. It is recognized that revegetation could become more difficult due to the potential for more variable temperatures and precipitation. However, it generally understood that some climate change prediction models have conflicting results as to whether the Southwest will be warmer and/or wetter in the future.

Revegetated sites would be compared with reference sites, and these comparisons would be used to monitor the effects of climate change on disturbed and undisturbed sites. This would allow for adjustments in species composition based upon the monitoring results. It is assumed that the initial revegetation will be successful. However, the effects of climate change could increase the vulnerability of vegetation cover on the site after successful revegetation has been accomplished. Revegetation success would be monitored and compared to reference sites. Seed mixture, soil preparation, and planting procedures could be modified using the monitoring results to respond to changing climate conditions [PR 047511_3, p. 214].

Recommended Remedy by Review Team Member (if any): The remedy suggested by the objector is not warranted. No remedy is required.

Review Team Member: Wayne Robbie, Ecosystem Analysis and Planning/Watershed & Air