

**Resolution Copper Project and Land Exchange  
Environmental Impact Statement**

USDA Forest Service  
Tonto National Forest  
Arizona

April 11, 2018

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# **Process Memorandum to File**

## **Selection of Appropriate Baseline Conditions for NEPA Analysis**

This document is deliberative and is prepared by the third-party contractor in compliance with the National Environmental Policy Act and other laws, regulations, and policies to document ongoing process and analysis steps. This document does not take the place of any Line Officer's decision space related to this project.

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## Purpose of Process Memorandum

The purpose of this process memorandum is to:

- Summarize available guidance regarding the selection of appropriate baseline conditions against which Resolution Copper Project and Land Exchange (project) impacts will be compared; and
- Where necessary, document the rationale for selecting baseline conditions for specific resources. In particular, the Tonto National Forest received two differing suggestions on how to define baseline conditions for groundwater resources, and this memorandum discusses the appropriateness of each possible approach.

The environmental impact statement (EIS) contains predictions of how the Proposed Action or alternatives would affect resources, such as wildlife, groundwater, or socioeconomic conditions. These predicted impacts must be compared to some baseline condition in order to have context. As a specific example, the groundwater modeling predicts the groundwater elevation at Walker Spring would be 2,524 feet above mean sea level (amsl) after 200 years. This prediction is relatively meaningless unless one knows that this represents a drawdown of 41 feet when compared to the starting groundwater elevation of 2,565 feet amsl.

Two common methods for establishing baseline conditions are to use either the “Affected Environment” or the “No Action alternative”:

- “Affected Environment” is a description of the environment as it exists today. The Affected Environment is essentially a snapshot in time, but also can include descriptions of ongoing trends.
- The “No Action alternative” involves an analysis of predicted impacts into the future in the event there is no approval of the mining project or land exchange. Any impacts predicted under the No Action alternative are typically compared to, but should not be confused with, the Affected Environment.

Comparing the predicted effects of the Proposed Action alternative to the predicted effects of the No Action alternative is the most common approach for selecting baseline conditions for National Environmental Policy Act (NEPA) analysis. Comparing predicted effects solely to the Affected Environment often does not allow one to take into account trends in the environment—like population growth or climatic trends—or ongoing management actions that would take place regardless of the proposal.

## Summary of Available Guidance

### **Council on Environmental Quality Regulations and Forest Service Guidance Affected Environment.**

Much of the pertinent regulation or guidance on this topic is limited to the Affected Environment, which is a required component of the EIS. In this case, guidance in both Council on Environmental Quality (CEQ) regulations and the Forest Service NEPA Handbook use the same language, stating that the document: "...shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration."

In most cases, the Affected Environment is a representation or snapshot of the environment as it exists at the time the EIS is written. For example, for transportation resources, the Affected Environment would include actual measured traffic counts in the project area. A more complete picture of the Affected Environment would also take into account ongoing trends that would tend to change over time (e.g., ongoing recovery of vegetation in burned areas; expected climatic trends).

#### CEQ Regulations (40 CFR 1502.15. Affected environment)

*The environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives. Data and analyses in a statement shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced. Agencies shall avoid useless bulk in statements and shall concentrate effort and attention on important issues. Verbose descriptions of the affected environment are themselves no measure of the adequacy of an environmental impact statement.*

#### Forest Service Guidance (FSH 1909.15 Chapter 20, 23.3, 6. Affected Environment)

*The environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives. Data and analyses in a statement shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced.*

*Agencies shall avoid useless bulk in statements and shall concentrate effort and attention on important issues. Verbose descriptions of the affected environment are themselves no measure of the adequacy of an environmental impact statement. (40 CFR 1502.15)*

*The affected environment section can be organized by resource topic or by issue. In either case, discussions of the affected environment should describe the physical, biological, social and economic components for each potentially affected resource. It is important to limit the discussion of affected environment to topics relevant to the significant issues and to the decision being made. See chapter 10, section 15.1, for additional guidance on the consideration of past actions.*

*The affected environment and environmental consequences sections may be combined for efficiency and clarity. Combining the sections focuses the documentation on what is relevant and reduces redundancies and inconsistencies.*

### **Other Legal Guidance on Established Baseline Conditions**

Additional guidance on the topic of baseline conditions comes from the suit filed against the Tonto National Forest regarding the Resolution Baseline Hydrological and Geotechnical Data Gathering Activities Environmental Assessment (EA) (Concerned Citizens and Retired Miners Coalition, et al., v. United States Forest Service, et al.). The District Court ruling was handed down on September 6, 2017, finding in favor of the Forest Service, and is included in its entirety as Attachment A.

The Order summarizes the pertinent portion of the complaint as follows:

#### *D. Analysis of Baseline Conditions.*

*Plaintiffs argue that the Forest Service did not sufficiently establish baseline data for the EA and thus did not consider all relevant factors before determining that the Baseline Project would have no significant impact. Doc. 38 at 33. Plaintiffs appear to allege this deficiency with regard to multiple resources, but make arguments only with respect to baseline data for water resources. Id. at 33-36. (9/6/17 Order, p. 41-42)*

In this case, the complaint focused on whether sufficient baseline data had been collected to allow the agency to adequately assess the potential impacts of proposed activities. This is a different question than that being posed in this process memorandum, but the Order also contains a useful discussion regarding the legal basis for establishing baseline conditions:

*Baseline conditions are necessary to “determine what effect the project will have on the environment” and thus to comply with the requirements of NEPA. Great Basin Res. Watch, 844 F.3d at 1101. The “establishment of a ‘baseline is not an independent legal requirement, but rather, a practical requirement in environmental analysis often employed to identify the environmental consequences of a proposed agency action.” Oregon Nat. Desert Ass’n v. Jewell, 840 F.3d 562, 568 (9th Cir. 2016) (citation omitted). (9/6/17 Order, p. 42-43)*

### **Guiding Principles for Selecting Appropriate Baseline Conditions**

Logistically, the selection of appropriate baseline condition is a required step for each and every resource section in the EIS. The next section of this process memorandum states the appropriate baseline conditions that will be used in the EIS. The guiding principles for these decisions are based on the regulatory and legal guidance reviewed above, and are as follows:

1. Appropriate selection of baseline conditions is not defined by specific legal requirements, and therefore solely must make sense in the context of this specific project.
2. Baseline conditions must provide a reasonable basis for determining the effect of the activities authorized by the Forest Service or of the land exchange.

3. Baseline conditions must be practical and should not be speculative. Baseline conditions must meet the same standard as the rest of the analysis, using the best available scientific information.

## Baseline Conditions for Specific Resource Sections

### Groundwater Resources—Groundwater Pumping

For many resources, logic dictates that the baseline conditions are identical to either the No Action alternative or the Affected Environment. However, for this specific project stakeholders have raised the issue that proper baseline conditions should not reflect the environment as it looks today, but rather that baseline conditions ought to pre-date any activities by Resolution Copper Mining, LLC (Resolution Copper) over the last decade, in order to fully disclose not just future impacts but also impacts due to ongoing activities.

The concern over proper selection of baseline conditions is drawn most clearly with groundwater resources. Resolution Copper began pumping groundwater from private property (Shafts 9 and 10) in 2009 as part of the latest dewatering efforts; before this, dewatering had not occurred at the site since 1998. Pumping continues into the present, and has resulted in approximately 2,000 feet or more of groundwater drawdown in the deep aquifer, as documented by Resolution Copper.<sup>1</sup>

The current mine infrastructure lies almost entirely within the Phoenix Active Management Area. In this area, pumping groundwater requires a groundwater right from the Arizona Department of Water Resources. Resolution Copper's dewatering right (59-524492) is permitted through 2029. The groundwater pumped by Resolution Copper is provided, after appropriate treatment, to the New Magma Irrigation and Drainage District (NMIDD). The dewatering pumping and delivery are being conducted legally with appropriate permits in place.

Three possible approaches to defining baseline conditions for groundwater resources follow, including one proposed by Resolution Copper, one proposed by outside stakeholders, and the approach ultimately selected by the Tonto National Forest.

#### *Resolution Copper Suggested Approach for Baseline Conditions*

The impact of the project on groundwater resources will be analyzed in part through the use of a numerical groundwater model. Resolution Copper will conduct the modeling itself, subject to review by the Tonto National Forest in order to ensure professional and scientific integrity (40 CFR 1502.24).<sup>2</sup> Resolution Copper has stated during technical meetings their analysis approach would be to conduct two modeling runs in order to calculate project impacts:

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<sup>1</sup> See "Hydrograph Set for Current Hydrogeologic Monitoring Network", Resolution Copper, July 11, 2016 (Project Record #0000926).

<sup>2</sup> A specific working group has been set up to inform the use of the groundwater model, including Forest Service specialists, specialists on the SWCA Environmental Consultants third-party NEPA team, cooperating agency specialists, and other interested parties, including the San Carlos Tribe.

1. A modeling run (Run #1) in which groundwater pumping for dewatering purposes continues during mine operation. This modeling run includes the creation of the block-cave subsidence zone (which is expected to drastically affect the hydrology of the area). In this modeling run, pumping terminates after mining is completed (approximately Mine Year 56).<sup>3</sup> This model run represents all action alternatives.
2. A modeling run (Run #2) in which groundwater pumping for dewatering purposes is identical to Run #1, but no mining occurs and no block-cave subsidence zone develops. Pumping would continue to occur on private lands through Mine Year 56, in order to protect the current infrastructure built by Resolution Copper. This model run represents the No Action alternative.
3. For the action alternatives, Resolution Copper has stated their analysis approach would be to compare the amount of groundwater drawdown modeled under Run #1 (action alternatives) to the amount of groundwater drawdown modeled under Run #2 (No Action alternatives). The difference between these two numbers (Run #1 drawdown minus Run #2 drawdown) represents the groundwater drawdown that is solely associated with the construction and operation of the mine.
4. For the No Action alternative, impacts are defined as the difference between Run #2 (mine is not constructed) and the Affected Environment as it exists today.

#### *Stakeholder Suggested Approach*

The stakeholders have stated that taking the approach described above effectively ignores the impacts the last decade of dewatering has had on the aquifer and environment, and therefore “gives a free ride” to the mining company. They verbally have suggested an alternative approach:

1. A modeling run identical to Run #1 proposed above to represent the action alternatives.
2. A modeling run identical to Run #2 proposed above to represent the No Action alternative.
3. Identify pre-pumping groundwater conditions, before dewatering was reinitiated in 2009. Stakeholders did not provide specific suggestions for how to obtain this historic information.
4. Compare the groundwater levels under modeling runs #1 and #2 to the pre-2009 groundwater conditions in order to determine the impact either under the No Action alternative (Run #2) or action alternatives (Run #1).

#### *Tonto National Forest Selected Approach for Baseline Conditions*

The Forest Service determined that the approach suggested by Resolution Copper is the most appropriate way to define baseline conditions for groundwater resources, with some modification. Specifically:

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<sup>3</sup> For description of consistent terminology used to describe the mine life, see “Process Memorandum to File – Mine Life Phase Durations”, November 10, 2017 (Project Record #0002103).

1. A modeling run (Run #1) as described above in which groundwater pumping for dewatering purposes continues during mine operation, the block-cave subsidence zone occurs, and pumping terminates after mining is completed (Mine Year 56). This model run represents all action alternatives. [Same as Resolution Copper approach]
2. A modeling run (Run #2) as described above in which groundwater pumping for dewatering purposes is identical to the first run, but no mining occurs and no block-cave subsidence zone develops. This model run represents the No Action alternative. [Same as Resolution Copper approach]
3. Action alternative impacts are defined as the difference between Run #1 (mine is constructed) and Run #2 (mine is not constructed). [Same as Resolution Copper approach]
4. No Action alternative impacts are defined as the difference between Run #2 (mine is not constructed) and the Affected Environment as it exists today. [Same as Resolution Copper approach]
5. Unlike the suggested approach from Resolution Copper, the Forest Service approach includes clear disclosure of any reasonably known impacts from dewatering pumping that have already occurred. These would not be based on model predictions, but rather on observed changes in real-world hydrologic conditions, which could include changes in groundwater levels, changes in observed surface flows, or changes in the presence or extent of water, if supported by reasonable evidence. The dewatering pumping conducted since 2009 and any associated impacts will be clearly described as an ongoing trend or past action in the Affected Environment section.

*Summary of Alternative Approaches*

The following table summarizes the approaches as initially proposed by Resolution Copper, as proposed by stakeholders, and as determined to be appropriate by the Tonto National Forest.

	<b>Alternative</b>	<b>Analysis to apply to alternative:</b>	<b>To disclose impacts in the EIS, compare analysis to:</b>	<b>Additional considerations:</b>
Initial Resolution Copper Suggested Approach	No Action	Modeling run in which pumping continues but mine is not built and subsidence does not occur.	Affected Environment, i.e., snapshot of aquifer as it exists today	N/A
	Action (all)	Modeling run in which pumping continues, mine is built, and subsidence occurs.	No Action alternative	
Stakeholder Suggested Approach	No Action	Modeling run in which pumping continues but mine is not built and subsidence does not occur.	Reconstructed pre-2009 groundwater levels	N/A
	Action (all)	Modeling run in which pumping continues, mine is built, and subsidence occurs.	Reconstructed pre-2009 groundwater levels	

	<b>Alternative</b>	<b>Analysis to apply to alternative:</b>	<b>To disclose impacts in the EIS, compare analysis to:</b>	<b>Additional considerations:</b>
Forest Service Selected Approach	No Action	Modeling run in which pumping continues but mine is not built and subsidence does not occur.	Affected Environment, i.e., snapshot of aquifer as it exists today	As part of Affected Environment section in EIS, provide clear identification of ongoing pumping trends and effects that have already occurred, if supported by evidence
	Action (all)	Modeling run in which pumping continues, mine is built, and subsidence occurs.	No Action alternative	

*Rationale for Selected Approach*

This decision is based on the following rationale:

- Resolution Copper has a legal right to pump the groundwater from private property in order to maintain dewatered conditions and is properly permitted and compliant with all pertinent regulations. They have indicated that in the event they decide to not build the mine or mine the ore body, they would still continue to pump groundwater in order to protect the infrastructure built and the investments made. The Forest Service has no authority over the decision to pump or not pump groundwater, nor will the activities authorized by the Forest Service change whether groundwater is pumped or not pumped. For these reasons groundwater pumping likely would continue indefinitely.
- The selected approach properly informs the Forest Service decision, as it allows changes to be described that would result from the activities authorized by the Forest Service. In this case, the authorized activity is the construction and operation of the mine itself. If the stakeholder proposed approach were used instead, the impact disclosed would represent the impacts of the authorized activity, but inextricably combined with other activities that have taken place and will continue to take place with or without any authorization from the Forest Service.

As an example, consider again the predicted impacts to Walker Spring:

- Under the No Action alternative, at 200 years the continued dewatering pumping is predicted to drop the groundwater elevation at Walker Spring from 2,565 feet amsl to 2,538 feet amsl, or a drawdown of 27 feet.
- Under the Proposed Action, at 200 years the continued dewatering pumping and the hydrologic changes caused by the block-cave are predicted to drop the groundwater elevation at Walker Spring from 2,565 feet amsl to 2,524 feet amsl, or a drawdown of 41 feet.



- If the approach suggested by the stakeholders were used, the predicted groundwater elevation (2,524 feet amsl) would be compared to the pre-2009 groundwater elevation (which is unknown, but likely similar to the starting modeled elevation of 2,565 feet amsl). This suggested approach would conclude that the authorization of the proposed mine activities by the Forest Service would result in 41 feet of drawdown at Walker Spring.
- This interpretation would be erroneous. Under all scenarios, the continued dewatering would result in 27 feet of drawdown at Walker Spring, regardless of any decision the Forest Service makes. The approval of the plan of operation by the Forest Service, allowing the construction of the mine, would result in an additional 14 feet of drawdown at Walker Spring. This is the impact that is directly related to the Forest Service authorization.
- To attempt to reconstruct conditions in 2009, in order to establish a baseline condition prior to Resolution Copper conducting any activities on their private lands, would be impractical and require speculation. Some resources have been monitored since before dewatering pumping began and would allow such a reconstruction, specifically aquifer water levels. However other resources such as water quality, springs, or riparian areas, would prove problematic. These resources have been monitored over the past decade, but that monitoring largely does not predate the onset of dewatering pumping.
- The selected approach does not ignore impacts that have occurred, nor does it “give a free ride” to the mining company. Any ongoing trends and associated impacts will be described under Affected Environment and, if appropriate, linked specifically to Resolution Copper’s activities over the past decade. In the context of NEPA, groundwater pumping is considered both a past and present action. These types of actions are required to be analyzed under CEQ regulations: “Cumulative impact is the 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.” (40 CFR 1508.7, emphasis added). The approach suggested by the stakeholders would disclose impacts due to dewatering pumping only in combination with impacts resulting from the Forest Service authorization. The approach selected by the Forest Service provides the most flexibility and clarity by disclosing impacts separately in three different ways:
  - a. Demonstrated or observed impacts that already have occurred due to Resolution Copper’s ongoing dewatering are disclosed;
  - b. Future impacts due to Resolution Copper’s ongoing dewatering—regardless of any Forest Service authorization—are disclosed;
  - c. Future impacts directly resulting from the Forest Service authorization are disclosed.

## All Other Resources

In order to describe the direct and indirect impacts of the project, baseline conditions specific to other resources will follow CEQ and Forest Service direction and guidance for both Affected Environment and addressing past and present cumulative effects. In general, baseline conditions for each resource are expected to consist of the following:

- The conditions of the Affected Environment will be disclosed as they exist at the time of writing of the EIS. This should be construed conceptually, and not as a specific day or even a specific year, since technical studies and surveys have been done over a number of years.
- This would include recognized trends that have been ongoing and are expected to continue into the future.
- This would include climatic trends that are expected, based on the best available science. The consistent climate scenario to be considered is described in a separate process memorandum.<sup>4</sup>
- Action alternative impacts are defined as the difference between the resource-specific impact analyses conducted for each alternative and the No Action alternative.
- No Action alternative impacts are defined as the difference between the resource-specific impact analyses conducted for the No Action alternative and the Affected Environment as it exists today.

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<sup>4</sup> See "Process Memorandum to File - Summary of Climate Change Trends in the Southwest", February 26, 2018 (Project Record #0002345).