Arizona Mining Reform Coalition – Center for Biological Diversity – Concerned Citizens & Retired Miners Coalition – Concerned Climbers of Arizona – Dragoon Conservation Alliance – Patagonia Area Resource Alliance – Save the Scenic Santa Ritas – Save Tonto National Forest – Sierra Club

December 5, 2017

Via Email: (palmer.kyle@azdeq.gov)

Arizona Department of Environmental Quality
Water Quality Division
Attn: Kyle Palmer
1110 W. Washington St.
Phoenix, AZ 85007

Re: Comments on Draft Total Maximum Daily Load (TMDL) analysis for three reaches of Queen Creek located near Superior, AZ

Dear Mr. Palmer:

These comments are submitted on behalf of the Arizona Mining Reform Coalition, Center for Biological Diversity, Concerned Citizens & Retired Miners Coalition, Concerned Climbers of Arizona, Dragoon Conservation Alliance, Patagonia Area Resource Alliance, Save the Scenic Santa Ritas, Save Tonto National Forest, and the Sierra Club, to the Arizona Department of Environmental Quality (ADEQ) regarding the draft Total Maximum Daily Load (TMDL) analysis for copper developed by the Arizona Department of Environmental Quality (ADEQ) for three reaches of Queen Creek, Arnett Creek, and two unnamed drainages located near Superior, Arizona.

1. COMMENTING ORGANIZATIONS

Arizona Mining Reform Coalition works in Arizona to improve state and federal laws, rules, and regulations governing hard rock mining to protect communities and the environment. AMRC works to hold mining operations to the highest environmental and social standards to provide for the long term environmental, cultural, and economic health of Arizona. Members of the Coalition include: Apache – Stronghold, Center for Biological Diversity, Concerned Citizens and Retired Miners Coalition, Concerned Climbers of Arizona, Dragoon Conservation Alliance, EARTHWORKS, Empire Fagan Coalition, Environment Arizona, Groundwater Awareness League, Maricopa Audubon Society, Save the Scenic Santa Ritas, Grand Canyon Chapter of the Sierra Club, Sky Island Alliance, Spirit of the Mountain Runners, Tucson Audubon Society, and the Valley Unitarian Universalist Congregation.

The **Center for Biological Diversity** is a non-profit public interest organization with headquarters located in Tucson, Arizona, representing more than 1.5 million members and supporters nationwide dedicated to the conservation and recovery of threatened and endangered

species and their habitats. The Center has long-standing interest in projects of ecological significance undertaken in the National Forests of the Southwest, including mining projects.

The **Concerned Citizens and Retired Miners Coalition** is a group of citizens who: 1) reside in Superior, Arizona, or do not reside in Superior, Arizona, but are affiliated with relatives who are residents; 2) are retired hard-rock miners who previously worked in the now non-operational mine in Superior, Arizona, and were displaced due to mine closure or personal disability; or 3) are individuals who are concerned that important U.S. public recreational land will be conveyed to a foreign mining company for private use.

Concerned Climbers of Arizona is an Arizona group that advocates for continued recreational access to climbing areas that are threatened by development or other forms of encroachment.

Dragoon Conservation Alliance is a grassroots coalition of southern Arizona landowners and decades-long activists working to protect their community and the Sonoran and Chihuahuan bioregions.

Patagonia Area Resource Alliance is a non-profit community watchdog organization that monitors the activities of mining companies, as well as ensures government agencies' due diligence, to make sure their actions have long-term, sustainable benefits to public lands and water resources in Patagonia and the State of Arizona.

Save the Scenic Santa Ritas is a non-profit organization that is working to protect the Santa Rita and Patagonia Mountains from environmental degradation caused by mining and mineral exploration activities. The current focus is on preventing the proposed open-pit copper mine in the Santa Ritas.

Save Tonto National Forest works to protect our National Forest and promote safe and responsible use by all groups of outdoor enthusiasts. We are based in Queen Valley, Arizona and have around 260 members concerned about the direction the Tonto National Forest is going.

Sierra Club is one of the nation's oldest and most influential grassroots organizations whose mission is "to explore, enjoy, and protect the wild places of the earth; to practice and promote the responsible use of the earth's ecosystems and resources; and to educate and enlist humanity to protect and restore the quality of the natural and human environments." Sierra Club has more than 2.4 million members and supporters with 60,000 in Arizona as part of the Grand Canyon (Arizona) Chapter. Our members have long been committed to protecting and enjoying the Tonto National Forest and have a significant interest in Queen Creek and other waters of the Tonto.

2. INTRODUCTION

Under section 303(d) of the Clean Water Act, states are required to identify their polluted waters and to establish a total maximum daily load for each pollutant in the water body. A TMDL analysis is then completed to establish baseline measurements of pollutant materials in those water bodies, and to identify potential reductions needed to attain standards.

Queen Creek Reach No. 15050100-014A, (headwaters to the Superior Wastewater Treatment Plant discharge), has been listed on Arizona's 303(d) list as impaired for dissolved copper since 2002. Reach No. 15050100-014B, (Superior Wastewater Treatment Plant discharge to Potts Canyon) has been listed as impaired for dissolved copper since 2004. Reach No. 15050100-014C (Potts Canyon confluence to the Whitlow Dam) has been listed as impaired for dissolved copper since 2010.[1] As a condition of these listings, ADEQ is required to prepare a TMDL analysis for Queen Creek to identify the amount of pollutants the water body can receive and still meet water quality standards. On October 4, 2017, a draft TMDL analysis was released for public comment.

The draft report raises more questions than it answers. In reading the report and the underlying record, we have serious concerns about the methodology used (including the computer models outlined), the report's conclusions, and the correctness of ADEQ's analysis.

For the reasons explained below, the TMDL prepared by ADEQ fails to comply with the Clean Water Act and applicable laws. ADEQ should not finalize the TMDL as presented, but rather, must pull the TMDL draft and reconsider what the appropriate limits are for loading in the impaired reaches of these water bodies, particularly in light of the pending Arizona Pollution Discharge Elimination Permit (AZPDES) proposed for issuance by ADEQ for the proposed Resolution Copper mine.

One of the biggest flaws in the analysis is ADEQ's decision to use only concentration based discharge limits on point sources that do not discharge to the creek continuously. The reliance on concentration based limits alone, with no mass limit, would allow a future discharger, for example Resolution Copper (should they move forward with plans to mine Oak Flat) to impair Queen Creek for copper by itself, without exceeding their permitted concentration limit.

3. GENERAL COMMENTS

The draft TMDL report recommendations would not lower TMDL levels to safe limits
From the draft Queen Creek TMDL, it is evident that ADEQ has struggled for many years to find a way to reconcile the differences between the naturally occurring background sources of copper with the anthropogenic sources found in the system stemming from the hundreds of old mining operations in the area, ultimately concluding that most of the copper loading originates in the upper reaches of Queen Creek and particularly from the Oak Flat basin. The draft TMDL report also states that current mining activities are not a major contributor to the impairment of Queen Creek for dissolved copper (Table 8, pages 28-29) and that "their complete removal will not impact the impairments predicted under the existing conditions scenario." In other words, if copper contributions from current mining activities are all set to zero, Queen Creek remains highly impaired for copper from the background sources theorized above. As discussed below, this same approach to modeling used by ADEQ can be used to demonstrate why the TMDL analysis prepared by ADEQ violates the requirements of the Clean Water Act, since it fails to

[1] This first reach is also impaired for lead (2010) and selenium (2012). Based on information available to us, the TMDL also does not appear to adequately address the loading factors for these impairments. *See* Arizona's 303(d) List of Impaired Waters.

include a mass based waste load allocation for dissolved copper stemming from discharges to Queen Creek approved by ADEQ in AZPDES Permit No. AZ0020389. [2]

Waste Load Allocation (WLA) for Resolution Copper

Under the Clean Water Act, ADEQ is required in the Queen Creek TMDL to list those permitted facilities found in the region that may contribute to loading in Queen Creek and to describe the type of waste-load allocations the facilities are permitted to meet. ADEQ takes the position that these facilities are required to meet either concentration-based limits (WQBELs) or mass-based limits. Under this analysis, ADEQ considers the Superior Wastewater Treatment Plant to be the only continuously discharging facility and, therefore, the only facility subject to a mass-based discharge limit.

The Resolution Copper mine received an AZPDES permit from ADEQ to discharge treated mine water to Queen Creek Outfall 002 and associated water on December 6, 2010. This permit was recently renewed with some modifications. Perhaps due to historical voluntary arrangements between Resolution Copper and New Magma Irrigation and Drainage District (NMIDD) that provided a means for Resolution to historically avoid discharges to Queen Creek by piping treated mine discharge water to agricultural fields located within the New Magma Irrigation & Drainage District (NMIDD), ADEQ has now misclassified Resolution Copper as a "non-continuous discharger" in the TMDL. This misclassification serves to conveniently justify (in ADEQ's view) ADEQ's decision to omit in its TMDL analysis the impacts that Resolution Copper's mass-based waste load allocation (WLA) will have on the receiving waters of Queen Creek, particularly vis-à-vis dissolved copper, despite the fact that Resolution Copper will be discharging five times as much water at Outfall 002 under its AZPDES permit as the Superior Wastewater Treatment Plant is capable of discharging. Indeed, Resolution Copper estimates a discharge volume of 3.6 MGD,[3] while the Superior Wastewater Treatment Plant's maximum discharge design capacity is 0.75 MGD.[4]

For reasons that are unsupported by the AZPDES permit, ADEQ concludes in the TMDL that Outfall 002 is not designed to discharge on a continuous basis (TMDL, p. 37). However, nowhere in the AZPDES permit materials does it specify that Resolution Copper has received a classification as a non-continuous discharger or that discharges from Outfall 002 are only allowed by ADEQ under the AZPDES permit on a non-continuous basis. In fact, the AZPDES permit itself makes clear that ADEQ has not imposed any discharge limit (by volume or by seasonality) for Outfall 002,[5] and it is completely silent about any maximum discharge design capacity.

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[2] ADEQ has notified the public of its intent to renew (as modified) Resolution Copper's AZPDES Permit No. AZ0020389. The permit, however, has not yet been issued in final form due to pending litigation by interested parties. Nevertheless, for purposes of these comments, we reference the most recent AZPDES permit, unless otherwise noted herein.

[3] *See* Response to Comments on AZPDES Permit No. AZ0020389, p. 18. ADEQ writes: "RCML noted the estimated maximum daily discharge from Outfall 002 is 3.6 MGD." http://static.azdeq.gov/pn/responses_resolution_cu.pdf

[4] *See* Draft Queen Creek TMDL, p. 36.

[5] *See* Draft AZPDES Permit for Resolution Copper, p. 5 (2016).

ADEQ appears to be using the discharge design capacity of Outfall 002 as a basis to conclude in the TMDL that Resolution will not be able to continuously discharge under their AZPDES permit; however, the basis for this conclusion (which is fundamental to its TMDL analysis) remains unclear. This should be clarified.

Also, while the 2010 AZPDES permit issued to Resolution Copper allowed for discharges to Queen Creek through Outfall 002, the permit required that all discharges be treated to reduce Total Dissolved Solid (TDS) using a Reverse Osmosis (RO) system to be constructed at the Mine Wastewater Treatment Plant. However, Resolution Copper never constructed the RO system. Accordingly, to the extent ADEQ's analysis is based upon a discharge design capacity that was reduced by an RO system as originally contemplated in the 2010 AZPDES permit, this would be factually incorrect, since that RO system was never built, and the RO requirement has been removed from the AZPDES permit. In fact, a letter from Resolution Copper to Mr. David Haag at ADEQ states regarding the discharge design of Outfall 002 "…the maximum flow rate for the discharge was based on the treatment design of the RO system." See Letter dated August 7, 2015 regarding an amendment to APP No. P-105823. In short, since there is no RO requirement in Resolution Copper's current AZPDES permit, ADEQ erred if it considered this standard in discussing the design of Outfall 002 in the TMDL.

Furthermore, in a memo to Resolution Copper prepared by SRK Consulting, Inc. regarding their AZPDES permit to discharge into Outfall 002, it states at page 2: "RCML would like the alternative to discharge through Outfall 002 during the winter months and potentially at all other times but has not discharged due to the inability to meet the 1200 mg/l TDS limit."[6] The SRK Consulting memo is silent about any inability to continually discharge based on design capacity. Further, the TDS limit in the AZPDES permit has since been raised, potentially removing any apparent obstacle to continuous discharge, assuming there ever was one.

It should also be noted, as discussed above, that Resolution Copper's arrangement to discharge water at NMIDD is a separate and independent relationship outside of ADEQ's control. That is, NMIDD may or may not agree at any given time, to accept Resolution Copper water for irrigation purposes. By the same token, Resolution Copper may choose solely of its own accord to discharge continuously to Queen Creek under its AZPDES permit or it may choose to instead pipe this water to NMIDD. None of these choices are under ADEQ control, since the permit itself allows for nothing short of continuous discharge. Thus, it would also be inappropriate and legally inaccurate for ADEQ to rely on this arrangement as the hinging point for classification of Resolution Copper Outfall 002 as a "non-continuous discharger" for the purposes of TMDL.

By relying on its conclusion that Resolution Copper is not a continuous discharger, ADEQ fails to consider mass-based limits which, based on the anticipated discharge volume, potentially violates the daily load limit on a daily basis, undermining the validity of the TMDL, and violating the Clean Water Act.

[6] *See* Memo dated June 26, 2015 from Patty McGrath at SRK Consulting to Casey McKeon at Resolution Copper Mining regarding AZPDES Permit No. AZ0020389; Revision of TDS Limit.

TABLE 1.b: Discharge Limitations and Monitoring Requirements for Outfall 002

Parameter	Maximum Allowable Discharge Limitations (6)		Monitoring Requirement (1)	
	Concentration Limits (µg/L)			
	Monthly Average	Daily Maximum	Monitoring Frequency	Sample Type (5)
Discharge Flow (MGD) (2)	Report	Report	Continuous	Metered
Cadmium (3)	50	100	1x/month	24-hr Composite
Copper (3)	8.5	17	1x/month	24-hr Composite
Iron	820	1640	1x/month	24-hr Composite
Lead (3)	2.7	5.4	1x/month	24-hr Composite
Mercury	1	2	1x/month	24-hr Composite
Selenium	2	3	1x/month	24-hr Composite
Zinc (3)	72.0	144	1x/month	24-hr Composite
Hardness($CaCO_3$) Discharge	Report (mg/L)	Report (mg/L)	1x/month	24-hr Composite
Hardness($CaCO_3$) Receving Water	Report (mg/L)	Report (mg/L)	1x/month	24-hr Composite
Total Supended Solids (TSS)	20 mg/L	30 mg/L	1x/month	24-hr Composite
pH (4)	Not less than 6.5 standard units nor greater than 9.0 standard units.		1x/month	24-hr Composite

As shown in Table 1.b., above, taken from the AZPDES Draft Permit, Resolution Copper's AZPDES permit provides for an average monthly discharge limit of 8.5 µg/L and a daily maximum limit of 17 µg/L, with a 1x/month monitoring frequency.[7] However with no mass limit calculated in the TMDL (regardless of continuous or non-continuous discharging status), **it is almost certain that Resolution Copper's daily discharges will exceed daily TMDL load limits for copper at water volumes far below what Resolution Copper has estimated it will discharge under its AZPDES permit to Outfall 002.**[8] This is likely to result in daily violations, even at relatively low discharge volumes. ***See Attachment A.***

Under Resolution Copper's own estimated maximum daily discharge of 3.6 MGD to Outfall 002 (or 13,627,482.42 Liters), the 55 grams/day TMDL limit would be exceeded by a factor of two. **In other words, the daily load of copper into Queen Creek would be 115.8 grams – more than twice the TMDL daily load impairment level of 55 grams per day.** If Resolution should discharge at the higher daily maximum concentration limit of 17µg/L, the daily discharge would then be some 420% of the TMDL impairment limit.

By declining to consider and regulate the mass-based limits in the TMDL for Resolution Copper, the largest permitted point-source discharger in the study area, ADEQ is not moving towards a non-impaired system, but rather, knowingly allowing Queen Creek, a water body already impaired for copper, to be further impaired. This violates the Clean Water Act and ADEQ's obligations to protect Arizona's waters.

Furthermore, it is also currently unclear how compliance with the AZPDES permit's maximum allowable discharge limit that allows for a **monthly average** concentration limit of 8.5 µg/L, could possibly be measured when sampling is reportedly only being done under the AZPDES **one time** per month (Table1.b). Information on how the "monthly average" is actually calculated

[7] *See* Table 1.b, taken from AZPDES Draft Permit No. AZ0020389.

[8] *See* Response to Comments on AZPDES Permit No. AZ0020389, p. 18. ADEQ writes: "RCML noted the estimated maximum daily discharge from Outfall 002 is 3.6 MGD."

in the AZPDES has not been provided, though it is difficult to understand how ADEQ can take an average from a single monthly measurement. [9] Based on this lack of available data, it appears possible that the monthly average for concentration limits under the permit for Outfall 002 may be being calculated on an annual basis (i.e. dividing by 12 months of sampling, regardless of whether discharge has occurred all 12 months). This is a critical question that must be clarified for purposes of the TMDL because if non-discharging months are being used to calculate the monthly average, then the results of these calculations can mask the existence of monthly discharges that exceed the TMDL daily load limits for copper.

EPA regulations require mass based limits

The Queen Creek draft TMDL report relies on the methods outlined in the 1991 EPA *Technical Support Document for Water Quality-based Toxics Control (*TSD) for calculating chronic and concentration-based (WQBEL) dissolved copper water quality standards. This *Technical Support Document* states that mass-based effluent limits are required by NPDES regulations (40 C.F.R. 122.45(f)) exempting pollutants which cannot be represented appropriately by mass and when applicable standards and limits are expressed in terms of other units of measurement. Other than these exceptions (which are not applicable here), 40 C.F.R. 122.45(f) requires that "all pollutants limited in permits shall have limitations, standards or prohibitions expressed in terms of mass."

Also, it is important to understand that discharges through Outfall 002 are very likely to be under low flow (thus, low dilution) conditions. Additional pollutant quantity monitoring requirements are recommended in low dilution scenarios. At page 111, the *Technical Support Document* states: "At the extreme case of a stream that is 100 percent effluent, it is the effluent concentration rather than the effluent mass discharge that dictates the instream concentration. Therefore, EPA recommends that permit limits on both mass and concentration be specified for effluents discharging into waters with less than100-fold dilution to ensure attainment of water quality standards."

The 1991 "Technical Support Document For Water-Quality-based Toxics Control" that ADEQ cites in the TMDL has additional guidance requirements on implementing mass-based standards. It says (look at PDF pages 130 to 131, Section 5.7.1):

> "Mass-based effluent limits are required by NPDES regulations at 40 CFR 122.450. The regulation requires that all pollutants limited in NPDES permits have limits, standards, or prohibitions expressed in terms of mass with three exceptions, including one for pollutants that cannot be expressed appropriately by mass. Examples of such pollutants

[9] As noted above, the concentration limits permitted in the Discharge Limitations described in the AZPDES permit (Table 1.b.) provide for a daily maximum discharge of 17 µg/L, with an average monthly limit of 8.5 µg/L. However, because sampling is required **only one time per month** under the permit, calculating an average within a month is impossible. This means that at any given day during a period of discharge, the daily maximum could well exceed the 17 µg/L limit and this may not be reflected in sampling information provided to ADEQ. This, is turn, could wildly skew the reported monthly average concentration for copper (and other parameters) and in turn, result in a TMDL model that fails to accurately represent the actual concentration of copper being loaded into Queen Creek on a daily basis – destroying the validity of the analysis contained in the TMDL.

are pH, temperature, radiation, and whole effluent toxicity. Mass limitations in terms of pounds per day or kilograms per day can be calculated for all chemical specific toxics such as chlorine or chromium. Mass-based limits should be calculated using concentration limits at critical flows. For example, a permit limit of 10 mg/l of cadmium discharged at an average rate of 1 million gallons per day also would contain a limit of 38 kilograms/day of cadmium. Mass-based limits are particularly important for control of bioconcentratable pollutants. Concentration-based limits will not adequately control discharges of these pollutants if the effluent concentrations are below detection levels. For these pollutants, controlling mass loadings to the receiving water is critical for preventing adverse environmental impacts. However, mass-based effluent limits atone may not assure attainment of water quality standards in waters with low dilution. In these waters, the quantity of effluent discharged has a strong effect on the instream dilution and therefore upon the RWC. At the extreme case of a stream that is 100 percent effluent, it is the effluent concentration rather than the effluent mass discharge that dictates the instream concentration. Therefore, EPA recommends that permit limits on both mass and concentration be specified for effluents discharging into waters with less than 100 fold dilution to ensure attainment of water quality standards."

In addition, 40 C.F.R. Part §122.45 requires in part:

(e) Non-continuous discharges. Discharges which are not continuous, as defined in §122.2, shall be particularly described and limited, considering the following factors, as appropriate:

(1) Frequency (for example, a batch discharge shall not occur more than once every 3 weeks);

(2) Total mass (for example, not to exceed 100 kilograms of zinc and 200 kilograms of chromium per batch discharge);

(3) Maximum rate of discharge of pollutants during the discharge (for example, not to exceed 2 kilograms of zinc per minute); and

(4) Prohibition or limitation of specified pollutants by mass, concentration, or other appropriate measure (for example, shall not contain at any time more than 0.1 mg/1 zinc or more than 250 grams (1⁄4 kilogram) of zinc in any discharge).

(f) Mass limitations.

(1) All pollutants limited in permits shall have limitations, standards or prohibitions expressed in terms of mass except:

(i) For pH, temperature, radiation, or other pollutants which cannot appropriately be expressed by mass;

(ii) When applicable standards and limitations are expressed in terms of other units of measurement; or

(iii) If in establishing permit limitations on a case-by-case basis under §125.3, limitations expressed in terms of mass are infeasible because the mass of the pollutant discharged cannot be related to a measure of operation (for example, discharges of TSS from certain mining operations), and permit conditions ensure that dilution will not be used as a substitute for treatment.

> (2) Pollutants limited in terms of mass additionally may be limited in terms of other units of measurement, and the permit shall require the permittee to comply with both limitations.

The idea that RCC Outfall 002 isn't "designed to discharge on a continual basis" is something that never appeared in the AZPDES permit, but is relied upon by ADEQ in the TMDL to assign only a concentration-based WLA (and not a mass-based WLA). Please explain this descrepency.

2013 Modeling Report

The Queen Creek TMDL Modeling Report prepared by Louis & Berger (January 2013), which is the primary basis of the TMDL,[10] contains factually inaccurate information pertaining to the Resolution Copper AZPDES permit. It is both surprising and alarming that the 2013 Modeling Report has not been updated to reflect critical data related to the AZPDES for Resolution Copper. For example, the 2013 Modeling Report states, at page 4:

> According to the file and ADEQ Permits Staff, the facility is reportedly designed to contain all runoff up to and including the 100-year, 24-hour event. Thus, the RCC discharge point 001 is non-discharging in the range of storm magnitudes being simulated for the estimation of the copper and lead loads (Chapter 3). **RCC has proposed, and then withdrawn, an AZPDES permit application to discharge treated mine dewatering water to Queen Creek adjacent to their existing 001 outfall. At this point, there is no information that a future request to discharge this water is pending.** Currently, water is transported approximately 30 miles westerly of Superior via pipeline to an irrigation district. The water transfer currently occurs during the growing season only, reportedly **forcing RCC to halt mine dewatering during the winter months.** [Emphasis added].

As an initial matter, it is clear that the 2013 Louis & Berger report completely fails to take into account the fact that Resolution Copper has, in fact, been issued an AZPDES at least since 2010 that **allows** for treated mine to be discharge at Outfall 002 into Queen Creek. Which raises the question as to whether or not this model, which is plainly outdated, can be used to accurately predict the amount of dissolved copper being contributed by each modeling basin. Certainly, it does not consider the permitted contributions of the largest permitted project in the entire project watershed (Resolution Copper). Furthermore, it has been well documented and it is commonly known that Resolution Copper has not ceased mine dewatering during winter months, and that water is in fact seeping into Shaft #10 at inflow rate of up to 600 gpm.[11] It is not clear why this information has not been updated.

How was the overland flow from Oak Flat determined to be a major contributor copper?

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[10] The function of the model is to predict the amount of dissolved copper being contributed by each modeling basin utilizing both the sampling data and the meteorological data of the entire project watershed. TMDL at 14.

[11] *See* Fiscor, Steve. "Sinking America's Deepest Shaft: Development and Blast Applications for Resolution Copper's No. 10 Shaft" in Engineering & Mining Journal, April 2014.

Hardness

The Queen Creek draft TMDL incorporates hardness calculations (dissolved calcium and magnesium), but seems to point to controversy not only about the conclusions of the analysis, but also the underlying data. On page 14, the report states that hardness data supplied by ADEQ to the modeling team was discovered to have been "inaccurate." This raises a number of questions. For example, when were those inaccuracies discovered and how were they corrected? The January 2013 modeling report has been presented to the public as a final version of the report, and it has been posted alongside the draft Queen Creek TMDL report. Yet, the draft Queen Creek TMDL report brushes this off by stating on page 14: "The original total hardness values were not used in the modeling of the dissolved copper, and the updated values do not affect the modeling results." What errors in the prior data were being corrected? Additionally, what changed in the model, what was omitted and included and when? In fact, Matthew Bolt, a Life Scientist with EPA who has been reviewing ADEQ's Queen Creek TMDL, has specifically asked for an accounting of how the updated data in the current draft TMDL was reconciled with contradictory data presented in the original report's hardness table, and how those changes were made between the data, the modeling report, and the draft TMDL. (*See Email from Matthew Bolt sent July 13, 2017 at 6:12 p.m.)* It is unclear from the records we have reviewed on this matter, whether this accounting was ever provided to EPA. This should be clarified and, if necessary, addressed.

The draft should be revised to include the correct data.

Are Tables 3.4 and 3-6 (which we assume come from a 2013 final modeling report by the Louis Berger Group) available to the public?

ADEQ fails to identify polluters that should be required to clean up "legacy" pollution

The draft TMDL report states that Queen Creek and various tributaries are impaired for copper and that most of the copper loading originates in the upper reaches of Queen Creek and particularly from the Oak Flat modeling basin. ADEQ theorizes that the majority of copper comes from background sources although some comes from smelter deposition from older mining operations. The report concludes that there is no culpability in the smelter deposition of copper from any current dischargers to Queen Creek.

However, in an ADEQ internal ADEQ document titled Queen Creek Modeling Report Comments dated August 17, 2012, says,

- "Low soil Cu in Oak Flat area suggests this is not an NPS source area that can be remediated
    - The OF area is an issue- it has low Cu in the rock but is a major source of copper. Mine says it must be smelter fall out not natural background. We will need to explore this more. I asked LB to summarize the WQ and soil data for all of the tuff in the area."

Here it is clear that ADEQ learns that there is low natural background copper and a "mine" (Rio Tinto's Resolution Copper project?) says that the high levels of copper in the Oak Flat area is from smelter fallout.

The major (only?) smelter operating upwind from the Oak Flat area would have been the Magma smelter in Superior, Arizona. ADEQ asserts in numerous documents that Rio Tinto's Resolution

Copper operations have been an ongoing continuation of Magma's operations in the past (This is a position that we dispute. We maintain that the new Resolution Copper project is a new mine and a new operation.)

If ADEQ is correct that Rio Tinto's Resolution Copper project is a continuation of Magma Copper's older operations and if the "Mine" (Resolution Copper) admits that much of the copper loading at Oak Flat is from "smelter fall out," then it is clear that Rio Tinto is responsible for high levels of copper in the Queen Creek watershed downwind from the Magma smelter in Superior. Therefore, ADEQ should require that Rio Tinto clean up this "fall out" before they are allowed to add more copper loading to Queen Creek.

Effect of Resolution Copper dewatering of Oak Flat area on water levels in Queen Creek
Rio Tinto is currently dewatering (at the rate of at least 600 gallons per minute) from the Numbers 9 and 10 shafts at Oak Flat. This water is piped to Superior for minimal treatment and then piped to the New Magma Irrigation District near Phoenix. The water, taken from the Queen Creek watershed bypasses the impaired sections of Queen Creek.

What effect does this dewatering have on the impairment of Queen Creek from copper and other elements? What would happen if this dewatering ended and these 600 gallons per minute stream of water were to reenter Queen Creek? The draft report does not answer these questions.

4. COMMENTS ON SPECIFIC SECTIONS OF THE DRAFT TMDL REPORT

1.0 Introduction
Why has it taken so long for ADEQ to complete this process? It is our understanding that EPA regulations require state agencies to submit (and have approved) a schedule to establish TMDL standards for impaired streams every 2 years. Some sections of Queen Creek were listed as impaired in 2002.

Has data submitted by Resolution Copper Company (Rio Tinto) been independently verified?

Who was the contractor hired to do the modeling and does this contractor have any ties to regulated companies or other conflicting interests?

2.2 Climatic Setting
The data used for summer weather patterns in the Superior area seems to be outdated and underestimating current conditions. Should that be updated? Does the analysis consider the impacts of future climate change including generally higher temperature, continuing drought conditions, and more violent storms?

Where did the rainfall data come from? Did the data come from only a few locations, or did you use data from different points throughout the watershed? Would differences in rainfall amount in the subbasins affect your conclusions?

5.0 Modeling of the Data
Did ADEQ use the correct model?

Figure 5 of the draft shows that ADEQ did not include a number of the sub-basins in their modeling. Since some of the sub-basins not used in the modeling are quite large, the modeling exercise itself is fatally flawed. Why are some sub-basins not used? What rationale was used to choose the basins used? How were the "representative" basins chosen to assure that they are truly representative?

How does this affect the validity of entire analysis?

5.2 Hydrologic Calibration

This section points to one of the real problems of this analysis: That ADEQ is making assumptions not based on any data and tweaking the modeling to confirm their assumptions. How can you say, "Even though a large amount of data was collected at sites throughout the watershed, it was still not enough for statistical methods to be applicable"? You can't base an analysis like this on visual agreement of the results, you must have a rational and scientifically based rational for your assumptions.

Figure 6 does not support the draft reports conclusion that actual data matches simulated modeling. Was this a cherry-picked graph or do other sub-basins also show any kind of correlation? To us, Figure 6 does not show an acceptable visual agreement between observed and simulated flows.

5.3 Dissolved Copper Calibration of the Model

As with Figure 6, there is simply not enough data in Figure 7 to support ADEQ's conclusions.

6.2 Margin of Safety

The ADEQ MOS used is not nearly conservative enough. If Rio Tinto gets underway, the MOS should be much higher.

The TMDL report forecasts that the used portions of the already permitted WLA's will remain unused and therefore available as a MOS. This relies on a permittee not using their full allotment. Is there a better option?

7.0 Implementation

In general, this section needs a lot more definition of specific actions that much be performed. There needs to be projects with goals and timelines outlined in this section that will help reduce the illegal loading of copper in Queen Creek.

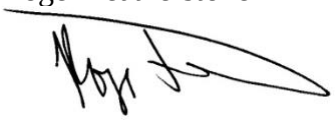
6. CONCLUSION

In conclusion, the draft Total Maximum Daily Load (TMDL) analysis for three reaches of Queen Creek located near Superior, AZ, is fatally flawed and its issuance would violate the CWA, Arizona law, and other applicable authorities. ADEQ should write a new draft that provides adequate protections for the environment, the public health and the waters of Arizona can be developed.

Please include the Arizona Mining Reform Coalition, Center for Biological Diversity, Concerned Citizens & Retired Miners Coalition, Concerned Climbers of Arizona, Dragoon Conservation Alliance, Patagonia Area Resource Alliance, Save the Scenic Santa Ritas, Save Tonto National Forest, and the Sierra Club, as interested parties and direct all future public notices and documents to us at the addresses below.

Sincerely,

Roger Featherstone



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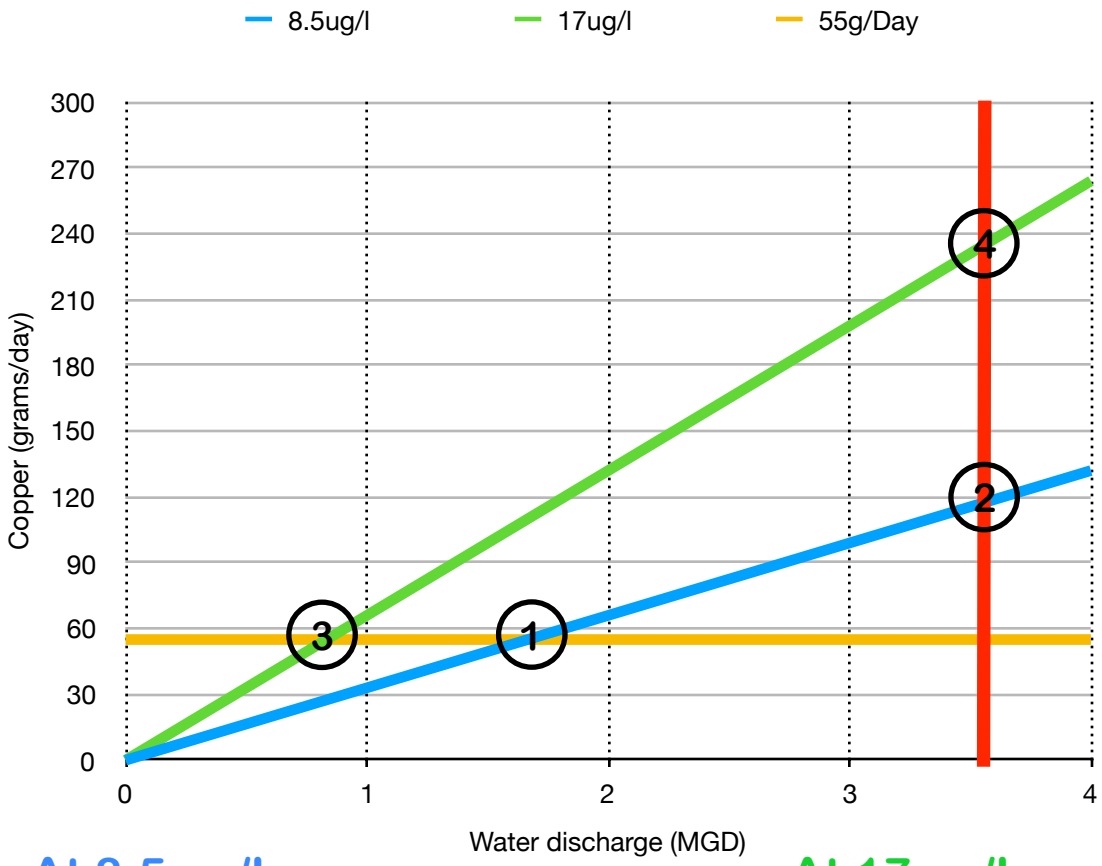
Permitted Cu Discharges by RCM Into Queen Creek at Outfall 002



At 8.5 ug/L (Monthly Average Concentration Limit):

(1) TMDL daily mass limit (55 grams of Cu per day) is exceeded when 1,708,235 gallons are discharged

(2) Total Cu discharged at RCM's 3,600,000 MGD estimated daily discharge volume?

115.8 grams/day

At 17 ug/L (Daily Maximum Concentration Limit):

(3) TMDL daily mass limit (55 grams of Cu per day) is exceeded when 854,118 gallons are discharged

(4) Total Cu discharged at RCM's 3,600,000 MGD estimated daily discharge volume?

231.6 grams/day