January 24, 2020

Pinto Valley Mine EIS Comments
2324 E McDowell Rd.
Phoenix, AZ 85006

Please find our comments on the Pinto Valley Mine Draft Environmental Impact Statement issued by the Tonto National Forest on December 13, 2019 below.

Introduction

We the undersigned have worked in natural resource management for a combined total of 154 years. We have worked on the Tonto National Forest for a total of 120 years primarily in the fields of watershed, riparian, and minerals management. We are all retired. We normally are not involved, nor do we feel the need to be involved with the current challenges and management issues facing the Forest today. However, the current state of affairs regarding Pinto Creek and the Pinto Valley Mine compels us to state our collective opinion and are doing so in part by commenting on the Draft Environmental Statement for the Pinto Valley Mine recently issued by the Forest.

Our comments will focus primarily on the impacts of the proposed project on water and riparian resources located on the National Forest immediately downstream from the Pinto Valley Mine.

Overview of Pinto Valley Mine Impacts on Water and Riparian Resources

Pinto Creek is a perennial stream in the desert....something rare and valuable. The creek and associated riparian area is a green oasis in the desert that provides invaluable habitat for fish and wildlife.

Pinto Creek has received both statewide and national attention: It was nominated for Unique Waters (now known as Outstanding Arizona Waters) status, it was considered eligible for inclusion in the nations wild and scenic rivers system, it was listed as one of the ten most threatened rivers in the nation three years in a row by the American Rivers environmental group, it was identified as an Aquatic Resource of National Importance by the EPA, and it was called a "Jewel in the Desert" by the late Senator Barry Goldwater.

The Pinto Valley Mine is having a profound adverse impact on Pinto Creek and associated riparian area. More specifically, pumping from the Peak Well Field is causing a drastic reduction

in streamflow. Whereas the creek used to flow almost constantly at the Magma weir, now it seldom flows.

As flows have declined, the riparian vegetation has suffered. Many of the trees and shrubs located above the stream gaging station known as the Magma weir (USGS Gage Station 09498502) have died or are dying (See Figures 1 & 2).

According to Table 2-4 (page2-19) of the Draft Environmental Impact Statement (DEIS), the mine will consume 9,722 gallons of water per minute 24 hours a day, 365 days a year. Approximately 36 percent of this need is to be supplied by the Peak Well Field. This amounts to 3,500 gallons of water per minute or 7.8 cubic feet of water per second yearlong (or a total of 5,650 acre feet per year). This is a very large volume of water to continue to pump in a desert environment for the next 20 years.

Groundwater modeling using pump data from the Peak Well Field indicates that baseflows in Pinto Creek as measured at USGS Stream Gage Station 09498502 (Magma weir) have already been reduced a whopping 82%, from 1070 gallons per minute (gpm) to 188 gpm, between the end of 2012 when the mine was in a "care and maintenance period" and 2018. Under the Proposed Action Alternative, reductions in baseflow would continue for another 20 years, reaching an estimated low of 76 gpm or a total reduction in flow of 92% by the year 2039 when the mine would close.

And that is not the end of it. After closure in the year 2039, base flows would improve, but this is only because it is anticipated that poor quality water seeping primarily from Tailings Storage Facility No. 4 will be discharging into Pinto Creek. Even 100 years after closure, baseflows in Pinto creek are estimated to be only 407 gpm or a 62 percent reduction from the 2012 flows.

The groundwater model also predicts that pumping from the Peak Well Field will cause significant reductions in groundwater levels. Decreases of 5 feet or more are expected to occur over 23.8 square miles at the end of mining in 2039. Even worse, this drawdown area is predicted to expand to 37.9 square miles 100 years after mine closure. It is also estimated that almost 5 miles of the perennial reach of Pinto Creek will be impacted, either with reduced flows or complete dry up. This is over half the total length of the perennial reach located on National Forest System (NFS) lands below the mine property. Needless to say, this will result in mortality of additional riparian vegetation and loss of fish and wildlife habitat.

To better understand the magnitude of the impact of pumping on Pinto Creek flows, see Table 1 which lists the number of days of zero flow at the USGS gaging station (Magma weir) between 1994 and 2018 (Table 2-3 on page E-11 of Appendix E in the DEIS is similar to Table 1, but only lists 4 years of data. We suggest that Table 2-3 be expanded to include the years from 1994 through 2018).

We have never seen a project that has the potential to do so much damage to valuable National Forest Resources as this one.

Figure1. Dead riparian trees located on the National Forest a short distance below the Pinto Valley Mine (Photo taken November, 2017).

Figure 2. A large number of dead and down trees are scattered along the upper on-half mile of the formerly perennial reach (Photo taken December, 2016.

Year	Number of Days of Zero Flow	Notes
1994	0	
1995	0	
1996	15	
1997	43	
1998	0	
1999	0	
2000	0	
2001	0	
2002	0	Driest year of 105 year period of record at Miami, Az. 4.51 inches
2003	0	
2004	0	
2005	0	
2006	0	
2007	0	
2008	0	
2009	0	
2010	0	
2011	0	
2012	0	
2013	14	Capstone acquires Pinto Valley Mine*
2014	295	
2015	361	Slightly wetter than average year. Yet flow for only 5 days of year
2016	70	274 days of record. No flows 25% of time
2017	47	93 days of record. No flows 51% of time
2018	337	Second worst year for zero flow days in 25 year period of record

Table 1. Number of days of zero streamflow recorded at USGS gage 09498502, Pinto Creek near Miami, AZ (Magma weir). *Note that Capstone acquired Pinto Valley Mine on October 11, 2013 and the stream dried up the last 14 days of December, 2013.

Comments on the Pinto Valley Mine Proposed Action

1. Lack of Project Consistency with Forest Plan and National Policy.

Forest Plan

On page 1-21 of the DEIS, it is stated that the Forest Service reviewed Pinto Valley Mining Corp's mining plan of operation and found it consistent and in conformance with the goals, objectives, standards, and guidelines of the Forest Plan with one exception involving cultural resources (which was later resolved with a forest wide amendment).

To the contrary, the Forest Plan contains Goals that are in direct conflict with the proposed mine project. Two such Goals contained in the Forest Plan (page 19) and listed in Appendix E of the DEIS (page E-1) are to "**enhance riparian ecosystems, by improved management**" and to "**emphasize improvement of soil productivity, air and water quality.**"

The DEIS also fails to mention key Management Direction contained in the Forest Plan for the Globe Ranger District. The Management Emphasis for the area that includes Pinto Creek below the mine property identified as General Management Area 2F (replacement page 85) states:

> **"Manage for a variety of renewable natural resources with primary emphasis on wildlife habitat improvement, water quality maintenance,** livestock forage production, and dispersed recreation. Watersheds will be managed so as to improve them to a satisfactory or better condition. **Improve and manage the included riparian areas (as defined by FSM 2526) to benefit riparian dependent resources"** (emphasis added).

Contrary to this direction, the Proposed Action for the Pinto Valley Mine project will further degrade riparian areas including wildlife habitat, water quality, and dispersed recreational opportunities.

The Management Direction contained in the Forest Plan regarding minerals management is concise: "Support environmentally sound energy and minerals management." When considering the detrimental effects the proposed action will have on streamflows, riparian areas, wildlife habitat, and water quality, it cannot be construed as environmentally sound.

Forest Service Manual Policy

On pages 3-38 and 3-39, the DEIS lists "Key" Forest Service manuals that contain relevant policies, practices and procedures for managing vegetation. However, this list has omitted a key long standing national policy to manage riparian areas "....under the principles of multiple-use and sustained yield, while "**emphasizing protection of soil,**

water and vegetation, particularly because of their effects upon aquatic and wildlife resources" (emphasis added). Perhaps even more to the point, the Policy requires that the Forest Service **"Give preferential consideration to riparian dependent resources when conflicts among land use activities occur** (FSM 2526.03) (Emphasis added). As the Proposed Action will result in further degradation of the extensive riparian area located downstream of the mine, it is in direct conflict with this long standing National Policy.

2. Importance of Riparian Areas.

When discussing "Vegetation" under the Affected Environment (Page 3-41), the DEIS lists the acreage of riparian vegetation communities found in the study area. Nowhere, however, does the DEIS discuss the unique nature and importance of riparian areas, particularly those such as Pinto Creek that are located in the desert. It should be pointed out in the EIS that riparian areas are the most ecologically diverse and productive areas in the western United States. They are vital for fish and wildlife. In Arizona it has been estimated that up to 80 percent of all vertebrate wildlife species depend on riparian areas at some stage in their life cycle. Bird life is particularly dependent on riparian areas. Studies have shown that riparian areas provide habitat for more species of breeding birds than all other western habitats combined. Riparian areas also have many other values which include: providing tremendous recreational opportunities, reducing erosion, improving water quality, recharging ground water, sustaining baseflows, and reducing the magnitude of flood flows. While riparian areas are amazing natural resources, they are very limited in size...occupying only about two to three percent of the land area within the Tonto National Forest.

Riparian areas occurring in the desert take on added importance due to the scarcity of water in the adjacent uplands. Many of the major desert riparian areas in Arizona such as along the Gila, Santa Cruz and lower Salt Rivers have been destroyed through dam building, diversions, and ground water pumping. This makes the remaining areas, such as Pinto Creek, even more valuable. (See Figure 3).

Figure 3. Riparian area in a desert Landscape. Not all streams and their associated riparian vegetation are of equal value. Those that flow through the desert take on added importance due to the scarcity of water in the *surrounding country side.*

3. Water Quality Impacts to Pinto Creek. After closure, several of the existing mine facilities could degrade water quality in Pinto Creek. These include Tailings Storage Facility No. 4, Tailings Storage Facility No. 3, and the Heap Leach Facility. Seepage from these facilities could migrate downgradient and eventually enter Pinto Creek within the Forest. In fact, groundwater modeling indicates that seepage from Tailings Facility No. 4 will contribute most of the baseflow to Pinto Creek as measured at the Magma weir for several years after closure. These waters will be high in sulfates and total dissolved solids. This poor water quality will have an adverse effect on numerous aspects of the riparian ecosystem.

   The mine currently contains most of this seepage by utilizing production wells to pump back the low quality water. However, the current mine closure and reclamation plans do not include a commitment for the construction and long-term operation and maintenance of a pump back (seepage capture system) and treatment system to manage the predicted seepage from Tailings Storage Facilities No 3 and No 4. (See page E-118).

Mitigation measure WR-3 (Page 3-385) is intended to address this seepage issue. We support WR-3, but are concerned about the timing of its approval. The DEIS states (page 3-385) that the mitigation plan will be submitted to the Forest Service and the Arizona Department of Environmental Quality for approval prior to authorizing the mine to commence the expansion and modifications included in the proposed action. It is not clear if the intent is to approve the Mitigation Plan prior to or after the mine Plan of Operations is approved. The Mitigation Plan should be developed, approved and incorporated into the Plan of Operation prior to its approval. Otherwise, it could be very difficult to get Capstone to agree to a meaningful plan, and even more difficult to have the company commit to the funding necessary to ensure its success.

4. Forest Service Instream Flow Water Right.

The DEIS mentions the instream flow water right held by the Forest, but does not elaborate on its purpose and importance.

Background

The Forest has been concerned about the impact of pumping large quantities of water from the Peak Well Field on flows in Pinto Creek since the mid 1970's. As a result of this concern, the Forest filed an application for an instream flow water right with the Arizona Department of Water Resources (ADWR) in December of 1983. This was one of the first instream flow rights filed for in the State of Arizona. The reasons for selecting Pinto Creek were twofold: 1) The high likelihood of an impact to flows from the Peak Well Field, and 2) the need to protect the high resource values associated with a desert riparian area. After the Forest submitted documentation proving the need for the water to ADWR, the Certificate of Water Right (No 33-89109) was issued in 1999. This certificate is extremely important in that it gives the Forest the legal right to maintain specified flows in Pinto Creek. It should be noted that it required a considerable amount of time, effort and money on part of the Forest to acquire this Certificate.

In the 1990's the Forest faced a similar situation with the Carlota Copper Mine as it faces today with the Pinto Valley Mine. Carlota Copper Company production wells were found to be impacting surface flows in Haunted Canyon and Pinto Creek. The Forest used its instream flow right for Pinto Creek as a tool to negotiate a mitigation plan with Carlota that would protect the flows in Haunted Canyon and Pinto Creek while allowing the company to construct and operate their mine.

Current Situation

At the end of 2013, Pinto Creek at the Magma weir abruptly quit flowing much of the time. This condition was unprecedented during the 20 year period of record that the

USGS has maintained this gage. In addition, a substantial portion of the riparian vegetation located in the upper one half mile of this reach has died. This has never occurred previously in the past 45 years that we have been observing this area despite periods of drought. Coincidently, Capstone acquired the Pinto Valley mine on October 11, 2013 and commenced production shortly thereafter.

Where common sense indicted that the mine was impacting flows, there was no proof. Capstone claimed the lack of flows were due to drought. They also refused to share their records regarding the Peak Well Field, or to conduct pump tests that would prove or disprove a hydrologic connection between the water being pumped and Pinto Creek.

As a result of the proposed mine expansion, the Forest has obtained data from Capstone and overseen the completion of two different ground water models. Both of these models indicate that pumping from the Peak Well Field is dramatically impacting the creek.

The DEIS recognizes that pumping from the Peak Well Field could "potentially" affect Forest Service held water rights including the instream flow right to Pinto Creek. The proposed mitigation measure (WR-2) (page 3-384) to address this situation is to require Capstone to monitor ground water levels between the mine and Pinto Creek. Then any adverse impacts on surface rights "....would be identified and mitigated as required under Arizona State law."

Recommendations

The impact of the mine's pumping to the Forest Service instream flow water right has been established during the past year. This is based on stream flow records and ground water modeling conducted in conjunction with the DEIS. The United States (Tonto National Forest) holds the Pinto Creek instream flow water right and it is largely up to the Forest to protect and ensure compliance with this right. Although ADWR is charged with administering water rights in Arizona, they do not have the staff to ensure compliance with all the water laws of the state.

The Forest should approach ADWR and ask for an appropriability determination. It is apparent from the ground water modeling that the cone of depression from the Peak Well Field is affecting the flows in Pinto creek and this hopefully will result in ADWR finding that Capstone is removing subflow. Subfow is appropriable water which would require Capstone to apply for a surface water right. The Forest should then protest this application and use that as leverage to negotiate a meaningful mitigation program that will protect National Forest System resources while allowing the mine to expand. It would also be advisable to consult with Salt River Project (SRP) who holds senior water rights to Pinto Creek and is well versed in the water laws of the state. Collaboration with the Arizona Game and Fish Department is also advisable as they are responsible for management of fish and wildlife resources affected by the mine's pumping.

5. Mitigation

The proposed action will result in the dewatering of approximately five miles of perennial stream in the desert along with the degradation or loss of high value riparian vegetation, fish and wildlife habitat. It also appears that the effects on streamflow will last for more than 100 years!

The proposed mitigation measures for these impacts include more monitoring, periodic recalibration of the groundwater model, and an annual workshop. **These proposed mitigation measures fall well short of providing adequate protection of National Forest resources. Instead of monitoring and meetings, the mitigation should be aimed at requiring Capstone to reduce the impacts of pumping from the Peak Well Field.**

The alternatives considered but eliminated should be revisited. For instance, the development of a Peak Well System pumping plan. The mine claims that it cannot afford to idle any of the wells close to the creek as they are all needed for production. We are skeptical that this is the case. Perhaps the groundwater model would be helpful in identifying those wells that potentially could have the greatest impact on flows in Pinto Creek and the use of these wells could be curtailed. It should be noted that the Cottonwood Reservoir with a capacity of 1000 acre feet could be utilized to store excess water for use in production during periods of reduced pumping and testing of the Peak Well Field. Other well field strategies should also be explored.

Similarly, obtaining water from Carlota Copper Company, which will be closing soon should also be revisited. Perennial flow was maintained in Pinto Creek at the Magma weir during the period that Carlota was in full production. In addition, artesian pressure was maintained in Carlota's production and bedrock observation wells in the wellfield area during this period, which is an indicator that this aquifer has not been depleted. There is no evidence that allowing Pinto Valley Mine to have access to these wells (assuming Carlota Copper Company is amenable) in exchange for reduced pumping from the Peak Well Field would have the same impacts as the current level of pumping from the Peak Wells only.

New options such as pit lake evaporation control should be evaluated. The University of Arizona has conducted research in the past about methods to reduce evaporation losses as a means of conserving scarce water resources. Perhaps some of this research could be useful for reducing evaporative losses from the pit lake and improving baseflow discharge to Pinto Creek after mine closure.

In addition, Pinto Valley Mine should identify areas in their production process where water could be conserved by being required to prepare a water conservation plan.

It is not the Forest Service's s responsibility to find the effective mitigation. It is however, incumbent upon the Forest to meet its stewardship responsibilities by

protecting the high value resources located on National Forest System lands located below the mine.

When adequate mitigation measures are ultimately found and agreed upon, they must be included in the Mine Plan of Operation prior to approval.

6. Pipelines

When the Peak Well Field was being developed in the early 1970's, pipelines were constructed across National Forest System lands to convey water from some of the well heads to the mine. The construction and maintenance of these pipelines was authorized by Special Use Permit. This has worked for the past 45 years. Now the mine has requested that the pipeline authorizations be included as part of the Mine Plan of Operation. This makes sense from an administrative standpoint, but will give the Forest even less leverage over the mine's activities regarding water use than it has now.

The Forest should keep the pipelines under Special Use Permit. This will give the Forest more and better opportunities to consider the impact of the Peak Well Field on Pinto Creek. For instance, the Forest could reissue the Permits for limited periods of time. Then during reauthorization of the permits the Forest can consider "connected actions" (under NEPA) such as the impact of well pumping on water flows in Pinto Creek and associated riparian resources. It will also allow the application of the Region's Groundwater Policy (R3 Manual supplement 2500-2001-1).

7. Capstone Mining Corporation

Capstone Mining Corporation purchased the Pinto Valley Mine in October of 2013 and is the sole owner. Capstone is a Canadian owned company headquartered in Vancouver, British Columbia. Their financial records indicate that the company has lost money every year for the past 6 years (2013 through 2018) except one (2017). Their stock currently sells for about 90 cents Canadian Dollars (69 cents in U.S. Dollars). As might be expected for a company in this financial situation, Capstone appears to be focused on efficiency which includes controlling costs. For example, in 2018 they reduced the size of their headquarters office staff by 35 percent.

In light of the above, it is highly likely that Capstone will balk at any substantial expenditures aimed at environmental protection that are not required under the terms and conditions specified in the Mine Plan of Operation. This implies that all mitigation and reclamation measures should be agreed to and included in the POO prior to being approved. In addition it is imperative that the amount of the reclamation bond be carefully and conservatively estimated.

Summary of Major Points

Pinto Creek is an extremely valuable resource.....a perennial stream in the desert that supports a luxuriant growth of riparian vegetation (see Figure 4). Pinto Valley Mine is dewatering the stream causing a loss of riparian vegetation, fish and wildlife habitat and recreational opportunities. Approval of the Proposed Action as written will allow conditions to worsen and continue for 12 more years.

The Proposed Action as written is not in conformance with existing Forest Plan guidance and Forest Service manual policy. Only after meaningful mitigation measures that ensure protection of National Forest System resources are included in the Plan of Operation, will the proposed project be in conformance.

The measures proposed in the DEIS to mitigate the loss of water in Pinto Creek is to do more monitoring and have annual workshops. This is totally inadequate. Effective mitigation measures must reduce the effects of pumping from the Peak Well Field. This could be accomplished by using another source of water that would not affect flows in Pinto Creek or by augmenting flows to Pinto Creek.

Thanks to the efforts of the Forest, our knowledge of the cause of streamflow reductions has improved dramatically in the past year. Two groundwater models overseen by the Forest have shown conclusively that pumping from the Peak Well Field is causing reductions in flow in Pinto Creek.

The Forest should aggressively defend its water right to maintain flows in Pinto Creek. Utilizing the information from the ground water models and existing stream flow records, the Forest should approach the Arizona Department of Water Resources and ask for a determination of appropriability. It is highly recommended that the Forest collaborate with Salt River Project and Arizona Gave and Fish Department in this effort. Assuming that ADWR agrees that the mine is pumping appropriable water, the Forest can use its instream flow water right to negotiate a reasonable solution that protects the creek and allows the mine to continue production.

In all of our collective years of resource management, we have never seen a potentially more damaging project to National Forest System resources. We urge Forest leadership to do whatever is necessary to protect these valuable resources.

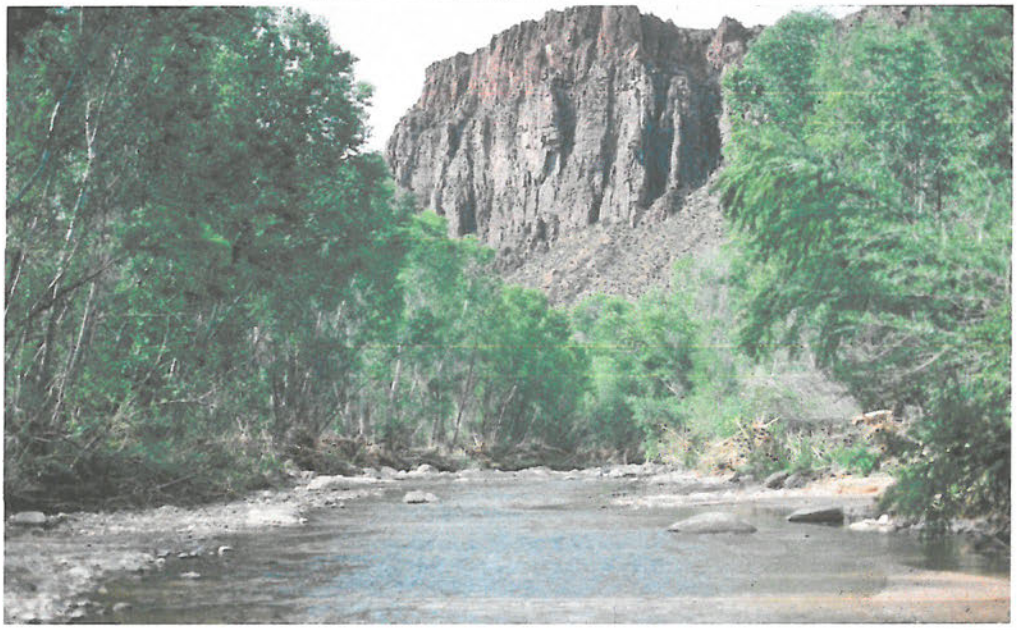

Figure 4. Pinto Creek near Henderson Ford. Photo taken in the 1990's. The late Senator Barry Goldwater called Pinto Creek a "jewel in the desert".

Signed this 24th Day of January, 2020

[redacted]

Richard Martin — Forest Staff Officer, Retired

[redacted]

Grant Loomis — Forest Hydrologist, Retired

[redacted]

Janet Grove — Forest Riparian Ecologist, Retired

[redacted]

[redacted]

Kathy Nelson — Forest Instream Flow Specialist, Retired

[redacted]

Lynn Mason — Hydrologist, Retired