

**CORRESPONDENCE RECEIVED FROM THE PUBLIC ON
THE TRASCANYON WATER DISTRIBUTION PIPELINE ENVIRONMENTAL
ASSESSMENT FOR GRAND CANYON NATIONAL PARK**

Note to Reader: The comments contained in this document were entered into and exported from an online comment database. Greetings, salutations, and concluding thank you statements have generally been removed. In some cases, the comment system translated commenter input into stray characters that were undecipherable; we have attempted to represent those comments as accurately as possible, but in some cases, ambiguity concerning the commenter's intent remains.

Correspondence 1: Having crossed the Canyon some 26 times in the past 20 years, I agree completely with the Park Services's preferred alternative, particularly if it would result in eliminating some of the valve covers that protrude from the trail in the Box. Maintaining reliable potable water service between the North Rim and Phantom Ranch is critical to visitors' safe enjoyment of this spectacular portion of the Canyon. One challenge will be to maintain reliable service during the replacement project without unduly disrupting the visitor experience, and also without unduly burdening the heroic NPS employees and contractors who actually will be doing the hard work in a harsh environment.

Correspondence 2: Relocating the intake to Phantom Ranch makes the most sense. Cutting out the part that receives the most damage in the box is the right thing to do. I would like to hear more about the studies that have been done on the effects of drawing from the creek and how it will affect water tables, etc., elsewhere in the canyon.

Correspondence 3: Please fix the water pipelines no matter what the cost in a manner **THAT WILL LAST AND LEAVE THE LEAST DISTURBANCE OF THE CANYON AS POSSIBLE.** The Canyon deserves nothing less than this. We travel to the Grand Canyon, both sides, often.

Correspondence 4: Without knowing further details:

If it hasn't been upgraded since it was installed with the pipeline, will the existing power line from Indian Gardens to Phantom Ranch have sufficient capacity for either the alternative with alluvial wells along Bright Angel Creek or the surface water intake from the creek - ie water treatment, booster pumps, employee housing, etc?

Assuming that the 8 to 9 acres footprint for the new infrastructure and buildings in Bright Angel Creek Canyon (with the exception of a surface water intake) will be above the recorded flash flood water level of the creek, what is proposed to mitigate the visual impact on that area when viewed from the South Rim? One alternative considered back in the 1990s when in-house considerations were conducted for a 10-238 Project Package Proposal for a similar project to replace the waterline was to tunnel into the canyon wall for the location of as much of these facilities as economically possible and environmentally acceptable.

Correspondence 5: I agree that something must be done to upgrade the TCWL. I support Alternative B.

Correspondence 6: The Trans canyon pipeline and its continual failure due to its age is a subject i am well versed on. I have participated in its repair numerous times and it is a very physically demanding task. The pipeline was designed to be simple and effective in an age when the ability to get materials for its construction to these remote and rugged areas and installed was limited by the technology available to transport said materials and bed the original pipe in the bed rock of the grand canyon. Never the less the simple, effective, design and construction of the trans canyon pipeline was accomplished and worked effectively for its designed life span. The aluminum pipe was chosen due to its weight and the ability of helicopters to fly it to these locations. It is well known that aluminum is not the most abrasion resistant metal, but with todays advancements in pipe construction materials the choices are not as limited as they were 60 years ago. not only that but advancements in aviation and remote drilling technology take the back breaking work out of transporting and installing the pipe. With current drilling technologies a directional drill rig can drill and install pipe in the same pass hitting a pin point location many miles away, far more than the 12.5 miles needed to complete the replacement of the current pipeline. This simple and effective distribution of water through the canyons corridor and to the south rim is the preferred option in the canyons harsh and extreme environment. Simplicity reliability and longevity are the chief considerations when planning this project. Complex mechanical equipment including pumps capable of performing lifts over thousands of feet, valves, filtration and desedimentation units, chemical pumps, and all the other equipment associated with pumping stations and water treatment plants does not fair well in the extreme and remote environment in which they will operate at the bottom of the grand canyon. The maintenance and operation budget overhead for new water treatment plants and pumping stations will far surpass the current budget for what it takes to maintain the parks existing trans canyon distribution system. It is no secret and park management knows they can barely maintain and staff existing infrastructure with qualified operators. One might argue that staffing issues will be resolved by automation, but even automation equipment needs maintained and there is no way around qualified staffing. I say this from experience. The replacement of the trans canyon pipeline in kind and the renovation and update of the Roaring Springs and Indian gardens pump houses is the preferred option and the only option. As stewards and protectors of the National Park Services natural landscapes the last thing we should be doing is constructing more industrial buildings and equipment in the very heart of the crown jewel of the National Park Service which we have sworn to protect. The current trans canyon pipeline design is tried and true, and has proven to be effective at distributing water to the south rim of the grand canyon with no visual intrusion and minimal electrical consumption, or mechanical propulsion. No construction materials last forever and everything has a life span but design ideas and simple engineering can last life times through and through. That is what the Holverson Construction Company accomplished when they designed and built the trans canyon pipeline. SIMPLE, RELIABLE, EFFECTIVE. Low maintenance and staffing expenses, and minimal impact to the resource. If they could accomplish this herrculean feat 60 years ago I am sure that with the advancements in technology and pipeline construction we can replicate it. Replacement of the trans canyon pipeline with updated high pressure abrasion resistant pipe and a complete update and renovation of the Roaring Springs and Indian Gardens pump houses in kind is the preferred option.

Correspondence 7: If the water intake for the pipeline is moved from Roaring Springs to an area near Bright Angel Creek at Phantom Ranch, where would that area be? How would the water be pushed up to Indian Gardens and to the South Rim. Where would the water treatment, sediment

settling ponds and tanks be located.

Would water still be flowing to the North Rim, the tunnel, the ranger station (old pump manager house), and Cottonwood campground.

How would all this construction affect hiking in the main corridor, Bright Angel trail and North Kaibab trail?

Correspondence 8: Clear preference for Alternative B - Relocate water intake.

Though not noted in the advantages, this option, as I understand, also eliminates the severe turbidity that contributes to plumbing and mechanical issues at Phantom Ranch and at the rim. Also understood, is the need to provide 3 phase power to the new facilities at Phantom Ranch. Please plan to include, or design for future expansion of 3 phase power to the ranch. I would assume that doing so during this project under the same mobilization would be most cost effective and would facilitate further water and electric conservation at the Ranch with the ability to upgrade HVAC and other equipment.

Looking forward to more detail on the construction schedule for the selected option as impacts Xanterra operations. It's been suggested that Option B is expected to have a 4-5 year construction schedule and that while work at Phantom Ranch would not extend that period, the mule operation would be impacted for a longer duration as helicopter activity will be extensive throughout most of the project and deemed a safety concern (and no doubt impact the guest experience) to operate the mule service.

To not create guest inconvenience, advance notice of 13 months or more would be needed to coincide with our reservation schedule.

Correspondence 9: I support the NPS Preferred Alternative. It is clear that renovation of the water system is necessary. The restoration of natural water flow in Bright Angel Creek is a significant improvement to current conditions.

I would like to congratulate the Park Service for some outside-the-box thinking resulting in the Preferred Alternative. It would have been easy to simply fix the current system without looking to change the system in a way to reduce impacts to the environment.

Well done!

Correspondence 10: I support the preferred alternative to move the water intake to Phantom Ranch. I however have concerns about the practicality of getting this project completed on time. Previous NPS contracted work, including the Phantom Ranch water line replacement went well over budget and time. I question the Agency's decision to not allow for outside collaboration and support. I know that the Park fiercely opposes their gateway community neighbor (Tusayan) but sharing the cost and burden of this pipeline seems to make sense. The Park's argument that they cannot sell a resource (water) is a little silly. Tusayan exists to serve visitors to the Grand Canyon, the community only exists because the Agency has refused to build more infrastructure, including lodging, within the Park over the last 50 years. Tusayan only exists because of the Agency's/Park's refusal to meet their mandate (half of the mission statement of the NPS is about visitors). Allowing water use to Tusayan allows for visitor enjoyment of the Grand Canyon into the future while also providing cost-share and liability-share. If the Agency worries about growth

at Tusayan inconsistent with NPS values they can write language in whatever water contract is created that limits growth to responsible growth focused on Grand Canyon visitors and not undue profit.

Correspondence 11: As a hiker and runner I am concerned about drinking water during construction. South Kaibab Trail has no water and by having visitors use that trail while the BA is closed I am concerned for my and others safety. Could there be a temporary water source at Cedar Ridge? Also, how would this affect the traffic on Tonto Trail? When/how long would the BA be closed?

Correspondence 12: Page 5. In the paragraph on Wetlands, it appears that the word "acre" is missing after "would be less than 0.1."

Page 58. The text states that "there are no trails directly under the flight path." (referring here mostly to helicopter flights going to and from Phantom Ranch or Indian Garden). What about the Rim Trail, the Tonto Trail, and the River Trail? All of these trails are under this flight path.

Page 59. Similar comment to page 58. The text on page 59 states: "with no trails directly under flight path".

Correspondence 13: I support replacing the current pipeline but not increasing the pipeline's carrying capacity. As the concept of "Induced demand" has taught us, the more of a resource that you provide, the more people demand (this concept is usually applied to traffic). Given the diminishing resources of the Colorado River and associated climate change, doing any work to expand capacity would irresponsibly tax already fragile water resources. Additionally, if additional capacity were to be created, that would attract even more tourists to an already over run park.

Correspondence 14: How will the dates that the Bright Angle trail and/or campsites that will be closed be posted? Will the close dates be given to the vendors that make reservations in the canyon for lodging, hikes, etc. so reservations will not be made at those times? How will this information given to the public. Will it be placed online or in another method to people who will be planning trips to the Grand Canyon in the usual 4 to 13 month period that most use to plan a vacation to the Grand Canyon. It would be a shame to come from another country or part of the USA only to find out what you where hoping to do was shutdown due to construction.

Correspondence 15: I agree with the selected alternative. Please move this project along.

Correspondence 16: I understand that action needs to be taken to replace or repair the water transportation pipe across the canyon. I am a regular hiker in the area to be impacted by the repair or replace process. I want to suggest that the Park Service provide opportunities during each year of the construction project that the park will be free of noise and dust. This would allow hikers and others to access this wonderful park on a planned basis to avoid these disturbing factors, noise and dust.

A coordinated five weeks each year of no overhead flights including tourist and construction flights would be wonderful. NPS would need to coordinate with the FAA to achieve this giving back of the park to quiet enjoyment.

Each week could be linked to a holiday to optimize quiet access. Perhaps the week of Veterans day for example.

Correspondence 17: Thanks for the opportunity to comment on the TCWL EA. I am completely supportive of this project as it is needed to maintain the capability to meet the needs of staff, visitors, and management of the Grand Canyon. In 1995 I was assigned as a Field Observer to monitor progress after the March, 1995 flood that damaged the pipeline and trail along Bright Angel Creek and along the Bright Angel Trail. I was introduced to the potable water issue at Grand Canyon at that time; I tried to eliminate or minimize my showering after long days of hiking, mapping, and photographing on that assignment. I expect some of the photos I took of damage and work can probably be found in the files somewhere in the Park archives. Since that time I have also observed issues with the pipeline while on backpacking trips with no water at the rest houses, river trips with no water at the Boat Beach, and time on the South Rim eating off of paper plates at El Tovar Lodge. I am glad the Grand Canyon is moving toward solving this issue!

Below are my comments for your consideration.

Though only 5% of the water from Roaring Springs is diverted into the pipeline that 5% could become a higher percentage if the overall flow from Roaring Springs declines due to impacts of climate change. Having that 5% in Bright Angel Creek between Roaring Springs and Phantom Ranch will help to maintain flows, riparian systems, and key species as climate change continues. I support Alternative B for this reason.

I believe that very few historic 'artifacts from the original TCWL should be left in place. Select very limited examples of pipe, valves, valve boxes, historic engineering, etc and remove the rest. Though it is designated as a Historic District all of the materials are relatively modern and leaving too many of those in place will appear as abandoned junk and affect visitor experiences negatively. Interpret the few remaining examples well to make up for the removal of most of it.

Please do not increase the availability of backcountry permits in nearby threshold and primitive areas to compensate for intermittent closures of Indian Garden and Bright Angel Campgrounds. Doing so would 1)decrease visitor experiences in these adjacent areas, 2)lead to degradation of trails, facilities, and natural features in adjacent areas, and 3)potentially increase visitor risk as inexperienced 'corridor users not accustomed to more difficult terrain, conditions, and lack of water confront these conditions in the threshold and primitive areas.

Try to keep helicopter flights within specified project flight paths designated for each cargo destination area and outside of proposed wilderness to the extent possible. As with commercial aircraft flights for tourism, the project related helicopter flights should have some daily time constraints applied. I dont think these constraints should be as restrictive as with the commercial flights since there is a need to get materials transported and work completed in a timely manner,

but there should be a definite 'lunch break and an 'end of day time each day. Early morning flights are okay since the ability to transport materials under calm, cool conditions early in the day is essential for efficiency as well as pilot and ground personnel safety. Just try to give the backcountry users a break from flights at lunch and early enough in the afternoon/evening so they can enjoy the quiet ambiance of dusk in the Canyon. Additionally, let backcountry users know which areas might be most impacted by project related flights so they can plan and permit their trips accordingly.

The commercial use impact to Xanterra and other commercial companies is substantial in terms of revenue! This may be one of the biggest issues related to the project! Though Im not a fan of 'spreading the use to threshold and primitive areas it may be necessary to displace some commercial use to other locations during construction to help mitigate this financial impact and provide a partial opportunity for companies to make up lost revenue, thus making the project more palatable for these entities. Another option would be to focus work on specific areas through time, which would allow some commercial visitor use to continue, ie work in the Phantom Ranch area first, then when that is completed move to the lower Bright Angel Trail, then to Indian Garden. That would allow some commercial trips to either continue, to use alternative routes, or to avoid work in some locations.

There needs to be a BMP to address control of invasive species and other weeds post-construction for a 3-5 year period. Disturbed soils will attract weeds, regardless of how good the BMPs are followed during construction.

Thanks for the opportunity to comment. Good luck with getting the project approved and implemented!

Correspondence 18:

I.

The environmental assessment of the Grand Canyon National Park Transcanyon Water Distribution Pipeline left little doubt that action must be taken to improve water delivery reliability and resiliency to Grand Canyon residents and visitors. As a local resident and stakeholder in changes to the water source, I urge Grand Canyon to reconsider their preferred plan of Alternative B, relocating the water intake. Upon review of the environmental assessment, it is clear that the best option for Grand Canyon is Alternative C, replacing the transcanyon pipeline in kind. This plan of action is superior to relocating the water intake from the perspective of environmental impacts, quality of water source, reliability of water delivery, and climate change concerns.

II.

I was surprised and disappointed while reading the EA to see the ways in which this document and associated research had been manipulated to encourage the selection of the parks preferred alternative. The deck was very carefully stacked against the consideration of other actions. The EA is riddled with cautionary language regarding pipelines and their unreasonable maintenance needs, but makes no mention of the exorbitant maintenance requirements and costs for water treatment plants. Estimations and assumptions have been exaggerated in favor of Alternative B throughout the document, with construction times and helicopter needs as very obvious

examples. While the platitude remains true that construction takes longer than we plan, it seems that the EA underestimated the construction time for Alternative B even more so. With a transcanyon construction project of this size and with such variable needs, it is patently untrue that construction could take 5 years total, with a mere 3 years in the inner-canyon. And yet, this short construction time was used to justify the favorability of Alternative B when analyzing the environmental impacts. And again, the EA claims that Alternative B will require 6 hours per day of helicopter time for 30 months. In comparison, Alternative C will require a whopping 14 hours per day of helicopter time for 48 months. These estimates are absurd and clearly biased. With the variability of materials and concurrent projects, it is unreasonable to expect that Alternative B should take such little time and helicopter flights as is projected in the EA.

Even with these distortions, the conclusion of the EA is that both Alternative B and C will have some adverse and negative impacts on the selected environmental topics. But these effects will be similar for each alternative, especially when taking into account the exaggerations in the estimated construction and helicopter times. With the environmental impacts being equal, it is important to examine other factors that should impact Grand Canyons decision regarding our water source and distribution system.

III.

I do not profess to be an expert in water sources or treatment, but I have worked alongside water utilities before and have some familiarity with Grand Canyons infrastructure. The EA places significant value on the construction phase of the water utility distribution project, but does not acknowledge the years that come after. As anyone familiar with water infrastructure can tell you, the operation and maintenance requirements of Alternative B will be arduous and demanding for park staff. Alternative B will require a switch from groundwater to surface water, which requires much stricter treatment and monitoring requirements. In order to keep up with multiple backcountry water treatment plants, pump houses, communications, and electricity requirements, I would predict that frequent helicopter flights will be required for transportation of staff and equipment for the lifetime of the water infrastructure. It is not in the best interests of Grand Canyons natural resources or visitor experience to build infrastructure that will be so burdensome.

Before pursuing a project like Alternative B, the park would need to put into place adequate staff and functioning infrastructure throughout the water utility. The Grand Canyons maintenance staff is a skeleton crew, and the water utility is no exception. With Alternative Bs water distribution plan, the park would need to double the amount of positions within the water utility to include electricians, pump mechanics, journeymen, and compliance experts. With such a complicated utility with so many varied obligations, the park would also need a plan to guarantee that the water utility could remain fully staffed at all times. Given the current state of maintenance staffing, I do not think this can be achieved. Meanwhile, in order for new treatment plants and pump houses to function, existing water infrastructure would need to be repaired so as to be fully operable. The pump houses at Roaring Springs and Indian Garden would need to be rebuilt with pumps that function reliably and consistently. The Phantom Ranch and Indian Garden waste treatment plants would need to be redesigned and rebuilt to accommodate the reject water from the drinking water treatment plants. And perhaps most importantly, all communications would need to be rebuilt. It is my understanding that the current

communications system is outdated and failing. In order to run remote treatment plants and pump houses, the water utility staff will need reliable communications for all new infrastructure. All of this would need to be addressed before pursuing Alternative B.

It is common knowledge that the most effective and reliable drinking water infrastructures are the simple ones. The designers of the original Roaring Springs water source knew this when they designed a distribution pipeline that was 80% gravity fed. It is the responsibility of modern day engineers to design out any complications and problems in new projects. Yet Alternative B describes a water utility as complex as possible. It introduces new problems and issues without considering how this will impact the parks maintenance staff. Alternative C provides a simple solution to a simple problem. It addresses the concerns of reliability of water distribution infrastructure and does not create arduous conditions for the operation and maintenance of the water utility.

IV.

The Grand Canyon has a long history of ambitious and poorly planned engineering projects that failed, and there is no reason to believe that Alternative B will be any different. The pumps at Indian Garden have not functioned for years, despite many contractors, equipment, and money being poured in. The pipeline replacement at Phantom Ranch was a multi-million dollar project that is now unusable and unfixable. The water utility has been a frequent victim of these failed attempts, but they are not the only ones. The backcountry office was supposed to be the new train depot, but designers neglected to take the length of the train into account. The new visitor center was built as a train stop for a light rail that will never be completed. The Paiute apartment complex was already crumbling before the discovery that some apartments are not connected to any sewer lines. There are countless failed projects at Grand Canyon, for one reason or another, all of which indicate that the park should strongly consider the simplest option for constructing new water distribution infrastructure.

Alternative B is an extremely ambitious project, probably the biggest and most expensive infrastructure construction in the National Park Service. And there are plenty of unknowns. It is only a theory that power will be sufficient to operate the treatment plants and pump houses. It is unknown if the pumps and motors will be capable of pumping from Phantom Ranch. It is unknown if the source water will be of a sufficient quality and if the chosen water treatment methods will be effective. Lastly, we do not know if we have thought of everything. For want of a nail comes to mind - one small detail in any part of this construction project could prevent the entire system from working. But Alternative C provides a lot more certainty. It is known that the pump houses can function and that the water can gravity feed. The Roaring Springs water source is high quality and easily treatable. With so much uncertainty, and a history of overreaching engineering projects, Alternative C looks like the most promising choice.

V.

There is no doubt that climate change is real and that it will have a significant impact on how humans live. Unfortunately, Grand Canyon National Park is now faced with making long-term decisions regarding our water resources based on the unknowable climate change challenges of the future. The fear of a megadrought descending upon the Colorado Plateau is not unjustified. It has been predicted that climate change will decrease the water flow at Roaring Springs,

impacting both the access to a water source and the ecosystem in Bright Angel Creek. But the Alternative B outlined in the EA fails to address these climate change concerns.

It is important to realize that while climate change will undoubtedly cause severe problems for residents and visitors to Grand Canyon, it is still unclear exactly how. As stated in the EA, preliminary data suggests that changes in snowpack may affect the flow at Roaring Springs, but the data is preliminary and research is still being conducted. The exact source and hydrology of the Colorado Plateau leading to Roaring Springs is still largely unknown. Alternative B relocates the source water, moving it from a groundwater source to a surface water source. If water resources at Roaring Springs will be effected by climate change, then surely the water at Bright Angel Creek will also be effected. There is no reason to believe that a megadrought will not impact Phantom Ranch as well. Why would we move an intake downstream from our current source if we believe it will soon run dry? Not only that, but in an unknown future, it is possible that the quality of surface water will deteriorate due to temperature changes and chemical contamination. If that is the case, any water treatment facilities built now will not be adequate in 20 years. How do we plan for water treatment infrastructure for water quality that we cannot predict? Alternative B does not address any of the concerns with the existing source. It is based on the assumption that Roaring Springs will become unusable in the future while Bright Angel Creek at Phantom Ranch will be somehow unaffected by climate change. If the decision to change the source water is based on climate change concerns, Alternative B is not a good option. It is a massive project, and much more data is required to justify such a drastic move. Alternative C, while not directly addressing climate change concerns, still provides the highest likelihood of a resilient water source and reliable distribution system.

Climate change is real, terrifying, and demands our attention. People should try to adapt to climate change, but it should be done carefully and with a full understanding of the choices being made. It is important to look at all the options, because a decrease in water availability on the Colorado Plateau can be addressed in many ways. The park could curb freshwater usage through increased access to reclaim water. The park could limit water availability in backcountry settings or stop selling water to neighboring Forest Service land. Changing the source water is not the only way for the park to respond to climate change.

VI.

I agree with the parks assessment that action must be taken to improve water delivery reliability and resiliency at Grand Canyon. However, I strongly disagree that Alternative B, relocating the water intake, is the best option. Honestly, it is perplexing how the park came to the conclusion that Alternative B would be the preferred route. The negative environmental impacts of Alternative B will be greater than Alternative C. Alternative B will require infrastructure and buildings at Phantom Ranch and Indian Gardens that will forever change the natural landscape. Alternative B will have burdensome operation and maintenance demands that require more staff and better existing infrastructure. Lastly, Alternative B does nothing to address the climate change issues of the future. The parks proposed solution is not a solution or even a leap of faith, but an inevitable failure. To pursue a project of this magnitude, with the damaging effects both to the environment and public enjoyment of the park, is wildly irresponsible of park management.

Alternative C, replacing the transcanyon pipeline in kind, is the better choice for the park. Its environmental impacts are minimal during construction and nonexistent after. It is simple engineering that allows for easy operation and maintenance for the maintenance staff. Construction can begin without first building a new communication system or backcountry waste treatment plants. Alternative C allows the park to quickly construct reliable and resilient water infrastructure so that time can be spent addressing climate change in other ways. Replacing the transcanyon pipeline in kind is the best option for providing potable water from a high-quality water source to residents and visitors of Grand Canyon National Park.

Correspondence 19: Please accept these scoping comments on the Trans-Canyon Water Distribution Pipeline Environmental Assessment (EA) on behalf of Sierra Club - Grand Canyon Chapter.

Sierra Club is one of the nations 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 earths 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 2.7 million members and supporters with more than 60,000 in Arizona as part of the Grand Canyon (Arizona) Chapter. Our members have long been committed to protecting and enjoying our national parks, including Grand Canyon, and enjoy various types of recreation including hiking, backpacking, wildlife viewing and more, in the Canyon and specifically in the areas affected by this pipeline.

Grand Canyons Trans-Canyon Water Distribution Pipeline (pipeline) is overdue for major maintenance and replacement, and Sierra Club is supportive of the preferred alternative, which would restore most of the natural flow to Bright Angel Creek and Roaring Springs. Once complete, the preferred alternative would protect park resources and visitor experience by providing a reliable water source to visitors while best protecting riparian and aquatic resources. However, we ask the National Park Service (NPS) to consider the following issues when preparing the EA for this action.

Grand Canyon National Park Soundscape Must be Protected

All three Alternatives add increasing cumulative, unacceptable helicopter noise impacts to the east end of Grand Canyon: i.e., from Point Sublime and the Boucher/Hermit Trail system eastward past Indian Gardens-particularly in concert with the air-tour overlay also over the East End.

NEPA emphasizes coherent and comprehensive up-front environmental analysis to ensure an agency will not act on incomplete information, only to regret its decision after it is too late to correct (*Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1216 [9th Cir. 1998]). NEPA thus requires federal agencies to analyze the direct, indirect, and cumulative impacts of the proposed action (42 U.S.C. 4332[C]; 40 C.F.R. 1508.7, 1508.8, 1508.25 [the scope of a proposed action must include connected, cumulative, and similar actions]; *Sierra Club v. Bosworth*, 2007 U.S. App. LEXIS 28013 [9th Cir. 2007]). Cumulative impacts include the

impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 C.F.R. 1508.7). A cumulative effects analysis must also provide detailed and quantifiable information and cannot rely on general statements and conclusions (Neighbors of Cuddy Mountain v. U.S. Forest Service, 137 F.3d 1372, 1380 [9th Cir. 1998]).

NPS must examine the cumulative impacts of this project on soundscape and then identify and employ all possible mitigation measures to reduce noise. Natural quiet has been identified as a resource that NPS must protect in Grand Canyon National Park. The Grand Canyon National Park Enlargement Act of 1975 and the National Parks Overflights Act of 1987 specifically identify the importance of protecting natural quiet in the park. Surveys of Grand Canyon visitors have determined that mechanized noise can negatively impact the visitor experience, and Grand Canyon backcountry and river users are especially sensitive to noise (DOI NPS 1999).

The longstanding noise from commercial air tours on the east end was improperly left out of the draft EAs cumulative impacts section on soundscape, and must be referenced as already being well in excess of the NPS major adverse standards for Wilderness character and backcountry visitor experience. The several years of pipeline work will only drive this longstanding situation further into unacceptable noise levels on the east end. The noise/sight of the air tours and the construction helicopters will for years overlap with and compound air tour noise on trails and backcountry sites south of the River, particularly near the Dragon air tour corridor. These cumulative impacts should be recognized and mitigated in the final EA. The Tonto Trail should also be recognized as a place directly impacted by the construction project, because flights entering the Canyon from the Abyss area of South Rim will necessarily, immediately cross directly above the Tonto Trail and spread noise along many miles of it to the west and to the east of that crossover. Seasonal, NPS-permitted hiker trips along the Tonto are documented as particularly frequent in the spring and fall (as is true of the Bright Angel and Kaibab Trails).

Therefore we request that the National Park Service indicate in the final EA, and otherwise, that it will commence the following mitigation steps at this time, consistent with our Grand Canyon Chapter public letter to NPS Director Jon Jarvis, dated May 18, 2016:

1. Transcanyon Pipeline Environmental Assessment

- Designate Five Respite Intervals, of one week each, throughout each year of this project, where there will be no construction helicopters traffic into the Canyon. These would provide No Noise periods, matched with the four annual NPS No Fee days scheduled over the course of the year, in January, April, September, and November. (The fifth such period would be at the June Summer Solstice, to accommodate Native American pilgrimages often coincident within the east end of the Canyon).
- Designate Sundays additionally as No Fly days, throughout the year.

2. Special Flight Rules Area (Air Tours)

- Similarly, designate Five Respite Intervals, simultaneous week-long intervals hereafter, on the east end of the Canyon (Zuni and Dragon Corridors) where there will be no commercial air tours.

Implementation likely would require a formal Request from NPS to the Federal Aviation Administration (FAA). This request would be under authority of, pursuant to, the Grand Canyon Enlargement Act of 1975, which directed NPS to pursue such mitigation with FAA - - wherever and whenever there are unacceptable adverse noise impacts from air tours over the Park. Authorities and requirements for such mitigation are spelled out in the Sierra Clubs May 18, 2016 Grand Canyon Public Letter.

- Request of the FAA, further, similarly, that Sundays additionally be designated as No Fly days, for air tours from the Grand Canyon National Park Airport, throughout the year.

One huge advantage will be that those hikers seeking solitude and wilderness character and other attributes of the Wilderness Act (and of the National Parks mandates as well) will be able to confidently plan their trip for days when the Canyons natural quiet is respected, fully protected, and available. River trip users will also benefit, to the extent their trip planning can take advantage of this calendar.

See also:

- 10 Backcountry and Corridor Annual and Seasonal Use Density Maps for GCRA available at <https://parkplanning.nps.gov/document.cfm?parkID=65&projectID=22633&documentID=69878>, Accessed Nov 6, 2018

- Sierra Club Open Letter to the National Park Service Director John Jarvis, dated May 18, 2016 re Noise Pollution in the Grand Canyon National Park: cc:d to DOI Secretary and FAA Administrator: https://www.sierraclub.org/sites/www.sierraclub.org/files/sce/grand-canyon-chapter/conservation/GC_Natural_Quiet_2016-05-18.pdf (accessed Nov 6, 2018)

Sustainable Energy Sources Should be Identified and Considered

The preferred alternative contains a serious tradeoff. In exchange for returning higher flows to Bright Angel Creek and reducing the potential for pipeline breakage, NPS is committing to an increased energy cost in pumping water from the bottom of Grand Canyon to the South Rim. Grand Canyon National Parks air quality is affected by the regions coal burning power plants; the parks snowpack, springs, plants, and wildlife are affected by climate change. NPS must disclose the impacts of its decisions on air quality and climate change, because its decisions will ultimately feedback to impact Grand Canyon. Further, a commitment to purchasing energy to pump the water will increasingly cost taxpayers into the future. To alleviate environmental and social costs, NPS should consider ways that it can offset energy needs with onsite or centralized renewable sources, such as solar with storage.

Coordinate Flow Changes with Natural Flow Regimes

Native aquatic and riparian species tend to have life histories that correspond with flow magnitude and timing (Poff et al. 1997, Lytle and Poff 2004). Extreme disturbances can cause long term changes to biotic communities and may favor exotic species (Naiman et al. 2008). Some native species may depend on natural cues in order to escape potentially harmful natural flow events (Lytle 2008). NPS should do all they can to be sure that flow changes do not happen at a time when native species could be harmed or when exotic species could be favored. For

example, flow changes should correspond with normal natural flow regimes so that they do not wash away or strand eggs or encourage germination of non-native seeds. This should be considered for changes to come in both Bright Angel Creek and Garden Creek. If this proposed action will reduce flows in Garden Creek, the flow should be decreased at a time that corresponds with a decrease in natural snowmelt, so wetted soils favor germination of native plants.

NPS Should Not Export Water from Grand Canyon National Park nor Consider Purchasing Water from Offsite

While NPS is not considering buying water from or selling water to the town of Tusayan, AZ as part of this EA, in light of information released on recent tapes of Tusayan Town Council members and Stilo Development Group USA, LP, we reiterate comments that we submitted on August 7, 2017 during the scoping for the pipeline project (Sierra Club Grand Canyon Chapter. Letter Attn: Trans-Canyon Water Distribution Pipeline EA, submitted to Superintendent Chris Lehnertz on August 7, 2017, via parkplanning.nps.gov). In these recently released recordings, there is mention of Town of Tusayan officials and/or Stilo Development Group USA representatives lobbying NPS officials in Washington, DC to accept an alternative that would force NPS to purchase water from the foreign developer, Stilo, thereby enabling a development that NPS has declared would harm Grand Canyon National Park. (Audio beginning at 21:00 in https://www.dropbox.com/s/no4mmacdb9jj1ku/7.2_51PM.mp3?dl=0 - see also <http://www.grandcanyonwatchdog.com/news/index.php?id=1211> for an explanation of the recordings origin.)

NPS Should Not Consider Any Alternative that Mandates Water Sale to Tusayan, AZ According to Public Law 95-586, dated Nov. 3, 1978, the Secretary is authorized to sell by contract water located within Grand Canyon National Park for the use of customers within Tusayan, Arizona, to a nonprofit entity authorized to receive and distribute water within Tusayan, Arizona upon his determination that such a sale is not detrimental to the protection of the resources of Grand Canyon National Park or its visitors (U.S. Public Law 95-586, Nov. 3, 1978. Available at <http://uscode.house.gov/statutes/pl/95/586.pdf>, accessed 8/4/2017). The Town of Tusayan has a contractual agreement with Stilo Development Group USA, LP to pursue an easement through Forest Service land that would enable a large development that NPS has determined would harm Grand Canyon National Park (Section 3 (ii) and elsewhere in: Second Amendment to Pre-Annexation and Development Agreement No. 2011-11-02 Between the Town of Tusayan, an Arizona Municipal Corporation and Stilo Development Group USA, LP [sic]. Filed with Patty Hansen, Coconino County Recorder 12/6/2016; NPS 2011; NPS 2012).

Therefore, over the long term, such a sale would indeed be detrimental to the protection of the resources of Grand Canyon National Park.

According to former Superintendent David V. Uberuaga:

With a large residential community on the boundary of the park, and with increased visitation will come additional operational demands on park infrastructure and staff that provide

emergency services, law enforcement, visitor programs, maintenance and other visitor related services such as the visitor transportation system, and on the local clinic and school - both located within the park boundary.

Beyond water, wildlife, visitor experience, park infrastructure&and the long term impacts that can occur to these resources, we are also greatly concerned about park vegetation - such as the invasion and spread of exotic species; for cultural sites - knowing that increased development and additional roads can lead to looting of archeological sites both within and outside of the park; threats to proposed wilderness adjacent to the South Rim that could be impacted by degraded air quality, noise impacts to natural sounds, impacts to view sheds and vistas from installation of infrastructure, and clearing and grading for roads to name just a few. We are also concerned about large increases in visitation and local populations and how we might manage those with limited resources and an aging infrastructure. What will be the environmental and fiscal effects&we dont know, as no analysis has taken place, and concerns that we and others have expressed, have not been addressed in an adequate manner.

Ecological processes cross park boundaries, and park boundaries may not incorporate all of the natural resources, cultural sites, and scenic vistas that relate to park resources or the quality of the visitor experience. Therefore, activities proposed for adjacent lands may significantly affect park programs, resources, and values. Cooperative conservation beyond the park boundary is necessary as we strive to fulfill our mandate and protect these lands for future generations& (NPS 2011)

NPS should not engage in any agreement that would enable these harms to come to fruition.

NPS Should Not Consider Any Alternative that Purchases Water from the Town of Tusayan, Stilo Development Group USA, LP, or their Affiliated Corporations

The Town of Tusayan, Stilo Development Group USA, LP, and affiliated corporations claim they are investigating repurposing a 270-mile coal slurry pipeline to provide water to the Town and serve its new and proposed developments (Yerian 2015). This pipeline scheme is, as of yet, more an idea than a proposal. It would require a valid, and as yet undisclosed, water right, would also require rights-of-way through Forest Service and Bureau of Land Management lands to complete its route from water source to the Town of Tusayan. Pumping water uphill along the 270-mile line would require a tremendous amount of energy.

Grand Canyon National Park must not commit itself to being reliant on a foreign-owned, private water supplier, whose real intent appears to be financing a water project to unleash a huge private development on the Parks doorstep. NPS must not become a partner in a project that will harm Grand Canyon National Park (NPS 2011, NPS 2012). Again, see above for the huge negative impact this would have on the crown jewel of our National Park System (NPS 2011).

NPS cannot view this pipeline as a reasonable alternative because several unknowns render it far too speculative. It is unlikely that this pipeline will deliver water in time to meet the Parks needs, if it happens at all. The owners may be relying on an interstate transfer of water rights. If the

water rights derive from an Arizona source, how junior will they be? Will the water source be cut off when Lake Mead continues to fall? Will there be any problems transferring a water right from an agricultural to a drinking water supply?

The costs are also a huge unknown. How much energy will pumping require, and where will the energy come from? The Central Arizona Project, for example, requires the burning of coal at Navajo Generating Station, which causes a haze and air quality problem for Grand Canyon National Park. Will this pipeline create a similar pollution problem? What kind of expense will it create for American taxpayers?

The project would require further environmental reviews under NEPA, and the granting of a right-of-way is far from a guarantee. Aside from the clear connection to a development project that will harm Grand Canyon National Park, what would be the impacts from a new right-of-way in the adjacent National Forest and inside Grand Canyon National Park?

How would the owners of the coal slurry line ensure public safety? Coal contains a number of contaminants, including mercury, and coal can also contain the radioactive elements uranium and thorium (Hvistendahl 2007). Though these radioactive elements are usually in trace amounts in unburned coal, the coal in this pipeline was transmitted in a water-based slurry and it is unknown if these elements were able to dissolve and redeposit within the pipeline. That would need to be investigated. How do the owners of the pipeline intend to clean it out? Do they intend to line it? Will water be treated after it moves through the pipe? What would be the expense in that?

If all these questions cannot be answered and the pipeline cannot be retrofitted to supply water before the NPS desired date of 2019, it should not be considered because it will not meet the NPS's purpose and need, even partially. Agencies are not required under NEPA to consider alternatives that cannot meet, at least in part, the action agency's purpose and need. If it is to be considered, then all impacts, including the cumulative, direct, and indirect impacts, of the pipeline must be analyzed as part of this EA (likely requiring an Environmental Impact Statement). Impacts to be analyzed include: the development at Tusayan that the coal slurry pipeline would enable (which NPS has already determined is not in their best interest); impacts, likelihood, and stability of water rights transfer and associated water supply; energy costs and impacts of power generation; impacts of new rights-of-way and additional pipeline construction; contaminants and safety of the water supply.

Thank you for considering our input on the Trans-Canyon Water Distribution Pipeline EA. Please continue to keep us updated as this project moves forward. This is a greatly needed infrastructure project and we hope that NPS can replace the pipeline in a timely manner, while minimizing any environmental harms.

Thank you for considering our comments. Please keep us informed about any developments relative to this project.

References:

DOI NPS. Social Science Research Review Volume 1, Number 1 Winter 1999 The effect of mechanical noise and natural sound on visitor experiences in units of the National Park System. Available at <https://pdfs.semanticscholar.org/380e/270039c8bc6acde90f324859fa344fe13867.pdf>, accessed 8/7/2017.

Hvistendahl, M. 2007. Coal ash is more radioactive than nuclear waste. Scientific American. Originally published 12/13/2007. Available at <https://www.scientificamerican.com/article/coal-ash-is-more-radioactive-than-nuclear-waste/>, accessed 8/4/2017.

Lytle, D.A. and N.L. Poff. 2004. Adaptation to natural flow regimes. Trends in Ecology and Evolution 19:94-100.

Lytle, DAVID A. "Life-history and behavioural adaptations to flow regime in aquatic insects." Aquatic insects: challenges to populations. CAB International. Trowbridge (2008): 122-138.

N. LeRoy Poff; J. David Allan; Mark B. Bain; James R. Karr; Karen L. Prestegard; Brian D. Richter; Richard E. Sparks; Julie C. Stromberg BioScience, Vol. 47, No. 11. (Dec., 1997), pp. 769-784.

Naiman, R.J., J.J. Latterell, N.E. Pettit, and J.D. Olden. 2008. Flow variability and the biophysical vitality of river systems. Comptes Rendus Geoscience 340:629-643.

NPS. 2011. L3215 (GRCA 8211). Remarks by Superintendent David V. Uberuaga Presented to the Tusayan Town Council on October 26, 2011, 6pm, at the Grand Canyon Best Western Squire Inn.

NPS. 2012. N3617 (GRCA 8211). Letter from Superintendent David V. Uberuaga to Mike Williams, Forest Supervisor, Kaibab National Forest, dated Dec. 3, 2012.

Yerian, L. 2015. Stilo discusses water options for future developments. Grand Canyon News. Originally published 3/31/2015. Available at <https://www.grandcanyonnews.com/news/2015/mar/31/stilo-discusses-water-options-for-future-developm/?templates=desktop>, accessed 8/4/2017.

Correspondence 20: While I recognize that Alternative "B" may be preferable to NPS from several perspectives (notably cost, reliability and service performance), as a frequent backcountry hiker in Grand Canyon over the past 40 years I am very familiar with the existing TCWP between the South Rim and Cottonwood. I have not yet covered the North Kaibab Trail between Cottonwood and the North Rim, but have extensively hiked other North Rim trails and off-trail routes and been an overnight visitor in the North Rim facilities.

My concerns associated with Alternative "B" involves the development of the water treatment plant facilities at both Phantom Ranch and Indian Garden, both from the standpoint of their construction footprints and permanence in operation afterwards. Neither locale has an excess of available space in which to place such industrial facilities, and their presence would notably

degrade the 'natural' or quasi-natural audiovisual conditions in those local environments which are heavily utilized by visitors. In particular, the WTP functions will substantially impact the level of background noise on a constant, or near-constant basis - - especially so if their operation is intended to primarily occur during off-peak consumption periods (Rim-driven) which are principally during daytime, as the overnight operation will degrade the natural "quiet" conditions in which campers and hikers would be asleep (or attempting to sleep).

As an engineer with 45 years of experience in various municipal services, I recognize the need to provide a reliable and safe potable water supply to the developed park facilities at both rims and the major campground sites along the Bright Angel and North Kaibab trail corridors; however, the expanded distribution of water treatment through construction of several new (additional) plant facilities at those locations would not be preferable because of the degradation to the backcountry visitor experience in the most heavily-traveled corridor below the Rim.

Thus, I am effectively forced to conclude from review of the EA that an in-place reconstruction of the TCWP with replacement along the same alignment by a larger-diameter, higher-quality pipeline and appurtenances represents the more appropriate course of action, so I favor Alternative "C".

Correspondence 21: For the EA and construction helicopters, as well as special flight rules area at Grand Canyon, please respect the inner canyon environment and wilderness character, through designating five noise respite intervals, one week each, throughout each/every year, where there will be no construction helicopters or air tour traffic into or above the Canyon on its East End. These could be matched with the four NPS no fee days and the fifth near the June Solstice. Please mark all Sundays as a noise respite day! Thank you.

Correspondence 22: Stilo is providing comments to the National Park Service in response to the draft environmental assessment for the Trans-Canyon Water Distribution Pipeline. Due to its length, Stilo's comments are being sent via regular mail.

In summary, the project scoping notice stated that the "Purpose and Need" for this project included the objectives of "protecting natural and cultural resources, maintaining the visitor experience and reducing maintenance requirements." The draft EA does not provide sufficient analysis for a determination as to whether or not the purpose and need for the project can be met without significant impact on those resources. Stilo believes that the NPS must thoroughly study other viable alternatives and disclose substantially more information regarding the proposed project and the potential impacts on the environment in an EIS. Even with the limited information provided to date, a finding of no significant impact is not supportable for the proposed project.

Correspondence 23: Thank you for this opportunity to comment on the draft Environmental Assessment (EA) of the Transcanyon Water Distribution Pipeline (Pipeline) project for Grand Canyon National Park (Park) on behalf of National Parks Conservation Association (NPCA). NPCA was formed in 1919 to advocate on behalf of and in support of our National Parks. The organization has more than one million members and supporters.

This action is strongly needed

As your assessment describes, the Park has been plagued by numerous breaks of this aging pipeline, breaks that are costly and annoying. Mandatory conservation measures affect Park staff, concessioners, their families, and millions of visitors. It can be especially dangerous when water is suddenly not available along the popular Bright Angel Trail. What's more, there is a continuing possibility of a catastrophic failure of the pipeline that would simply shut down the South Rim. It is time to replace this Pipeline.

The preferred alternative works

Given the great need, "No Action" cannot be considered a tenable alternative. The Pipeline EA describes the good work Park and NPS planning staff has done to consider two options: to rebuild the Pipeline on its entire existing route, from Roaring Springs, making continued use of gravity pressure or to relocate the Pipeline intake to near the mouth of Bright Angel Creek - making a shorter structure, but one that will require new pumps at the intake that need more energy. We agree that this shorter Pipeline plan, Alternative B, is the better plan.

We encourage some thought being given between now and publication of the final EA to the source of the energy that will be supplying the pumps. The plan describes upgrading the electrical line from South Rim to Phantom Ranch, which assumes that Pipeline pumping would be powered with electricity purchased by Arizona Public Service (APS), a private utility that supplies the South Rim. A large portion of APS's portfolio is coal-powered generated. It would make sense for this project to be designed to use solar or some other renewable source of energy, either produced elsewhere by APS or generated within the park. Our collective future depends on a quick transition from fossil fuels to climate change friendly renewable sources - what better place than Grand Canyon to partner with APS to demonstrate how this can be done.

No other alternatives need to be or should be considered at this time. mitigation measures to be considered

There have been discussions about the Park cooperating with Tusayan by either providing water from this system to this town or partnering on a far-fetched scheme to bring Colorado River water from the Colorado River Indian Tribes reservation in a retrofitted coal slurry pipeline. In the first case, the many impacts of development outside the Park would need to be reviewed very carefully - and there is the matter of using federal resources for private benefit. In the other case, the idea of adding additional uses to the already over-subscribed water resources of the Colorado River - especially ones that require an expensive and energy-demanding pipeline - seems an obvious fantasy presented by a developer who has run out of other options. These alternatives were kept out during the scoping process, and they should stay out of the rest of this process so that we can proceed quickly with the preferred alternative as presented.

Correspondence 24: This firm represents Red Feather Properties Limited Partnership (Red Feather), a landowner in Tusayan, Arizona. As such, Red Feather is significantly interested in an adequate and sustainable water supply and delivery system within the Grand Canyon National

Park and surrounding areas. Accordingly, issues involving the Trancanyon Water Distribution Pipeline (Pipeline) are of great import.

We understand that the National Park Service's (NPS) preferred alternative is to relocate the water intake for the Pipeline from Roaring Springs to an area near Bright Angel Creek at Phantom Ranch, replace approximately three miles of the Pipeline between Phantom Ranch and Indian Garden, and construct water treatment facilities and tanks to support the water system, thus, eliminating one of the Pipeline sections through "the Box" where most of the breaks occur. Red Feather supports this alternative and believes it is in the best interest the region.

Further, Red Feather would support the establishment of an Active Management Area consistent with Title 45 of Arizona Revised Statutes, specifically Section 45-412, to provide for more stringent growth and oversight of new growth on private land in the region.

Thank for considering these comments. Please let us know if you have any questions.

Correspondence 25: The Pipeline clearly is necessary but its construction must be sensitive to important environmental concerns, especially among others: noise by helicopter flights. Commercial Air Tours already make almost intolerably noise. Helicopters for constructing the pipeline will only increase the terrible noise pollution. Pipeline construction should set aside certain days as "noise free" from helicopters (construction as well as commercial): specifically Sundays, days sacred to Native Americans, and no-fee days. The noise emitted by helicopters totally contradicts one of the principal reasons for the Park and that is silence and solitud. These must be respected to the greatest degree possible. Only by designating certain times when such noise will not be allowed will this respect be possible.

Correspondence 26: I have been around the Grand Canyon for 40 years. I have worked on the N. Rim and S. Rim over the years, as well as a guide to the bottom of the canyon. I have hiked to the bottom aprox. 45 times. Part of the allure and wonder of the Grand Canyon is the silence. It is unique to this place and found no where else on the planet...this very special "silence" that many of us love and appreciate. My concern with the potential new pipeline construction is the added noise from the helicopters coming and going whilst doing the work - --for potentially many months or even years. The impact of all of this noise on the quietness at the bottom of the Grand Canyon will impact people's experience, not to mention the wildlife in the area. And the potential "buzz" of helicopters that will be heard from the rim of the canyon also. Here's a thought - -a "trade" - - Fewer of the tourist helicopter flights in exchange for what will be the "guaranteed" noise from the pipeline construction!! Think about it....for the period of time that the construction takes place, fewer concessionaire's helicopter flights over the canyon! These are real concerns that need to be addressed before construction begins and the noise starts. Thank you for your consideration.

Correspondence 27: Personal Background:

I have personal experience longstanding with Grand Canyon National Park backcountry dating back to my 1958-62 five consecutive youthful summers working for the North Rim's Utah Parks Company concessionaire at the Grand Canyon Lodge, and over subsequent years have become

well known to NPS in my decades-long Sierra Club, and federal National Parks Overflights Advisory Committee (NPOAG, environmental representative) roles.

I offer the present comments in support of the official, recently submitted comments by the Sierra Club's Grand Canyon Chapter, which speak for the entire national Club. These comments are to lend depth and credence via more detail.

The Sierra Club's cautionary message should be heeded: re the need for NPS to **fully** examine the cumulative (noise) impacts of this long-lasting project on soundscape (involving intensive helicopter, recurrent flights) , across many thousands of Park acres within the Canyon including across its South Rim.

Given the sleight-of hand, crafty 2012 Congressional suspension of further noise mitigation otherwise imminent from the Special Flight Rules EIS, NPS Preferred overflights alternative within, urgency is markedly elevated via this project. Urgency is that there be **significant** noise mitigation measures immediately authorized/requested for relief from these new noise impacts upon the "East End" portion of the Park (as demarcated by Exhibit Three of Chapter Three: "Whole Park Location Points and EIS Areas": in the Special Rules DEIS, at Chapter 3, page 88, under Affected Environment).

This "East End" Park Area is the Heart of the Park, colloquially, and also perversely receives already the largest adverse noise impacts, longstanding, from the air tours. Thus, through this new project, this same Park Area will be further hammered with the significant new noise burden from the Pipeline construction/relocation helicopter traffic, entering and departing the Canyon from the Abyss area.

The net result will be cumulative noise increases on daily basis, which will drive the overall East End impact levels (as measured by Percent Time Audible, Leq, and Lmax) into further derogation of park values, longterm!

The **Tonto Trail** itself is highly sensitive to noise traveling east and west from the anticipated construction flight routes. The present author has hiked this trail and camped it, knowing well its convoluted course (owing to in-and-outs through the numerous side canyons entering from the South Rim).

It is grossly unfair and inappropriate to these permitted individuals/groups for NPS not to provide or procure **respite periods**, regularized and pre-announced, and staggered repeatedly, predictably, throughout each year, from the cumulative noise impact of these Abyss-overflown construction helicopters descending into the Inner Canyon.

This noise will pile greatly onto named Location Points (whose tour noise impact levels are shown clearly in Sierra Club Grand Canyon Chapter Comments of 18 June 2011, " Fig. 1: "Quantitative Impact, Alternative A, East End, Base Year", at page 23 of the Club's DEIS comments re the Special Flight Rules Area.

It will pile equally onto myriad unnamed Location Points, all along the Tonto Trail below the South Rim.

The Tonto Trail itself courses in a meandering fashion east-west, and is traversed slowly directly beneath the projected helicopter corridors of this project, not to mention beneath the incessant Dragon Corridor of air tours.

It should be displayed on a map in the Final EA along with cumulative noise levels at various points impacted east, west, and beneath the slightly westward Dragon Corridor as well as the proposed Construction enterprises.

Many of the Major Adversely impacted Location Points displayed in the Sierra Club's Figure 1 will become even more acoustically impaired, and unpredictably so, on any given day, including Peak Day, unless solid respite intervals are systematically developed into an advance-known annual Project Schedule.

Helicopter noise for construction purposes, will operate significantly closer to the Tonto Trail System than do the Tour helicopters of the Dragon, adding greatly to the need for mitigation.

Request: The NPS should immediately, and before finalizing this EA, approach the FAA Administrator - - as per the Sierra Club request in its Public Letter of May 18, 2016 - - for additional respite intervals of full-day(s) duration, from the air tour operations, to help make up for the added new noise burden from the construction helicopters, which themselves in turn should be subject to the same annual respite regime.

A Supplemental or Final EA should also include a Noise Map and a Route Map of the most likely construction helicopter patterns out across and into the Inner Canyon, indicating the likely number of daily-averaged and peak-day-flight numbers indicated clearly on the same map. It's not completely clear from the dEA whether the "number of helicopter flights" refers to one-way or round-trip from Base. Please clarify. Any supplemental or errata notice should make clear to what the "number" refers, in practice.

It is noted that Ribbon Falls and Point Sublime are well-known, important, popular well-documented historic or cultural sites. Noise data should be specifically calculated/proficed for these particular sites resulting from the construction project. The same applies for other well known, popular location points in the quiet desert areas such as Plateau Point and Indian Gardens.

One assumes any predictable, recurrent time-or-year special Zuni pilgrimages to Ribbon Falls would be honored in the respites for Construction.

On page 49 of the EA there is reference to "three maintained trails", but is the Tonto Trail never maintained? Surely some of it is.

Page 58 statement, mid-way down, says there are "no trails directly under the flight path". But this appears incongruous with the actual course of the Tonto Trail directly under the Flight Path/Zone.

A map should be provide in the Final EA of the "13,000" acres that would be impacted by helicopter flight, explaining the natural ambient below, and the calculation required to determine the acreage.

The ambient sound level of 29 dBA "in the undeveloped South Rim area" should be re-examined in light of the fact that the Desert Acoustic Zone (Inner Canyon_ corresponds to a natural ambient of only 17 dBA! - see in the Overflights DEIS from Y2011. And in the FEIS.

Correspondence 28: Please accept these scoping comments on the Trans-Canyon Water Distribution Pipeline Environmental Assessment (EA) on behalf of Sierra Club California/Nevada Desert Committee.

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 2.7 million members and supporters.

The Sierra Club California/Nevada Desert Committee works for the protection and conservation of the deserts of California, Nevada and other areas in the Southwest; monitors and works with public, private and non-profit agencies to promote preservation of our arid lands; sponsors education and service trips; encourages and supports others to work for similar objectives; and maintains, shares and publishes information about the deserts.

Members of the Desert Committee have read and discussed the comments submitted by the Grand Canyon Chapter of the Sierra Club and fully endorse and support these comments.

Correspondence 29: Thanks to project leads and all NPS employees who contributed to the Transcanyon Water Distribution Pipeline (TCWL) Environmental Assessment (EA). Your work is sincerely appreciated, especially your answers to questions at public meetings and your thoughtful consideration given to public feedback.

I've organized my comments by topic as outlined below. As always, please excuse any typographic or factual errors in my remarks, and thanks in advance for patiently tolerating my verbosity.

- 1.) Commit not to sell or purchase water to or from the town of Tusayan
- 2.) Evaluating bird-strike risk
- 3.) Managing for condor presence at Plateau Point
- 4.) Helicopter noise
- 5.) Forest recovery and climate change mitigation
- 6.) Please leave selected trees standing in South Rim disturbed areas to facilitate forest recovery
- 7.) Please preserve harvested trees from disturbed areas for interpretive or other use
- 8.) Please consider a long-term plan that recovers some disturbed areas for traditional uses
- 9.) Use of the term "climate change" in the introduction to the EA

1.) Commit not to sell or purchase water to or from the town of Tusayan

The TCWL EA lists several project objectives that would be harmed by selling or purchasing water to or from the town of Tusayan: Improving the TCWL's reliability and resiliency, minimizing impacts on visitor experience and wilderness character during and after construction, maintaining the historic character of the Cross Canyon Corridor Historic District, and minimizing impacts on archaeological sites and ethnographic resources.

Under the Preferred Alternative, the NPS would retire the section of pipeline that is currently most prone to failure. However, retained pipeline infrastructure will fail with increasingly frequency in the decades to come. Because the EA envisions a 50-year lifespan for the project, the NPS should have a plan in place to manage these future failures. Storage capacity is an obvious and necessary component of any such plan.

Selling water to the town of Tusayan would effectively reduce the amount of water available to fill South Rim storage tanks. Reducing the average stored water volume increases the likelihood of the park running dry after a pipeline break. In other words, it reduces the reliability and resiliency of the TCWL system.

Additionally, water sales to Tusayan will facilitate future development and visitation at the park's gateway town, resulting in a net increase in park visitation. Because impacts to wilderness character, historic resources, and archaeological sites all increase as visitation grows, water sales to Tusayan would undermine the EA's stated preservation objectives.

Conversely, purchasing water from the town of Tusayan would perhaps mean purchasing well water drawn from the Redwall-Muav aquifer. Drawing down the Redwall-Muav aquifer would mean decreased output or even the outright disappearance of some seeps and springs within Grand Canyon. This would diminish wilderness character and would undermine the EA's stated wilderness preservation objective.

Because selling or purchasing water to or from the town of Tusayan does not meet the plan's stated purpose and objectives, and because it reduces the reliability and resiliency of the TCWL system in future decades, and because it diminishes the canyon's wilderness character, historic character, and the increases the likelihood of damage to its archaeological sites and ethnographic resources, the NPS should make a commitment not to sell or purchase water to or from the town of Tusayan.

2.) Evaluating bird-strike risk

According to the EA, "the park currently operates 1,200 to 1,500 helicopter flights per year from the South Rim for administrative purposes, and no collisions or near misses of condors have been reported." This may be due to lack of reporting rather than the encounter rate itself. I have flown out of the canyon twice at Whitmore Wash, and on one of those occasions the helicopter was close enough to a condor that its wing tags were easily visible.

The EA also asserts that, "[s]ince condors are highly visible due to their size, it should be possible to avoid collision." Please do not use this assumption for planning purposes. Aircraft are

also large and highly visible but there have been multiple midair collisions and near-misses in the history Grand Canyon National Park.

3.) Managing for condor presence at Plateau Point

Thank you for considering the risks to California condors in Grand Canyon National Park. The one-mile buffer zone for helicopter flights near active condor nests is an important component of the plan and should be retained. However, please also consider non-nesting areas where condors are known to congregate. Although condors are actively discouraged from visiting or congregating at Plateau Point, this recurrent behavior has been documented by park scientists.

Helicopters flying into Indian Garden and Phantom Ranch occasionally fly very close to Plateau Point. In addition to the risk of a bird strike, regular close-proximity fly-bys in this area would presumably desensitize birds to the sound of helicopters, increasing the likelihood of collisions not only at Plateau Point but also elsewhere in the canyon.

Although a one-mile buffer is probably not practical or safe given the topography near Plateau Point, a safe, smaller buffer distance is warranted. Please determine and plan for such a buffer zone around Plateau Point that gives a degree of protection to condors while also providing a safe flight path for helicopters.

4.) Helicopter noise

Good gravy, the Preferred Action in this EA sure does require a lot of additional helicopter flight time over Grand Canyon. The cumulative impact of this needs to be addressed - the wilderness character of the Boucher and Tanner use areas is already compromised by overflight noise. Please designate respite intervals where helicopter flights (except for emergencies) do not take place. Please consult with recreational users and the park's traditionally associated tribes to determine which respite periods would offer the greatest stakeholder benefits.

5.) Forest recovery and climate change

The Preferred Action proposes the "disturbance" of 15 to 16 acres of ponderosa pine forest on the South Rim. The EA states that "restoration to preconstruction conditions would take many decades given the grown rate of ponderosa pine." Please consult with experts to determine the likelihood of "restoration to preconstruction conditions" under various plausible climate-change scenarios. How much warmer and drier can the climate get before it is no longer possible for ponderosa forests to regenerate at the South Rim? If it is unlikely that ponderosa forests will regenerate, the EA should clearly state as much.

If recovery to something approximating current conditions is indeed believed possible, please consult with forestry experts on a regeneration strategy that accounts for climate change. The Preferred Alternative calls for the disturbance of a previously burned area at the staging area on the east side of Highway 64. Before converting the site into a staging area, the NPS should consider transplanting saplings, especially ponderosa saplings, that have grown in dry soils with minimal shade inside the burned-over area. To the extent that there has been any such

regeneration in the burned-over area, the genotype of these trees and associated soil biota may be uniquely adapted for a drier climate in the future. Preserving and studying such specimens may facilitate the future recovery of disturbed areas.

6.) Please leave selected trees standing in South Rim disturbed areas to facilitate forest recovery

With the exception of the proposed helibase expansion area, where safety concerns may require a flat, open expanse of land, it may be safe and feasible to leave standing a number of selected mature trees in South Rim disturbed areas. (In other words: Please leave some big trees where you can.) Large trees will provide shade and habitat that facilitate forest recovery at the conclusion of the project.

7.) Please preserve harvested trees from disturbed areas for interpretive or other use

The Preferred Alternative requires the destruction of mature trees. Please preserve at least some of the wood from disturbed areas for interpretive use or other suitable use. The following examples come to mind:

- Tree-ring cross sections can be used to demonstrate dendrochronography and climate history. Mature ponderosa should record periods of wetter climate (e.g., those years used to allocate water in the Colorado River Compact) and periods of drought (e.g., present-day).
- Cross-sections of trunks can be used to show the fire-adapted, thick bark of ponderosa pine trees.
- Juniper trunks with sapsucker holes can be used to explain the relationships between different species on the plateau, defense mechanism that trees use against insects, and how drought affects sap production and therefore survival.
- Bird nests and other signs of animal life in the forest canopy can be saved for use in ranger talks.

Please also consult with traditionally affiliated tribes on possible uses for timber from disturbed areas. Plans are currently taking shape for the Desert View Inter-Tribal Cultural Heritage Area; perhaps affiliated tribes might wish to use harvested wood for demonstration purposes or the construction of traditional structures.

8.) Please consider a long-term plan that recovers some disturbed areas for traditional uses

The (re-)construction of the Wahhoga Village site in Yosemite National Park is, to the best of my knowledge, a success story in the making. This success story could perhaps be replicated at Grand Canyon National Park. At the conclusion of the TCWL project, a portion of the affected plateau land could be recovered through the construction of traditional Havasupai structures.

I propose that the park consult with the Havasupai Tribe on their interest in the following possible course of action to take place at the conclusion of TWCL construction:

- Move existing preconstruction facilities east of Highway 64 on Center Road to the disturbed land west of Highway 64 slated for helibase expansion and contractor operations.
- On the site of the planned staging area and adjacent preconstruction facilities, construct (or allow the tribe to construct) a number of traditional structures/developments.

Planning for this project could take place in tandem with and be completed by the end of TWCL construction. Because of past and proposed disturbances in the area, the site presumably is or will be thoroughly surveyed and well-understood, and the construction of traditional structures can take place without harm to park resources.

Does this idea fall outside the scope of the EA? I think not. The EA explicitly considers the "recovery" of lands "disturbed" by the TCWL project. The TCWL is one of a long string of cumulative impacts that began with the arrival of colonizers in the Southwest. What should the word "recovery" mean if it excludes the recovery of traditional connections between Grand Canyon and its inhabitants?

9.) Use of the term "climate change" in the introduction to the EA

Please include the term "climate change" in the introduction to the EA. The climate is projected to become warmer and drier; this will affect snowpack, rainfall, and spring output. This in turn affects GCNP's ability to "provide a reliable water delivery system to meet water supply needs" with the current infrastructure, which draws exclusively from Roaring Springs. Climate change is clearly an issue of concern for the future of Grand Canyon National Park and its visitors, and motivates the preference for drawing water from the Bright Angel Delta - doing so incorporates water not only from Roaring Springs, but also Wall Creek and Phantom Creek. This EA is a part of Grand Canyon's future historic record. It should accurately and fearlessly record the reasons for our decisions in the present day.

That said, I understand that acknowledging the reality of climate change requires the expenditure of political capital. If you are looking for diplomatic language to avoid acting on this suggestion, might I suggest the following: "Accurately and fearlessly writing the future history of a slowly unfolding environmental catastrophe is beyond the scope of this project."

Correspondence 30: This letter is in reference to correspondence #22. The text stated that they would be mailing in their comments. The text from the letter:

Stilo Development Group USA, L.P. ("Stilo") is providing comments to the National Park Service ("NPS") in response to the draft environmental assessment ("EA") for the Trans- Canyon Water Distribution Pipeline ("TCWL"). Stilo owns 334 acres of private land in Tusayan, Arizona and is a vested stakeholder relative to water supply issues in the region.¹

Stilo has attempted for years to initiate a dialogue on alternative solutions for water provision to the Grand Canyon National Park ("GCNP"). We hoped that this pending National Environmental Policy Act analysis ("NEPA") process would provide a forum for the GCNP to

consider alternative solutions and recognize the important role that private enterprise could have in developing solutions to the backlog of maintenance and other issues at the GCNP. In that spirit, Stilo provided comments to the NPS regarding the scoping of this proposed action. Unfortunately, those comments seem to have been ignored and Stilo's concerns with the analysis in the draft EA are provided below.

I. Rejection of BOR Study Alternatives

In our scoping comments, Stilo proposed two additional alternatives for consideration which had been previously evaluated by the Bureau of Reclamation ("BOR") in 2002 (i.e., BOR

Study Alternatives 9 and 10).² In the draft EA, both of these alternatives were given short shrift and treated as "considered but rejected." The legal test for whether or not an alternative is reasonable (justifying further analysis) is set forth in the Council for Environmental Quality's 40 Most Asked Questions. Specifically, Question 2A states:

2a. Alternatives Outside the Capability of Applicant or Jurisdiction of Agency. If a [NEPA document] is prepared in connection with an application for a permit or other federal approval, must the [NEPA document] rigorously analyze and discuss alternatives that are outside the capability of the applicant or can it be limited to reasonable alternatives that can be carried out by the applicant?

A. Section 1502.14 requires [a NEPA document] to examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is "reasonable" rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.

The NPS apparently rejected BOR Study Alternative 9 (Obtain a Dependable Water Supply from Water Providers or Companies) from study in the EA because it would require partnership with other public or private entities to purchase water, significant regional infrastructure, and a "multiple year planning effort" and because the "TCWL is failing and an immediate solution is needed and no regional water solutions are feasible with the immediate project timeframe."³ Similarly, the NPS rejected BOR Study Alternative 10 (Truck or Train Water into the GCNP) because water hauling is expensive and because of issues "with feasibility, reliability, and cost due to the large number of required trucks and the anticipated need to upgrade train tracks and roads."⁴

The unjustified and summary rejection of these two alternatives and the others with no rationale or supporting explanation is inconsistent with the requirements of NEPA requiring a rigorous exploration of reasonable alternatives. BOR Study Alternatives 9 and 10 should both be considered as alternatives to the proposed action and a supplemental draft EA should be published for public comment. It is remarkable that in nearly 20 years that problems with the water line have been known to exist, the NPS now rejects viable alternatives on the basis that

As we mentioned in our initial scoping comments, the General Accounting Office ("GAO") recently produced a report entitled "National Park Service: Process Exists for Prioritizing Asset Maintenance Decisions, but Evaluation Could Improve Efforts (Dec. 2016)" (hereafter the "GAO Report"). The GAO Report highlighted the NPS challenges with deferred maintenance projects and included a section on creative measures the NPS is using to address the backlog. These measures included:

- Using philanthropic donations
- Working with volunteers
- Leasing properties
- Engaging partners
- Entering into other arrangements for management of assets
- Partnering with states for transportation grants

Similarly, the Pew Charitable Trusts recently engaged in a case study of deferred maintenance at national parks and published a fact-sheet specific to the GCNP.⁵ Chief among their recommendations to Congress was to "create more opportunities for public-private collaboration and donations to support the parks." In the same vein, Secretary Zinke has remarked:

"[u]sing public-private partnerships to help address the deferred maintenance backlog remains a priority for the Department and the Trump Administration. Park infrastructure includes trails, signage, restrooms, lodges, roads, bridges and waterlines. These funds will help us continue to provide a world-class experience to visitors and ensure that these amazing places are around for future generations."⁶

In fact, Secretary Zinke announced his intent to create a new advisory committee that will focus on expanding public-private partnerships on America's public lands. That committee could be the catalyst to help explore reasonable alternatives. With no imminent source of funding available for the Alternative B or C, Stilo contends that it is time for the GCNP to earnestly explore opportunities for public-private partnerships or other creative measures to address this critical infrastructure dilemma.

II. Insufficient NEPA Analysis

Alternative B: the NPS Preferred Alternative (Relocate Water Intake) involves:

- A construction project taking up to 4-5 years;
- 37 to 45 total acres of disturbance;
- At Phantom Ranch, the construction of either a shallow alluvial well system or a surface water intake (both requiring additional data collection and testing) or some combination thereof:
 - *Well system option*: up to eight shallow alluvial wells would be constructed 30 feet from the Bright Angel Creek shoreline capable of producing 1 million gallons/day along with 1,800 linear feet of waterline in a 30-foot construction zone; and

- *Surface water intake option:* intake structure (submerged depth of 2-3 feet), water control structures in the creek and a set of below ground pumps within a below ground concrete structure.
- Two water treatment plants, water storage tanks, pump stations, miles of new water lines and electrical lines;
- A helibase for operations including 5,500 total helicopter flights active over 30 nonconsecutive months for up to 6 hours a day;⁷
- Four construction camps; and
- A new 1,500 foot long, 30 foot wide access road. Alternative C: TCWL Replacement involves:
 - A construction project taking up to 5-6 years;
 - 58 to 60 acres of total disturbance;
 - Replacement of 12 miles of water line;
 - Construction camps; and
 - A helibase for operations including 11,500 helicopter flights for up to 14 hours a day.

It defies reason that a half-decade long construction project of the scale of either Alternative B or C in a national park (let alone the Grand Canyon National Park), having a proposed wilderness designation,⁸ requiring thousands of helicopter flights, impacting 37-60 acres of land, disrupting recreation, diverting water out of a tributary to the Colorado River, impacting threatened and endangered species and cultural resources is appropriate for an EA level analysis. No other privately proposed project in similar circumstances would proceed with this level of NEPA analysis. Further, it is inconceivable that a finding of no significant impact will be supportable (particularly if the project duration and adverse effects on visitors, concessioners and commercial business is properly considered).

That being said, further study must be undertaken of a host of impacts that were not disclosed in the draft EA. At a minimum, this will require a revised draft EA to be published for public comment in light of the applicable standards for federal agency disclosure of new information or changed circumstances. Specifically, the matters of additional information include the following:

- There is no disclosure in the draft EA of the source of water rights for the diversion of IMM gallons a day of water out of Bright Angel and/or what the effect the severance and transfer of existing water rights to a new place of diversion and point of use might be.⁹
- There is no disclosure or analysis of the water quality or associated impacts from drawdown to Bright Angel Creek or to area seeps or springs due to pumping from proposed alluvial wells (placed 30 feet from the Bright Angel Creek shoreline) or the construction and use of a water intake structure.¹⁰ In fact, the NPS publicized the helicoptering in of a drill rig to Phantom Ranch to drill and pump test a well(s) to determine such information in March of 2018, and yet none of that information or the results of the drilling were disclosed to the public in the draft EA.
- There is no discussion of any requirement for a Clean Water Act permit that may be required for impacts to waters of the United States as a result of the construction of substantial infrastructure which may include a water intake system in the river.

- Floodplain analysis was dismissed from further analysis despite the fact that an entire wellfield, pipeline system (or buried water intake), water control structures and below ground pump station will be constructed 30 feet from the Bright Angel shoreline in an area known to have incurred flash floods.
- There is no disclosure of the cost estimate for construction of Alternative B or C.
- There is no disclosure of operation and maintenance costs of Alternative B or C.
- There is only nominal evaluation of the impacts to native fish known to occupy Bright Angel Creek and no discussion of required ESA Section 7 consultation with USFWS.¹¹
- There is nominal evaluation of impacts to the California Condor and Mexican Spotted Owl and no discussion of required ESA Section 7 consultation with USFWS.
- The draft EA is void of any discussion of Section 106 consultation efforts or the specific concerns of tribal entities relative to the identified impact on the Grand Canyon which the tribes regard as a Traditional Cultural Property.¹²
- With the exception of ongoing trail corridor work, there is no identification of present and reasonably foreseeable future actions relative to cumulative impacts for biological or cultural resources contrary to the requirements of NEPA.
- The impacts to visitor use, park concessioner Xanterra and other commercial companies will not support a finding of no significant impact, thus requiring an EIS. The implementation of Alternative B requires period closure of the Bright Angel, Colorado River and North Kaibab Trails and Phantom Ranch for up to 8 nonconsecutive months over a 3-year period. If the closures were spread out across 3 years, with 2-3 of the busiest months closed each year, lost gross annual revenue for Xanterra could be \$1 to \$1.5MM and 9 to 19% of total annual revenue for commercial companies operating in the GCNP.¹³

In summary, the project scoping notice stated that the "Purpose and Need" for this project included the objectives of "protecting natural and cultural resources, maintaining the visitor experience and reducing maintenance requirements." The draft EA does not provide sufficient analysis for a determination as to whether or not the purpose and need for the project can be met without significant impact on those resources. Stilo believes that the NPS must thoroughly study other viable alternatives and disclose substantially more information regarding the proposed project and the potential impacts on the environment in an EIS. Even with the limited information provided to date, a finding of no significant impact is not supportable for the proposed project.

¹ Stilo is so vested in the community that the company has donated 40 acres of land to the Town of Tusayan for housing. There is a critical shortage of housing in Tusayan primarily driven by water supply constraints.

² In January 2002, the BOR published a study for the NPS and the GCNP entitled "Grand Canyon National Park Water Supply Appraisal Study" (hereafter the "BOR Study"). In the study, BOR evaluated eleven (11) potentially viable options/alternatives that would provide a treated water supply to the north and south rims of the GCNP through the year 2050. Of those 11 alternatives, the NPS has elected to carry forward only two for analysis in the EA (i.e., BOR Study Alternative 3 and Alternative 4).

³ See EA at pg. 21.

⁴ Id.

"time is of the essence." Further, published reports have indicated that the cost for replacing the TCWL could be \$160MM or more. That staggering expense (with no identifiable funding source) should provide sufficient incentive to explore other solutions that may be cost shared with other federal agencies and/or the private sector regardless of the fact that it may mean partnering with others.

⁵ Grand Canyon National Park-Fact Sheet, The Pew Charitable Trusts, <http://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2017/01/grand-canyon-national-park> (last visited August 3, 2017).

⁶ Press Release, U.S. Dep't of the Interior, Secretary Zinke and Colorado Senator Gardner Announce more than \$50 Million for National Parks Infrastructure (July 24, 2017) (on file with the Dep't of the Interior Press Office).

⁷ For sake of comparison, the GCNP currently operates 1,200 to 1,500 helicopter flights per year. See draft EA at pg. 28.

⁸ 94% of the GCNP qualifies for wilderness designation and the GCNP is prohibited by NPS Management Policies from taking any action that would "diminish wilderness eligibility." See draft EA at pg. 54. 13,000 acres of the 1.1MM proposed wilderness acres are acknowledged to be impacted by the proposed helicopter flights. Id. at pg. 59.

⁹ In fact, we are unable to discern what source of existing water claims or rights the NPS has for its diversion from Roaring Springs. A compiled search of Arizona Department of Water Resources public records is attached as Tab A, and there does not appear to be an associated water claim or rights filings for the existing water use or that would support a change in place of use or point of diversion to the proposed location on Bright Angel Creek in the GCNP.

¹¹ See EA at pg. 25 (the two-page baseline and effects analysis in the EA acknowledges take of larval fish species but then discounts any threat to the population as if sufficient for analysis).

¹² The content of the draft EA at pg. 70 does not suffice to meet the requirements of NEPA or Section 106.

¹³ See EA at pg. 62.

