

NPS-USGS Water  
Quality  
Partnership  
Program

2020

Work Group  
Comments –  
Proposals for  
New Projects  
Commencing  
FY2020

## Table of Contents

<b>DOES A COPPER-NITRATE SYNERGY DRIVE ALGAL BLOOMS AND TOXICITY IN SIERRA NEVADA LAKES?</b> .....	4
CATEGORY: INTENSIVE .....	4
PARK: SEQUOIA AND KINGS CANYON NATIONAL PARK (SEKI).....	4
<i>USGS Columbia Environmental Research Center</i> .....	4
<b>EVALUATING THE EFFECTS OF INFRASTRUCTURE ON STREAM WATER QUALITY AND BENTHIC COMMUNITY COMPOSITION IN CATOCTIN MOUNTAIN PARK</b> .....	5
CATEGORY: INTENSIVE .....	5
PARK: CATOCTIN MOUNTAIN PARK (CATO).....	5
<i>USGS Maryland, Delaware, District of Columbia Water Science Center</i> .....	5
<b>IDENTIFYING HISTORICAL TRENDS AND CURRENT PATTERNS OF ANTHROPOGENIC NUTRIENT LOADING TO NPSA’S OFU POOLS AND ITS IMPACTS ON CORAL HEALTH</b> .....	6
CATEGORY: INTENSIVE .....	6
PARK: ST. NATIONAL PARK OF AMERICAN SAMOA (NPSA) .....	6
<i>USGS Pacific Coastal and Marine Science Center</i> .....	6
<b>ASSESSMENT OF WATER QUALITY FOR STREAMS DRAINING OIL AND GAS DEVELOPMENT NEAR THEODORE ROOSEVELT NATIONAL PARK, NORTH DAKOTA</b> .....	7
CATEGORY: INTENSIVE .....	7
PARK: THEODORE ROOSEVELT NATIONAL PARK (THRO).....	7
<i>USGS Dakota Water Science Center</i> .....	7
<b>INVESTIGATING GROUNDWATER-SURFACE WATER CONNECTIONS BETWEEN NEIGHBORING WATERSHEDS USING WATER QUALITY PARAMETERS IN GREAT BASIN NATIONAL PARK</b> .....	9
CATEGORY: INTENSIVE .....	9
PARK: GREAT BASIN NATIONAL PARK (GRBA) .....	9
<i>USGS Nevada Water Science Center</i> .....	9
<b>CHARACTERIZATION OF WATER QUALITY, HYDROLOGY, AND USE OF ADVANCED DNA TECHNOLOGIES IN THE BIG DARBY CREEK BASIN, OHIO, TO BETTER UNDERSTAND POTENTIAL STRESSORS ON THE NATIVE FRESHWATER MUSSELS</b> .....	10
CATEGORY: INTENSIVE .....	10
PARK: NATIONAL WILD AND SCENIC RIVERS PROGRAM (NWSR).....	10
<i>USGS Ohio-Kentucky-Indiana Water Science Center</i> .....	10
<b>SEDIMENT NUTRIENT STORAGE AND RELEASE IN RODEO LAGOON, GOLDEN GATE NATIONAL RECREATION AREA – MANAGEMENT IMPLICATIONS FOR HARMFUL ALGAL BLOOMS AND DIE-OFFS OF THREATENED AND ENDANGERED FISH</b> .....	11
CATEGORY: INTENSIVE .....	11
PARK: GOLDEN GATE NATIONAL RECREATION AREA (GOGA).....	11
<i>USGS California Water Science Center</i> .....	11
<b>A CHARACTERIZATION OF CONTAMINATION FROM LEGACY MINING ACTIVITIES RELATED TO WATER RESOURCES AT CORONADO NATIONAL MEMORIAL</b> .....	12

CATEGORY: INTENSIVE .....	12
PARK: CORONADO NATIONAL MEMORIAL (CORO) .....	12
<i>USGS Arizona Water Science Center</i> .....	12
<b>CAUSES AND EVOLUTION OF ANOXIA IN THE SAN JUAN ARM OF LAKE POWELL, UTAH .....</b>	<b>13</b>
CATEGORY: INTENSIVE .....	13
PARK: GLEN CANYON NATIONAL RECREATION AREA (GLCA) .....	13
<i>USGS Utah Water Science Center</i> .....	13
<b>USING WATER LEVEL MANAGEMENT TO REDUCE CYANOBACTERIAL BLOOM TOXICITY: A WHOLE-ECOSYSTEM TEST OF A POTENTIAL MANAGEMENT STRATEGY.....</b>	<b>14</b>
CATEGORY: INTENSIVE .....	14
PARK: VOYAGEURS NATIONAL PARK (VOYA).....	14
<i>USGS Upper Midwest Environmental Sciences Center, Upper Midwest Water Science Center</i> .....	14
<b>WATER QUALITY AND ECOLOGICAL CONDITIONS IN AN ACIDIC WATERSHED IN SHENANDOAH NATIONAL PARK .....</b>	<b>15</b>
CATEGORY: INTENSIVE .....	15
PARK: SHENANDOAH NATIONAL PARK (SHEN) .....	15
<i>USGS Virginia and West Virginia Water Science Center</i> .....	15
<b>AN ASSESSMENT OF THE SCOPE OF AQUATIC PARASITE CONTAMINATION AND THE EFFECTIVENESS OF PROTECTION STRATEGIES IN SURFACE WATERS AT ACADIA NATIONAL PARK .....</b>	<b>16</b>
CATEGORY: INTENSIVE .....	16
PARK: ACADIA NATIONAL PARK (ACAD) .....	16
<i>USGS Upper Midwest Environmental Sciences Center, Upper Midwest Water Science Center</i> .....	16
<b>VULNERABILITY OF GROUNDWATER RESOURCES FROM ACTIVITIES RELATED TO OIL AND GAS EXPLORATION NEAR GUADALUPE MOUNTAINS NATIONAL PARK AND CARLSBAD CAVERNS NATIONAL PARK .....</b>	<b>17</b>
CATEGORY: SYNOPTIC.....	17
PARK: GUMO AND CAVE .....	17
<i>USGS Texas Water Science Center</i> .....	17
<b>ASSESSING SOURCES OF BACTERIAL CONTAMINATION AT FIRE ISLAND NATIONAL SEASHORE (FIIS).....</b>	<b>19</b>
CATEGORY: SYNOPTIC.....	19
PARK: FIRE ISLAND NATIONAL SEASHORE (FIIS).....	19
<i>USGS New York Water Science Center</i> .....	19
<b>DETECTING AND MITIGATING GLACIER LAKE OUTBURST FLOODS WITH MEASUREMENTS OF CONDUCTIVITY AND TURBIDITY IN WRANGELL-ST. ELIAS NATIONAL PARK, AK.....</b>	<b>20</b>
CATEGORY: SYNOPTIC.....	20
PARK: WRANGELL-ST. ELIAS NATIONAL PARK (WRST) .....	20
<i>USGS Alaska Science Center</i> .....	20
<b>ULTRAVIOLET LIGHT SCREEN CHEMICAL CONTAMINATION OF CORAL REEFS IN THE VIRGIN ISLANDS NATIONAL PARK .....</b>	<b>21</b>
CATEGORY: SYNOPTIC.....	21

PARK: VIRGIN ISLANDS NATIONAL PARK (VIIS).....	21
<i>USGS Wetland and Aquatic Research Center</i> .....	21
<b>UNDERSTANDING THE CONTAMINANTS IN GLORIETA CREEK AND PECOS RIVER RELATED TO WASTEWATER TREATMENT FACILITIES NEAR PECOS NATIONAL HISTORICAL PARK, NEW MEXICO.....</b>	<b>22</b>
CATEGORY: SYNOPSIS.....	22
PARK: PECOS NATIONAL HISTORICAL PARK (PECO).....	22
<i>USGS New Mexico Water Science Center</i> .....	22
<b>PIPESTONE NATIONAL MONUMENT WATERFALL STUDY.....</b>	<b>23</b>
CATEGORY: SYNOPSIS.....	23
PARK: PIPESTONE NATIONAL MONUMENT (PIPE).....	23
<i>USGS Minnesota Water Science Center</i> .....	23
<b>REMOTE SENSING OF BENTHIC ALGAL BLOOMS ON THE BUFFALO NATIONAL RIVER.....</b>	<b>24</b>
CATEGORY: TECHNICAL ASSISTANCE.....	24
PARK: BUFFALO NATIONAL RIVER.....	24
<i>USGS Geomorphology and Sediment Transport Laboratory</i> .....	24
<b>SPATIALLY EXPLICIT MODEL OF <i>ESCHERICHIA COLI</i> LOADING TO THE LITTLE RIVER CANYON NATIONAL PRESERVE .....</b>	<b>25</b>
CATEGORY: TECHNICAL ASSISTANCE.....	25
PARK: LITTLE RIVER CANYON NATIONAL PRESERVE (LIRI).....	25
<i>USGS Lower Mississippi-Gulf Water Science Center</i> .....	25
<b>ASSESSMENT OF GROUNDWATER QUALITY INCLUDING RADON AT CAPULIN VOLCANO NATIONAL MONUMENT .....</b>	<b>26</b>
CATEGORY: TECHNICAL ASSISTANCE.....	26
PARK: CAPULIN VOLCANO NATIONAL MONUMENT (CAVO).....	26
<i>USGS New Mexico Water Science Center</i> .....	26
<b>ESTABLISHING BASELINE MEASUREMENTS OF HABITAT QUALITY AND CHANNEL CHANGE AS A FUNCTION OF RECREATIONAL USAGE ON THE PLATTE RIVER, MI.....</b>	<b>27</b>
CATEGORY: TECHNICAL ASSISTANCE.....	27
PARK: SLEEPING BEAR DUNES NATIONAL LAKESHORE (SLBE).....	27
<i>USGS Upper Midwest Water Science Center</i> .....	27

**Does a copper-nitrate synergy drive algal blooms and toxicity in Sierra Nevada lakes?**

**CATEGORY: Intensive**

**PARK: Sequoia and Kings Canyon National Park (SEKI)**

**USGS Columbia Environmental Research Center**

Comments:

This is a strong proposal, but it did not follow the format that was required for national panel evaluation. This was rather annoying.

If sampling aims to test the predicted copper and nitrate concentrations, is it assumed that all is sourced from agricultural deposition? If not, how might it be separated? Cu especially.

How is bioaccumulation compared in lakes with significantly different macroinvertebrate assemblages?

The proposal for a Story Map is an excellent idea for dispersing data to the public.

It seems like a very diffuse attempt to answer the question, with a lot of testing of different parameters and organisms in hopes that something will result in findings. Good use of co-location with other studies of Sierra lake eutrophication and changes in water quality to leverage interpretation of findings. Seems expensive for the potential products.

Well written and designed. Transferability to parks with alpine lakes in proximity to agricultural areas...perhaps beyond CA.

Study design is thorough. Including the validation of the mapper would have been appropriate for the design of the mapper itself prior to its roll-out.

Problem is defined ok to me, but I am not thinking I am fully understanding the severity to the park, and curious as to how can this be transferred to another park. I think there is some transferability in this proposed work

Technically this is well developed with using a good approach to address the questions.

## Evaluating the effects of infrastructure on stream water quality and benthic community composition in Catoctin Mountain Park

**CATEGORY: Intensive**

**PARK: Catoctin Mountain Park (CATO)**

**USGS Maryland, Delaware, District of Columbia Water Science Center**

### Comments:

Many typographical/formatting errors. Not scored on these but difficult to ignore.
P1. "Poorer quality benthic communities", poorer than what: previous surveys, state averages, other?
Elevated nutrients present compared to previous sampling, but are the levels exceeding any standards that are causing quantifiable injury to ecosystem?
Presence of deicing influence is better determined by chloride/bromide ratio rather than chloride content alone which can be elevated by septic influence, differences in geology, etc.
Figure 2. Nitrate and Chloride concentrations elevated above 1980s sampling, but still well below action levels. This may indicate a trend towards poorer quality with time, but makes it difficult to score this proposal equally with those parks where MCLs and aquatic health thresholds are being exceeded by a wide margin.
A sample n=18 is a small set for "exhaustive" statistical analysis.
Ranking criteria #1, does the author mean lotic and lentic?
Severity of threat: No action thresholds appear to be exceeded, no human health concerns noted.
Unclear how the data presented here will guide park management to do things that they could not do now (i.e., mitigate discharge from septic systems and roadways) to protect the important fishery. High "indirect costs" in the budget - what do these go toward?
Proposal states that ongoing wq monitoring is insufficient, but it neglects to describe those data and their specific insufficiencies. It also mentions ongoing I&M data collection, but doesn't state how/if I&M will be involved in this study.
No evidence was provided as to the existence of a threat to the trout fishery.
Details on the draft activity schedule are slim.
May benefit from enhance discussion of likelihood of significant degradation to understand the severity of the threat. Is there typically impacts to species at the levels that recon showed for example.
Project support for the study is skewed and external contributions were at a minimum. Like this study concept, but funding is not right. The budget should be reviewed and resubmitted or conversation with Steve and Tim about the high funding need in year 2
More clarity on the problem definition would be nice and the resolution. Not sure how the Park will use the information to resolve or manage the problem

**Identifying historical trends and current patterns of anthropogenic nutrient loading to NPSA’s Ofu Pools and its impacts on coral health**

**CATEGORY: Intensive**

**PARK: St. National Park of American Samoa (NPSA)**

**USGS Pacific Coastal and Marine Science Center**

Comments:

Well designed and cited proposal.
How will the presence of SGD inflow through ERT, etc. be converted to a rate of decision?
Shouldn't TIR, with its larger spatial coverage, be used as first approximation of SGD, followed by targeted ERT?
Nice blend of established and cutting edge approaches spanning geophysics, geochemistry, coral biology, etc.
Ability to resolve the problem uncertain without the results of the study.
Inkind and matching is unclear from budget table. The matching funds appear quite strong, but it's unclear where they are coming from and how they are allocated.
Letter of support from supt fails to justify a high level of need. Overall a strong proposal on a valuable topic/location. Price tag is very good considering the geography.
Timeline is nicely detailed but possibly too ambitious for the assigned tasks and timeframe of the project.
Like this proposal. Very good use of leveraging against existing work.
Good approach on using new technology and other parks where this may be an issue this has some transferability, but may be cost prohibitive unless a similar leveraging can be done.

## Assessment of water quality for streams draining oil and gas development near Theodore Roosevelt National Park, North Dakota

**CATEGORY: Intensive**

**PARK: Theodore Roosevelt National Park (THRO)**

**USGS Dakota Water Science Center**

**Comments:**

If spills are potentially catastrophic, what is the use of baseline condition data? The traces of the event would need to be removed/monitored
If waters were impacted by these more specialized contaminants, would an indication of this be seen in the standard water quality parameters currently being collected (cation/anion, TDS/SC, etc.)?
The park should not be expected to know what its baseline conditions are for every water body should a spill event occur. Conversely, the responsible party of a spill could argue that any baseline condition results are dated and not representative even if they were collected just months prior to a particular event.
In expected outcome and products section, proposal claims that not conducting this study would be detrimental to the environment, this is not accurate.
In the 530,000 gallon spill in 2016, were spikes in water quality parameters seen in the downstream monitoring sites? Seems that this would be a good candidate example of impact, and less effective if a spill of this size was not seen to result in significant impact.
Are there any downstream sources of public water supply that could be impacted?
In Scientific Merit section, do you mean to say oxygen isotopes instead of carbon isotopes?
There is no explanation of any sort of analysis of the collected data, this is a major strike against the scale of the proposal and significantly reduces the cost/benefit ratio. Also don't understand how an "interpretive USGS report" will be developed if no analyses are discussed in the proposal.
Important baseline information to be able to recover park resources in the event of an oil spill. Technically sound.
Will provide baseline contaminant data to help with remediation efforts from future spills. No evidence of strong partnership with the park or ongoing work. No evidence of cost-sharing or inkind. Supt letter appears to have been written by USGS rather than the park.
Proposal cites 1998 water resource management plan (which it calls a "report") but neglects to make it's case around the more recent Foundation document.
Proposed work fills a critical knowledge gap in the Park's preparation for a spill event. Several examples of OG spills were provided, which supports the need for this study.

Will high/low-flow be targeted in the given sampling quarter, or will samples be collected under ambient conditions within the sampling quarters?

Could benefit from a discussion of the probability of impact - Are there examples in similar settings where significant off-play effects or observed

**Investigating groundwater-surface water connections between neighboring watersheds using water quality parameters in Great Basin National Park**

**CATEGORY: Intensive**

**PARK: Great Basin National Park (GRBA)**

**USGS Nevada Water Science Center**

Comments:

No T&E species issues, no human health concerns. While scientifically valid, hard to score this above equally-rated proposals that have these concerns.
The main focus appears to be to expand the sampling for the existing NPS-supported project. If this approach can't be better described as stand-alone, it would seem more beneficial to increase funding of the existing project to cover this additional sampling.
SF6 and CFCs would be very useful to constrain groundwater age and recharge elevation. Was it not added because of cost?
Appear to be creating a water quality issue here by presenting the acute and chronic thresholds for As and Pb when there is little to no evidence (at least as presented) that this is an important issue.
The pipeline has been in place for decades, it is difficult to consider the issue as an "imminent threat"
The primary question here is about hydrology, not water quality. Also, prospects for problem resolution (i.e., preventing water diversions to downstream users) is low because the park explicitly lacks water rights per its 1980 enabling legislation. The park can engage with downstream users to mitigate impacts of water withdrawals without information produced by the proposed study
Proposed methods are not new but the target/setting is unique.
I'm a little confused and seems like just additional sampling, and will these be about quality (focus of the partnership) or quantity? Strengthen the connection to quality and what is the significance to the park?

**Characterization of water quality, hydrology, and use of advanced DNA technologies in the Big Darby Creek basin, Ohio, to better understand potential stressors on the native freshwater mussels**

**CATEGORY: Intensive**

**PARK: National Wild and Scenic Rivers Program (NWSR)**

**USGS Ohio-Kentucky-Indiana Water Science Center**

Comments:

Rapid mussel die-off seems more like an acute rather than chronic situation. Passive sampling would not catch these types of events.
Methods section states POCIS and SPMD samplers will be on 46-day deployment, while ranking criteria #5 states these samplers collect over 30-45 days.
Don't usually comment on budget details, but the costs for continuous monitoring of one site for only 6 months per year is excessive at \$24k/yr (about a quarter of entire project budget)
Problem Resolution section is rather thin.
Very poor prospects for problem resolution
eDNA will give a snap shot of relative abundance but not much more. So what's the value of eDNA applied to this issue?
Passive samplers deployed for a period of time (several weeks) offers significant savings.
Analytical techniques from proposed project could help develop new analytical methods for other studies.
Technically seems appropriate and the potential for transferability exists with this type of work.
The eDNA is a good approach and like the concept, but I am not sure on the problem resolution and how the park could use this information. Expand on the Resolution and usefulness as this could potentially be usable in other parks, but I would like to see how the Park can use this to manage the resource.

**Sediment nutrient storage and release in Rodeo Lagoon, Golden Gate National Recreation Area – management implications for harmful algal blooms and die-offs of threatened and endangered fish**

**CATEGORY: Intensive**

**PARK: Golden Gate National Recreation Area (GOGA)**

**USGS California Water Science Center**

Comments:

Like the idea of hosting a workshop for NPS staff and stakeholders. They will likely take more from this than a technical report alone.
Good spread of researchers between USGS, NPS, and academia.
Don't include full cost of items that are non-disposable, especially those that can be rented for the duration of the study
Well thought out proposal, appears technically sound and provides information to help guide critical management decisions.
Solid project, good methods for assessing nutrient dynamics in a semi-closed lagoon system. Only question is the overall significance. Appears to be a relatively isolated issue.
Very high on the scientific merit and use of the benthic flux chamber is nice and seems appropriate for this study.
A description of how data will be quality assured is lacking.
How will data be reviewed and approved, presumably through the use of TM1D3/TM1D5 for continuous data and through the use of screening tools for discrete data? These details are missing from the activity schedule.
Technically sound and well thought out. Can provide useful information for the methods, but what is the transferability to use at another park?
This idea is not as new as described, but it is commendable to use SOD-like chambers to measure benthic nutrient flux.
Consider adding SOD measurements to measure the potential sinks/sources of DO from the substrate. Recommend replicating and if possible, blanking, the nutrient flux chamber to estimate variability, reproducibility, and potential bias.
Interesting approach to address the review comments from the pre-proposal phase. I like this

**A characterization of contamination from legacy mining activities related to water resources at Coronado National Memorial**

**CATEGORY: Intensive**

**PARK: Coronado National Memorial (CORO)**

**USGS Arizona Water Science Center**

Comments:

Great detailed budget.
The use of geophysics seems like an add-on and the benefits are not adequately explained.
There are many typos. While not scored on this, it is distracting and symbolic of a hastily developed document.
Well defined problem, high-importance resources, good probability that the study will provide information to help managers resolve problems.
Sound project that could feed into AML funding. Unclear if AML funded projects can proceed without this. Extent to which human risk is an issues is somewhat unclear. Good inkind support.
The proposal is strong and well written. A description of how data will be reviewed and approved would be helpful, similar to the detail that was provided for sample collection.
Not only do data need to be checked and reviewed, but the data should be approved in NWIS before publication.
More clarity on the geophysics would be nice and seems like it would be helpful to the study and help the park, but unsure what will really be gained.
One of the better proposals written this year. Good clarity of the problem and technically using good methods.
The proposal states the pressure-transducer data will be available in ScienceBase for public dissemination, however it is possible to add these data to Aquarius so the data can be available in NWIS.

## Causes and evolution of anoxia in the San Juan Arm of Lake Powell, Utah

**CATEGORY: Intensive**

**PARK: Glen Canyon National Recreation Area (GLCA)**

**USGS Utah Water Science Center**

### Comments:

How does this proposal stand to be affected by the historic inflows of 2019 runoff season? This is out of the researchers' hands, but still.

How will this help manage the DO levels in the lake, and what is the transferability? It seems the PI can use the data in other parts of the Park but will the data be isolated to the point this design is for this setting?

The Gold King Mine represents a miniscule contribution to total metals load from abandoned mines in the Colorado River watershed!

The problem was not adequately covered which left me trying to understand the severity of the problem.

What is the major controlling factor of the steep DO decline at a depth of approx 20m on Figure 3?

Ongoing collection in year 3, can the data be incorporated into report or the findings? Like the leveraging of work with existing work in the Lake.

With samples still being collected in Year 3, do you expect to have results back and in the final report? Especially running through the USGS Stable Isotope Lab....

Good leverage with ongoing research.

Technically sound baseline investigation. Would have very much liked to see a discussion of how the data would be used to drive management decisions and the how mitigations driven by the data would solve the problems.

**Using water level management to reduce cyanobacterial bloom toxicity: a whole-ecosystem test of a potential management strategy**

**CATEGORY: Intensive**

**PARK: Voyageurs National Park (VOYA)**

**USGS Upper Midwest Environmental Sciences Center, Upper Midwest Water Science Center**

Comments:

Concentrations may exceed drinking water guidelines, but are any of these waters sources of drinking water?
The second lake site poses some issues of comparability given the many significant differences between the two sites, not limited to input rates/timing, thermal signatures, biologic assemblages, sediment types/rates, turbidity/clarity, solar radiation intensity and timing. Oglethorpe is an interesting prospect for the ability to manage levels; just don't see the direct link to VOYA conditions.
Problem resolution: Lake level management decisions driven by other factors beyond cyanotoxin concentrations, unlikely that this study will do more than inform the drivers of the condition.
Would be helpful for better description of 1) urgency of this study, 2) what critical resources are being impacted by the problem, 3) assurance that the laboratory studies provide data useful for field managers.
Use of appropriate methods and technology should be able to help address the park issue, but I am unclear on the resolution, what can the park do?
What is the urgency of collaborating with UGA and how will that opportunity be lost in the future? Proposal states no permit is needed. Regardless of who's on the project team, PIs are still required to obtain research permits
The proposed work presents a unique opportunity for research scientists to collaborate with environmental managers. The description of the water-quality sample analyses and requests is slim.
What is the impact on recreational contact? Concentrations elevated to the point this is a concern? Who may be drinking this water, beyond just recreational contact?
Good use bringing in outside staff from UGA and KS lab. Comparing lakes in MN to GA, is that representative and what can really be learned from this? What about the climate and duration of the warm season in the south to that of the north. I would like to see the benefits of the test lake expanded.

## Water Quality and Ecological Conditions in an Acidic Watershed in Shenandoah National Park

**CATEGORY: Intensive**

**PARK: Shenandoah National Park (SHEN)**

**USGS Virginia and West Virginia Water Science Center**

**Comments:**

To confirm the timing and concentration of acidity and aluminum, flow-triggered autosampling would be superior to QW parameters alone.
Any prospect for operation/funding of the gage after Year 2?
Project support amounts seem heavily inflated. \$20k for two sondes for a couple years of use?
Sonde-based DOM fluorescence data would be interesting (and possible) for modeling of ecosystem processes.
All ranking criteria submissions are quite thin and could all use significant expansion should this project be considered in the future.
Excellent, technically sound research with strong applicability to management.
What exactly is "pristine water quality" in the central Appalachians?
Solid proposal in need of funds now. Weakness is the relatively small geographic nature of the watershed in question. Also, the degree of NPS involvement/partnership is unclear and the case could be made stronger.
Nicely written proposal, and has a strong potential for this type of work at other parks with similar conditions.
Strong, well-written proposal. Proposed as a synoptic for FFY2019 funding opportunity. Overall a bit experimental yet logical in approach.
Consider adding field alkalinity or field acidity.
Problem is clear to me, but the resolution and how the Park can benefit is lacking. Build this resolution up and how the park can make strong decisions

**An assessment of the scope of aquatic parasite contamination and the effectiveness of protection strategies in surface waters at Acadia National Park**

**CATEGORY: Intensive**

**PARK: Acadia National Park (ACAD)**

**USGS Upper Midwest Environmental Sciences Center, Upper Midwest Water Science Center**

Comments:

This proposal seems like a response to entities outside the park complaining about a potential non-issue per the authors rather than a Park-driven water quality issue affecting Park resources.
How do shifting beaver populations and parasites being highly variable spatially and seasonally affect the efficacy of long-term monitoring?
Severity of Resource Threat: Is there any indication that the threat at ACAD is any more pressing than at other water-based NPS sites?
If the problem of <i>Giardia</i> in the drinking water is known, why don't the users of park surface water for municipal purposes treat the water to remove the pathogens? Or to assess water users for the cost of sourcing the pathogens?
The proposal implies that the management action would be to continually manage (i.e., cull) wildlife, which is not generally supported by NPS laws or policies.
Genetic sourcing for bacteria is expensive and often results in no firm conclusions, I'd like to see more discussion of the certainty that this expensive genetic testing would accurately source the pathogens.
Proposal could better articulate the geographic setting. Significance not well developed. Urgency also not well developed.
Proposal is a bit choppy and difficult to follow. Proposed work is interesting and multi-disciplinary, but it also seems ambitious for the timeframe, cost, and the amount of information needed in order to address the objectives.
Sample-collection details are slim and could be elaborated upon. Are enough data proposed to be collected to characterize the occurrence of aquatic parasites over a range of conditions? QA/QC samples were not included and there was no discussion of interpretation of data.

**Vulnerability of groundwater resources from activities related to oil and gas exploration near Guadalupe Mountains National Park and Carlsbad Caverns National Park**

**CATEGORY: Synoptic**

**PARK: GUMO and CAVE**

**USGS Texas Water Science Center**

**Comments:**

An issue worth evaluating, however this an inadequate proposal at the synoptic study level.
With O&G development, including fracking, requiring so much fresh water, where is this coming from? The Capitan Aquifer? This may be more of a concern than the quality issues brought up, and may even have a quality component, especially if lowering water levels, moving the freshwater/saltwater interface, bridging aquifers, etc. This is a very (if not the most) important issue related to groundwater out here, and it is not mentioned until p.11 of the proposal.
The scope is rather limited and general for a synoptic level study.
Of the selected sample sites, are they targeted in the Capitan Aquifer or anywhere groundwater is available? If from different aquifers, how will the results be compared?
Will water levels all be collected at the same time (similar hydrologic conditions?)
Unsure if this level of effort warrants an SIR over a Data Series or similar.
This proposed work gathers some basic data needed for the park, but may not necessarily fit as a synoptic.
No good explanation of why Otero Mesa is significant. Is it upgradient, a source of significant recharge, other?
Generally do not comment on the budget, but there are no in-kind collaborators or other researchers to help build this work. Are there any existing universities or potential collaborators that can contribute assistance? Analytical analysis? Interpretation? Conceptual flow around the park?
Since there is no indication that water quality impacts are occurring now, is there an example that can be presented where O&G has impacted water resources here or in a similar setting?
Springs in CAVE and GUMO appear to be sourced upgradient of where the Bone Springs play is located. How is contamination postulated to arrive at these sites?
Seems like a missed opportunity to propose some interesting analyses of the collected data. Instead we are presented with a data collection effort. For that, looking at the budget it appears that this could be achieved by a one-year technical assistance request.

It is tough to accept the comment that "little research has been conducted to determine the impacts of hydraulic fracturing on groundwater resources in and near production areas". A simple search contradicts this.

Strong synoptic proposal. Seems like these data will be invaluable to the park in protecting its groundwater sources.

I think I get the problem is lacking some information which had me wondering on the severity. O&G work is buzzworthy but I need to see the connection of what the park can do with the information to control O&G exploration in and around the park

## Assessing sources of bacterial contamination at Fire Island National Seashore (FIIS)

**CATEGORY: Synoptic**

**PARK: Fire Island National Seashore (FIIS)**

**USGS New York Water Science Center**

### Comments:

Good detail on approach, methods, QA/QC, well designed study.
Good nexus with ongoing studies in the area.
The point made about NPS units acting as a leader for the community!
Need a better discussion of the potential receptors: how are humans and wildlife coming into contact with this standing water?
Sampling for only 4 months of a hydrologic year may result in skewed data or missing some interesting cycles within a given year.
Good baseline study. From the photos, these do not look like recreational waters, proposal did not draw a direct connection between ponded water to be tested and recreational waters - is there any information that areas where people swim/wade are contaminated? Has there been any effort to map and assess failing infrastructure?
Solid proposal with good overall description and collaboration with the park. A weakness might be with urgency.
Budget details are slim but seem reasonable. Timeline is appropriate, and staff are experienced with this type of study.
Well written and well-designed study/proposal, but is the data collection effort long enough?
Scientific merit is high to me and using good and applicable methods, but the severity of the problem was a little thin and seems like this has been going for a while, so can the urgency of the study be expanded?

**Detecting and mitigating glacier lake outburst floods with measurements of conductivity and turbidity in Wrangell-St. Elias National Park, AK**

**CATEGORY: Synoptic**

**PARK: Wrangell-St. Elias National Park (WRST)**

**USGS Alaska Science Center**

Comments:

Development and presentation of Criteria 3 and 8 took a step back from last year's submission.
This is a very interesting phenomenon and approach to understanding controlling factors and timing of the events, with the added benefit of providing near real-time warning to downstream resources.
With a 1-hour reporting interval, how soon could an event be predicted and reasonably have information released to the public as a warning? Will there actually be adequate time to prepare for a large event?
If the source of these events is one location (in this instance), why not have a real-time stage recorder on the lake instead? If there are potentially multiple sources I can understand the benefit of the downstream monitoring.
Budget and Project Support are VERY thin.
Creative solution to a safety issue. Good probability of the data supporting management decisions. Perhaps not really a water quality issue.
Uses water quality as a proxy for timing of glacial flood events. Unclear why this is so important. In-kind support not well documented. Proposal would benefit from more explicit ranking criteria.
It may not be necessary for a TU/SC/SSC model to include pH and DO. As a cost-savings measure, consider eliminating pH and DO measurements from the continuous monitors.
For turbidity, it may be valuable to consider upgrading the model of sensors, as the newer models provide slightly more accurate results for turbidity (and DO if decide to keep) than the older model. Unlike the older model, the newer model also has a wiper that cleans the SC sensor, which could reduce the number of site visits.

## Ultraviolet light screen chemical contamination of coral reefs in the Virgin Islands National Park

**CATEGORY: Synoptic**

**PARK: Virgin Islands National Park (VIIS)**

**USGS Wetland and Aquatic Research Center**

### Comments:

Good job highlighting the potential magnitude of the problem, using innovative methods, and developing a very transferrable methodology.
How will concentration per unit volume be quantified considering that much of the argument of the study is based on established concentration thresholds?
How applicable is point in time visitation to long-term sampling? Would trail/traffic counters or similar be a better comparison metric for little added effort?
Good problem definition, technically sound, reasonable prospect for problem mitigation. Good transferability of information to other coral protected areas.
Why can't the park do this with data from elsewhere? Overall, a sound project with ample inkind contributions.
Proposed work is interesting. Some details were lacking from the project proposal. Description of background information or problem definition was insufficient. Sample details beyond SPMDs and POCIS are lacking. How will the data be reviewed and approved?
Innovative approach, to me, and would have applicability to other parks. Well written.
Would water concentrations of the compounds be affected by the recreating population? How can this be normalized for recreational activity on a given day?
If the sale of the compounds become limited or restricted, the public while protecting the coral health may approve, but what about personal health and impacts from the sun? Any chance to add extra work or in the future for "safer" (whatever that is) alternatives for the public protection?

**Understanding the contaminants in Glorieta Creek and Pecos River related to wastewater treatment facilities near Pecos National Historical Park, New Mexico**

**CATEGORY: Synoptic**

**PARK: Pecos National Historical Park (PECO)**

**USGS New Mexico Water Science Center**

Comments:

Is there any way to estimate how other parameters might respond in comparison to the 24hr bacteriological sampling? Are diurnal fluctuations in these constituents known/expected?
Good breakdown of schedule, budget, QA/QC plans.
If many of the measured constituents are unregulated, how are the results at all applicable to the potential for TMDL development in the future?
The problem is clear to me and this is a timely project to address a need for the park, but how much say so will the park have working with the operators of the facilities?
Good collaborative efforts with Park and I&M Network.
Good USGS-NPS partnership project. Results will support a variety of resource management decisions.
Proposal neglects to adequately describe park and how this project is related to park purpose, existing plans, etc.
Proposed work is interesting. What data already exist that could help inform the proposed study?
Well written and one of my top proposals in the group. Well thought out and good design.
Good innovative methods with the passive sampling, which is good for exposure type of sampling, in my opinion.

<b>Pipestone National Monument waterfall study</b>	
<b>CATEGORY: Synoptic</b>	<b>PARK: Pipestone National Monument (PIPE)</b>
<b>USGS Minnesota Water Science Center</b>	

Comments:

The language in the proposal and support letter do not indicate much in the way of problem resolution, only that results "could inform future park planning". Scored accordingly.
Technically sound proposal.
Is there transferability here? I see this can be a significant issue for this park, but do other parks have similar issues or benefit from the work being done in PIPE?
Little detail on data QA/QC
The mist methods are worthy of expanded process descriptions, especially when being reviewed on paper copy and unable to follow reference links.
Interesting sampling problem, very unclear how the data will improve the park's ability to mitigate risk other than seasonal signage.
Proposal neglects to describe the park to the reader. Otherwise a good proposal with inkind from NPS.
Proposal is slightly choppy and difficult to follow yet interesting. Description of the sampling plan and analysis are slim.
How will data be reviewed and approved? Where will data be stored? Are QA/QC samples incorporated into the sampling plan? If not, highly recommend ensuring QA/QC samples are collected, analyzed, and the data are interpreted.
Well written proposal. Technically sound, but I am not getting a sense of urgency with the study or the severity of the threat. More clarification is needed.

<b>Remote sensing of benthic algal blooms on the Buffalo National River</b>	
<b>CATEGORY: Technical Assistance</b>	<b>PARK: Buffalo National River</b>
<b>USGS Geomorphology and Sediment Transport Laboratory</b>	

Comments:

<p>While initial UAV flyover is an acceptable activity to collect the data, it seems unreasonable that this will be a standard method for data collection in the future. If it is anticipated that satellite data will be the way to monitor over time, why not just focus on that applicability rather than UAV data? Why coarsen/upscale UAV data to make a satellite analog when you can just use satellite right off the bat?</p>
<p>Clear issue, good explanation of methods, cool tech.</p>
<p>For future monitoring, who is going to take on acquisition, analysis of satellite imagery, do ground truthing, and issue warnings? Time consuming, seems unfeasible in practice unless entire process were automated somehow.</p>
<p>For project support using existing equipment, should present the applicable rental cost for the time of the investigation rather than the full purchase cost, unless they are consumable.</p>
<p>Interesting proposal! High applicability elsewhere if successful.</p>
<p>Nicely written. I like the concept of the remote sensing. Since this is a one year tech support, are we looking at a proof of concept and potential Intensive study in BUFF or other park?</p>
<p>Innovative approach and very transferable. Good NPS involvement. Won't solve the problem but could provide a very useful tool for rivers systemwide.</p>
<p>How will QC be incorporated into sampling/analysis design?</p>
<p>Proposal states algal samples will be collected within 1-2 days of when UAS-based images are acquired. Is this soon enough? If possible, samples should be collected sooner than within 1-2 days since environmental conditions could change during that time and result in poor linkage.</p>

## Spatially explicit model of *Escherichia coli* loading to the Little River Canyon National Preserve

**CATEGORY: Technical Assistance**

**PARK: Little River Canyon National Preserve (LIRI)**

**USGS Lower Mississippi-Gulf Water Science Center**

### Comments:

Proposal is missing the front page with contact information, project category, etc.
Terms such as "generally good" and "occasionally" do not strike the reader as descriptors for a situation that is imperative to resolve.
Figure 2: Why are so many of the max MPN values the same value?
Other available datasets seem applicable but are not mentioned: soils/geology, topography, etc.
P.5 refers to households "using sewer systems", do they mean septic systems?
Isn't flow at the subwatershed outlet an important parameter to calculating concentrations? How is this dealt with? The only discharge values noted are those of treatment facilities.
There is no mention of how the modeled E. coli concentrations will be compared to the measured values from the watershed.
I like this proposal, but have concerns of completion in one year as tech assist. Would a synoptic, 2 year study be better? Year 1 build and test the model, and year 2 continue testing and revising as more than one year of flow may be needed and I am thinking collecting own verification data may be needed. I would like to see this as a 2 year study.
Seems costly for a modeling effort. Unclear how the results will improve conditions in the park.
Solid proposal although the degree of park involvement could be better articulated.
How will the model be calibrated?

## Assessment of groundwater quality including radon at Capulin Volcano National Monument

**CATEGORY: Technical Assistance**

**PARK: Capulin Volcano National Monument (CAVO)**

**USGS New Mexico Water Science Center**

### Comments:

How does dissolved radon gas in indoor plumbing make it into the atmosphere? Where/when does it off-gas?
Before sampling a full suite 6 times in one year, what is keeping the park from collecting a round or two of sentinel constituents to determine scope/scale of the issue?
I like that the proposed sampling will tackle the water quality issue but also provide information on the age, recharge area and timing and other more interesting but not necessarily water quality related data.
How will samples be collected: after a pumping run, after purging X casing volumes, once water quality parameters have stabilized, other? How will the samplers know that representative samples are being collected?
Very important baseline information for operation of the park and protection of park staff and visitors.
Would this work as a two year synoptic type study with 2 years of data collection? Collect samples quarterly rather than every other month, and collect water level data in the well as component of the study? It seems the well is has only about 40 feet of water in it, what is the fluctuation and demand for the water?
Appears to be a much needed project.
The proposed work is interesting. The benefits are limited to CAVO but gaining an understanding of water-quality conditions is critical.
How will the data be reviewed and approved? Is there a strong argument for not using USGS/USGS contract labs for radchem/isotope analyses?
Timely and well written. The case is made to the importance of this work, and the significance of the resource to this park is very high.

**Establishing baseline measurements of habitat quality and channel change as a function of recreational usage on the Platte River, MI**

**CATEGORY: Technical Assistance**

**PARK: Sleeping Bear Dunes National Lakeshore (SLBE)**

**USGS Upper Midwest Water Science Center**

Comments:

Much of the proposed activity skirts around making a direct link to water quality without really doing it. This is an assessment of channel condition, and while it may be justified, if wanting to make a water quality connection, why not include some direct measurements of water parameters rather than just analogs?

How will changes over time be separated by human activity vs. natural processes?

Future surveys would need to follow proposed protocol, park and/or volunteers may not be able to run total station, etc. for proper repeat data.

Would rather see fewer cross sections and some sort of direct measurements of water, be it total suspended solids, turbidity, secchi depth, etc.

There are missing elements that would make this study more technically sound. If they can't be fit into a Technical Assistance format, suggest re-submitting as a synoptic study.

Very solid baseline study. Hard to give it high rank for urgent risk to human health / critically endangered resources etc., due to the nature of the proposal.

Somewhat unclear how important this project is to the park. Also not a mainstream water quality project but more of an integration into physical habitat.

Little water-quality characterization is included in the study.