

Glen Canyon Dam Technical Work Group Webinar

May 1, 2019

Date: May 1, 2019

Start Time: 8:05 am

Conducting: Seth Shanahan, TWG Chair

Meeting Recorder: Rosana Nesheim

Attendees:

Committee Members/Alternates Present

Melinda Arviso-Ciocco, Navajo Nation
Jan Balsom, NPS, GCNP
Clifford Barrett, UAMPS
Shane Capron, WAPA
Kevin Dahl, NPCA
Craig Ellsworth, WAPA (Alternate)
Charlie Ferrantell, Wyoming State Engineer's
Office
Paul Harms, New Mexico Interstate Stream
Commission
Ken Hyde, NPS, GCNRA
Leslie James, CREDA (Alternate)
Vineetha Kartha, ADWR

Craig McGinnis, ADWR
Terry Morgart, Hopi Tribe
Jessica Neuwerth, CRBC
Emily Omana Smith, Reclamation
Amy Ostdiek, Colorado Attorney General's
Office
Ben Reeder, GCRG
Peggy Roefer, State of Nevada
David Rogowski, AZGFD
Seth Shanahan, Southern Nevada Water
Authority
Jim Stroger, Trout Unlimited, IFF
Kirk Young, FWS

USGS/GCMRC

Helen Fairley
Ted Kennedy
Michael Moran

Jeff Muehlbauer
Scott VanderKooi

Reclamation

Tara Ashby
Bill Chada

Heather Patno

Interested Persons

Rob Billerbeck, NPS
John Jordan, Trout Unlimited & IFF
Rosana Nesheim, Galileo Project (Scribe)

Sarah Rinkevich, FWS
Garwain Sinyella, Hualapai Tribe

Presentations and Discussion

Welcome and Administrative

Presenter: Seth Shanahan, TWG Chair & others, as assigned

Presentation & Discussion Summary:

- Quorum Established with 16 members or alternates present.
- March 14, 2019 Meeting Minutes are still in draft form. Seth will send final version of the March 14, 2019 Meeting Minutes with the May 1, 2019 Webinar Meeting Minutes to TWG for review
- Future Proposed Meetings for 2019:
 - June 11 & 12 in-person meeting
 - October 21 & 22 in-person meeting
 - *Seth stated that because October 21 is a Monday, TWG is considering an afternoon start time on the first day and a later end time on the second day, so attendees don't have to travel on a Sunday.*
- The most up to date ad hoc groups will be posted on the website after the webinar. TWG retained all the ad hoc group names and listed each group as either "active" or "suspended." The idea is to preserve historical knowledge and understanding of some past ad hoc groups, so if at any time, TWG needs to reactivate an ad hoc group, TWG will be able to track group members and activities instead of starting from scratch. Seth stated that this information will be helpful when TWG starts thinking about a new TWP. TWG has thought about reactivating the Socioeconomic Ad Hoc Group and charging it with a new task or with something the group has done in the past.
 - *Ben Reeder asked that people in the group email him to help provide clarity or to identify what task or charge the Socioeconomic Ad Hoc Group could have when thinking about the upcoming TWP budget conversations.*
 - *Tara Ashby stated that she asked that the document be added to the website this morning, so it should be available now.*
 - *Craig Ellsworth mentioned that he really likes the document.*
- Craig Ellsworth has been updating the Wiki site. If a link does not work, there are still ways to find the information on the Reclamation website. Craig asked that members who encounter a broken link notify Craig to ensure links are active and information is current. The Wiki's front page contains links to pages that describe different aspects, resources, and the latest topics TWG and AMWG are discussing. Craig, Vineetha Kartha, and Peggy Roefer are stewards of the Wiki and are always looking for contributions from AMP stakeholders, including information on which stakeholders might be working or information that might make another stakeholder's work easier.
 - *Vineetha Kartha asked about adding the administrative history project onto the Wiki site. The Administrative History Group was to provide recommendations to the history project, but Vineetha was unsure whether that happened. Vineetha suggested providing, at the very least, some history or linkage to information Paul Hirt provided during the March AMWG meeting. Craig agreed that TWG should record all activities, including the information for the history project.*
 - *Seth Shanahan stated that Reclamation emailed TWG about complying with Section 508. Seth asked that Reclamation inform TWG of Section 508 details for posting information online and how Section 508 relates to the Wiki site because a lot of information on the Wiki site links to the Reclamation website. Tara Ashby responded that the law requires that everything posted to the website be Section 508 compliant. In her email, Tara included instructions on how to make documents Section 508 compliant. Emily added a description of the Section 508 law, which states that "Section 508 is an amendment to the US Workforce Rehabilitation Act of 1973 and... mandates that all electronic and IT developed, procured,*

- maintained, or used by the federal government be accessible to people with disabilities.” Reclamation has experienced delays in adding information to the website because of this requirement. Tara explained how presenters should describe graphics in their presentations to ensure compliance with the law. Scott VanderKooi stated that GCMRC also requires Section 508 compliance. GCMRC has been updating its website to look more like the DOI website but has been experiencing some constraints under the new format. Scott suggested adding a section on the GCMRC website for the June meeting. Jan Balsom added that DOI is updating all its sites to the new format and to be compliant with Section 508.*
- The Action Item Tracking Form will be posted on the website after the meeting. This document tracks important questions and is not necessarily just for action items. There are no updates to the form at this time.
 - Emily reported that since the March AMWG meeting, the White House has released its 2020 budget, which included \$20 million for AMP and RIPs; however, the House and Senate still need to review and approve a final budget.
 - *Seth Shanahan stated that TWG might have more flexibility than expected now that TWG is operating under the potentially appropriated funds process as the new normal. This could be an opportunity for TWG to consider where that flexibility might be when constructing the TWP. Emily agreed that there are some opportunities to consider flexibility, but that working on the budget several years ahead is different from how TWG has worked with the budget process in the past. Internal budget negotiations for USGS and Reclamation start in October 2019 for the FY 2022 budget requests.*
 - *Jim Stroger asked if Reclamation needs anything from TWG members to help with the budget. Emily Omana Smith responded that non-federal partners could help in some ways, and that perhaps the group could discuss this further during the budget discussion in the upcoming AMWG webinar. Vineetha added that TWG has sent letters to the appropriations subcommittee advising of the importance of this program and requesting that the budget remain as is, with regard to the AMP and the RIPs. ADWR has also informed the congressional delegation from Arizona of this request.*
 - *Clifford Barrett asked if this process would affect the budget timetable at AMWG. Emily stated she did not anticipate changes to the AMWG timetable but would know more when the federal government releases the final budget.*
 - *Ben Reeder asked if the budget was less than expected. Emily clarified that the proposed budget was not less than expected and was the same amount received in the past.*
 - *Vineetha asked if there was a conclusion to the experimental funding process. Emily explained that, with appropriated funds, Reclamation could no longer carry over unused dollars into the native fish contingency fund; however, Emily added that Reclamation would identify appropriate projects on which to spend those funds. Members of the BAHG were also interested in submitting ideas for possible projects; those are welcome, and should include scopes of work and proposed budgets.*
 - Ken Hyde stated that NPS was in the final steps of the Expanded Non-native Aquatic Species Management Plan and has a prepared draft for NPS leadership. NPS completed the BO and has been working on the PA. NPS had formal consultations with the Zuni Tribe and met with Hopi Tribal leadership. NPS will meet with the Kaibab Tribe in two weeks and is waiting on a response for whether the Navajo Nation still wants NPS to meet with Navajo Nation fisheries and cultural research staff. Upon receipt of the Navajo Nation response, or in the next two weeks, NPS will send out the final draft of the PA. Ken stated he hopes to finalize the PA and to have incentivized harvest activity related to brown trout in the fall.

- *Jim Strogen asked whether there will be public comments on the finalized draft of the PA. Ken explained that the PA is between NPS, the tribes, and the SHPO and does not include public comments. NPS has been making adjustments to the PA based on conversations with the tribes. Rob Billerbeck added that NPS held a public comment period for the draft EA prior to releasing the FONSI, but there would not be a public comment period for the PA.*
- Michael Moran provided an update on GCDAMP river trips and field activities to occur during May and June 2019. **Additional details are in Attachment 1.**
 - *Jim Strogen asked for more information about the GCMRC/Grand Canyon Youth, Aquatic food base monitoring trip. Scott VanderKooi responded that GCMRC has had a longstanding partnership, called Partners in Science, with the non-profit group Grand Canyon Youth. GCMRC has been using the trips to gather data for its research and to teach youth how to gather data. GCMRC conducts two youth trips each year with one in June and one in July for 2019. Seth added that participants pay their own way for these trips. Scott stated that scholarships are available for youth who cannot pay.*
- Scott VanderKooi informed the group that on April 10 GCMRC expects to release a Federal Register Notice for a project Lucas Bair (USGS) is leading in cooperation with several tribal partners to collect information on tribal perspectives about resources downstream of the Glen Canyon Dam. There will be a 60-day initial comment period and another 120-day comment period once Lucas has collected the necessary information. Scott will send the Federal Register Notice to all TWG members.

Update on Hydrology, Operations, and Reservoir/Release Temperatures

Presenter: Heather Patno, Reclamation

Presentation Summary: Snow conditions have changed over the season this year. The area started at 65% of average and has increased. Although the area has warmed and has experienced significant snowmelt, as of April 30, it is still 126% of the seasonal median. Reclamation expects some small snowstorms but does not expect those snowstorms to extend snowmelt for this season. Reservoir storage has increased since the March meeting and has already seen its lowest point in the season. Reclamation expects to see increased runoff over the year. Water year 2019 has been good.

Reclamation updates the minimum, maximum, and most probable release each month, and the previous update was for April to July. For the current water year, Reclamation expects to release 12.1 maf, or 112% of the average 10.83 maf, and expects a minimum of 89% of average and a maximum of 141% of average. The area may receive additional precipitation through the spring runoff period, so there is still a range of potential volume to see this year.

April was a decision month for interim guidelines. Reclamation is in the Upper Elevation Balancing Tier and experienced an April adjustment to balancing where Glen Canyon was below 3575 feet and Lake Mead was below 1075 feet. With the increased forecasted inflow volumes, Reclamation expects the minimum, maximum, and most probable inflow scenarios to have a water release of 9.0 maf. Even the minimum probable released is a significant amount of inflow Reclamation expects to receive from now until the end of September. Reclamation projects the 2020 most likely and maximum probable releases to be within normal levels at 9.0 maf and 12.84 maf, respectively, but expects the minimum probable release to fall into shortage level 1 conditions at 8.72 maf.

Reclamation has unit maintenance and replacement outages scheduled for 2019 and 2020 but does expect to meet the requirements for the minimum, maximum, and most release projections. Reclamation expects to complete maintenance on the second and third unit much faster than on the first unit. Reclamation has had to limit some of the releases based on the units available but expects to complete releases by September 2020. All eight units are expected to be available in November 2019.

Projected release water temperatures for April 2019 decreased significantly because of the amount of cold water Reclamation expected to come into the reservoirs. Temperatures through Glen Canyon decreased as well. [Additional details and are in Attachment 2](#)

Discussion:

- *Scott VanderKooi pointed out the timing for some of the weekends in the hydrographs for bug flows are off. May 11-13 shows as a three-day weekend, which is likely meant for the May 25-27 Memorial Day weekend. Heather stated she will double check those weekends.*

Bug Flows Update

Presenters: Ted Kennedy and Jeff Muehlbauer, GCMRC

Presentation Summary: On April 25, DOI approved bug flows for May through August 2019. Weekends in 2018 were 1000 cfs higher than on weekdays, and GCMRC expects weekends in 2019 to be 750 cfs higher than the weekday low based on water volume. In 2018, GCMRC used citizen science light traps and installed about one-thousand traps throughout the river between April and the end of September. GCMRC also conducted drift river trips in April and in September. The goal was to determine whether midge abundance correlates to the timing of hydropower waves, and GCMRC used drift to monitor that as well. GCMRC did not expect the results showing a higher midge abundance on weekends vs weekdays during the weekday-weekend study conducted August 10 to 13. GCMRC collected drift at that time but did not process that data because a transmission failure resulting in altered dam releases made them unreliable.

GCMRC also monitored fish diet through gut contents of 66 rainbow trout using non-lethal gastric wash. The goal was to determine feeding habits of rainbow trout on different days of the week. GCMRC observed that there was higher content of *Gammarus* in the rainbow trout guts on weekdays than on weekends when flows were steady. Higher *Gammarus* occurred in the drift in the Upper Glen Canyon, but there was less dominance of *Gammarus* farther downstream. Fish growth was the highest in 2018 than in the previous six to seven years of the study.

During the May downstream trip, GCMRC anticipates doing the same weekday-weekend comparison at HBC monitoring sites and is discussing intensive weekday-weekend studies in June and August at Glen Canyon with WAPA. GCMRC is also considering electrofishing and angling to compare gut content between fish caught through electrofishing and fish caught through angling.

Discussion:

- *Ben Reeder asked when the bug flows would start. Ted responded that bug flows are starting May 1, and the May 4 weekend will be the first weekend steady flow.*
- *Peggy Roefer asked whether the eggs always hatch within two to three days after midges lay them or if they could hatch over time. Ted explained that water temperature determines how quickly an egg can develop into a larva, and that eggs normally hatch a couple of days after the weekend in which they are laid. Eggs need to be kept wet, and exposure can cause the eggs to die within a few hours. Peggy asked if the peak in May was because a lot of eggs had already been laid and decided to hatch. Jeff clarified that it was not a lot of eggs that were observed hatching but a lot of adults that were observed leaving the water. GCMRC did see a peak of adults coming out of the water in May 2018, and that could have been due to water temperatures or the steady flow that made the midges think it was time to emerge. Peggy asked why there were so many at the beginning of May and then dropped off. GCMRC does not have a concrete explanation for that occurrence right now.*
- *Jim Stroger asked if GCMRC thinks the experiments contributed to the growth of trout and/or if there were other factors that impacted growth. Ted stated that the hypothesis is that the bug flows*

contributed to fish growth but there is also the possibility that as temperatures increase, trout growth increases. Ted thinks that in three years of bug flows, GCMRC could put a value on the impact on growth. Right now, there are a lot of other things GCMRC knows of that can affect trout growth, which makes it difficult to determine the marginal effect of bug flows.

- *Shane Capron thanked Ted and Jeff for the weekday vs weekend comparisons and commented that it will be helpful to untangle things like the potentially higher growth when there was higher emergence in May and higher food in the fish guts on weekdays. Shane thinks one might look at that information and hypothesize lower growth rates instead, but one would have to put all the bioenergetic information together to look at the larger picture. Jeff responded that the marginal effect of bug flows could be positive, but it could potentially be negative. Jeff suggested looking at native fish gut contents downstream considering that the numbers of Gammarus are lower below the Lower Colorado River. GCMRC saw a striking contrast driven by Gammarus at the Glen Canyon sites closer to the dam, which Jeff does not think they would see downstream because of the lack of Gammarus there. Scott added that the results are preliminary and were probably influenced by the pre-existing number of fish where Gammarus is common. Ted and Jeff only looked at these results on April 30 for the first time, so the information is new. GCMRC needs to collect more data and hopefully get around some of the challenges of 2018. It will be important to understand how the bug flows influence the native fish.*
- *Craig Ellsworth stated he appreciated Ted's and Jeff's willingness to take a closer look at these types of interactions and that he learned a lot about the process. WAPA is excited that GCMRC is interested in doing the bug flows again and looking at ways to design a better study for this summer as compared to 2018.*

Update from the Budget Ad Hoc Group

Presenter: Shane Capron, WAPA

Presentation Summary: TWG typically starts generating ideas for the budget in January after the GCMRC meeting, which was delayed until March this year, to make recommendations in June and to bring forward to the Secretary during the August AMWG meeting. Three specific criteria for recommendations include scientific requirement or merit, administrative needs, and new initiatives. Proposals require endorsement from the program manager at Reclamation prior to development.

The BAHG has been trying to determine how much money will be available and has been concerned with the change to appropriated funds. Reclamation will no longer be able to carry over unused money to the native fish contingency fund; however, there may potentially be more money available than expected. GCMRC has been reevaluating which projects could be shored up and has been identifying potentially available funds. The BAHG asked Reclamation to review those funds and to provide ideas on how to potentially use them. The BAHG has also asked folks to identify potential projects and will set up a meeting to work through suggestions made today to come up with potential projects to recommend in June.

The 2020 budget has not been approved, but Reclamation assumes it will be the same as in 2019. Differences will be the lack of CPI and not being able to carry over unused funds. Funds must be obligated by the end of the year.

The total budget for GCDAMP is \$11,360,000, of which 20% goes to Reclamation and 80% goes to GCMRC. Items like the stakeholder river trip will receive money from within Reclamation's budget, so TWG expects movement in the budget within categories. Tribal participation in AMP is funded by other federal agencies and is not part of this budget.

GCMRC made some revisions to its 2020 budget, based on discussions with the BAHG in the last week. In 2017, GCMRC had projected up to a 26% increase in overhead costs for FY2020 because of the new USGS facility in Flagstaff; however, the increase will actually be about 16% because USGS has not moved into the new facility yet. USGS has signed a 20-year lease agreement with the City of Flagstaff and is now working with GSA and the city on the new building to house GCMRC and other USGS groups. GCMRC expects to be in the new building by October 2021, which is when GCMRC also expects overhead rates to go up.

The lower increase in costs for FY 2020 has freed up some funding, and GCMRC found some projects that are short on staff to fit into the budget for FY2020. GCMRC also included a proposal to continue the study of trout management flow design. GCMRC requested additional funding to retain staff for Projects A, C, and D to continue work in FY 2020. GCMRC also requested funding to retain a staff member who would work on Projects E, G, H, and I. For Project K, GCMRC asked for six months of funding to retain a staff member. Additionally, AZGFD requested to add back the spring trip in Project H. GCMRC is still discussing funding amounts for that trip with AZGFD and with FWS. Overall, GCMRC requested an additional \$335,000, which is more than what the reduced overhead rate freed up. In the past GCMRC was able to use carryover funds but is unsure if that will still be possible. GCMRC also wanted to use carryover funds to conduct the overflight in FY 2021.

GCMRC does currently have funding for the Lake Powell work that is funded outside of AMP and from other Reclamation funds. GCMRC has been working with Robert Radtke at Reclamation to ensure funding continues for the Lake Powell work and will send the workplan for that to the group.

In addition to the lack of CPI and the reduced flexibility associated with appropriated funds, GCMRC is at the end of a five-year interagency agreement with Reclamation. During agreements, GCMRC is able to carryover funds from one year to the next, but they can't be carried over between agreements. Once GCMRC and Reclamation have a new five-year agreement in place, the ability to carry over funding will be easier. **Additional details on this presentation are in Attachments 3 and 4.**

Discussion:

- *Peggy Roefer asked how the experimental vegetation treatments were going and whether those would continue. Scott VanderKooi responded that the GCMRC portion of those experiments are in Project D. GCMRC has provided science support and has facilitated a couple of planning meetings between GCMRC, NPS, and the tribal participants in the program. NPS had an initial trip a few weeks ago to start doing some experimental vegetation treatments. GCMRC has planned another trip to stop at the same sites where vegetation removal has occurred to collect and evaluate data. Peggy thought that a lot of the beaches seemed useful for recreation but were covered in arrowweed. Scott explained that the goal of the experimental vegetation treatments was to benefit multiple resources like camping beaches and archaeological sites. In some areas, vegetation has blocked wind-blown sand onto archaeological sites, so the treatments would help with preserving those sites. Jan Balsom added that the first trip, which leaves today, employed an ancestral land core group. Jan agreed with Scott that there were multiple purposes for looking at vegetation management, including cultural and recreational resources. The priorities for vegetation management is laid out in the LTEMP ROD. Peggy asked if there was enough money in the budget for this item, and Scott and Jan responded that there was enough money for this year. Scott added that the work was going on this year, and GCMRC hoped to follow up on monitoring data and evaluations and to plan for additional sites in 2020.*

- *Helen Fairly asked if the \$30,000 set aside for the cultural resource contingency fund would fall into the same category as the experimental fund with regard to losing the money that Reclamation does not spend. Emily confirmed that this was correct.*
- *Craig Ellsworth asked if Ted Kennedy and Jeff Muehlbauer could absorb additional work for bug flows in Glen Canyon into their normal food base budget. Scott does not think Ted and Jeff will need additional funds for FY 2019 but might for FY 2020 because most of the work related to bug flow monitoring is in the actual processing of the samples, and that will occur in FY 2020. In FY 2018, GCMRC requested funds from Reclamation's experimental fund to support the bug flow experiment and carried most of those funds into FY 2019. Given the five-year interagency agreement between GCMRC and Reclamation ending in September 2019, it makes more sense for Ted and Jeff to propose using FY 2020 funds for the bug flows.*
- *Shane asked if GCMRC would be adding more money into its FY 2020 budget. Scott responded that GCMRC has already added more money into the FY 2020 budget. Shane asked whether GCMRC would be adding more funding into the food base work or if GCMRC has already accounted for that. Scott stated that GCMRC would likely request additional funds from the experimental funds in FY 2020 because costs would be higher in FY 2020, which is when GCMRC expected to process the samples collected in summer 2019. Shane asked if GCMRC had identified additional money coming from the experimental fund in the FY 2020 budget. Scott clarified that GCMRC normally writes up a statement of work and submits it to Reclamation. This is how GCMRC requested money for the bug flows and the brown trout workshop last year and Scott did not expect the process to change. Shane thought that in the past GCMRC had identified line item budgets that pulled from the experimental fund or from the native fish contingency fund to fund projects. Scott confirmed that in the past GCMRC had requested funds from the native fish contingency fund but would defer to Reclamation on whether to continue past protocol or to add it to the budget. Emily Omana Smith confirmed that Reclamation preferred GCMRC continue with past protocol, but that could change when the new program manager, Lee Traynham, starts in two weeks. Shane thought that if the money did not carry over, GCMRC should have identified the funds needed for the bug flows and added that to the budget the way GCMRC has added funds for the trout management fund. Shane thought allocating that money and making recommendations from AMWG should be open to discussion. Scott stated that last year, Reclamation asked GCMRC to move the request for the trout management fund to the proposed amount that would go to GCMRC rather than accessing the native fish contingency funds, which is what GCMRC did this year. Emily stated that Reclamation is committed to identifying ways to spend the funds, and is open to ideas for potential projects.*
- *Ben Reeder asked whether it would be better for GCMRC to do things differently if there was concern for which budget cycle to draw from each year. Scott stated that GCMRC would need to adapt to how it dealt with new funding, but that the biggest challenge would be years like the current year in which the five-year interagency agreement between Reclamation and GCMRC ends and a new one begins. In the past, GCMRC has had more flexibility with carried over funds, and once the new five-year agreement is in place, GCMRC will maintain a lot of that flexibility. With the five-year agreement, GCMRC has five years to use the money Reclamation obligates to GCMRC. Although transition years will not be as flexible, most years will.*
- *Shane asked whether Reclamation's experimental fund would be affected if Reclamation does not obligate that money to GCMRC. Scott stated that Reclamation would need to plan accordingly and spend money prior to the end of the fiscal year, but that the new five-year interagency agreement would allow for more flexibility. Emily added that Reclamation is accustomed to working with appropriated funds and would continue to track funds closely, as it has in the past.*

- *Shane asked whether the funds TWG put aside for the overflight in FY 2018 and FY 2019 were in jeopardy. Scott confirmed that those funds were in jeopardy, but that GCMRC would be able to carry over money for the overflight in FY 2020 and in FY 2021. Scott added that the cost for the overflight is \$500,000.*
- *Ken Hyde wanted to remind the group that NPS was looking at the incentivized harvest as a research project and has committed three years to brown trout. NPS expects to work with GCMRC staff to answer questions from the brown trout white paper and asked the group to consider that as research into a potential tool to gather data on smallmouth bass and walleye in Glen Canyon. NPS has been working on a proposed budget and specific research topics NPS is interested in addressing. Shane stated the Ken brought this up in the last BAHG call and expects Reclamation and NPS to discuss it further to identify which parts of NPS's project could be funded with AMP funds; however, that might just be the case for FY 2019 funds. Shane added that he would wait to hear more regarding FY 2020 funds because the issues might be different than for FY 2019.*

Consideration of FY20 Budget and Work Plan Adjustments

Presenters: TWG Members

Presentation Summary: This is an opportunity for TWG members to further discuss items identified in the BAHG.

Discussion:

- *Seth Shanahan stated that Brian Healy at NPS had suggested a new brown trout natal origins project to look at movement information and the use of various techniques to track movement. Ken added that he and Brian could offer some natal origin information for both subsets of the brown trout species between the information Ken and Brian collect for each of their proposed projects.*
- *Jan Balsom asked what type of criteria would be established for prioritizing proposed projects and what the risks would be for not moving forward on emergent issues that could become critical if not addressed immediately. Emily stated that anything related to conservation measures would have highest priority for funding opportunities.*
- *Jim Strogon stated that he noticed \$50,000 for invasive species passthrough at the Glen Canyon Dam but nothing for temperature control. Jim asked if Reclamation could increase those funds to add temperature control because the conservation aspect is critical information to work on for the future. Emily stated that the FY 2019 budget did include \$50,000 for temperature control and this white paper product of this was still expected. Reclamation also has access to external funds from the technical services division. Currently, the technical services division is holding a prize contest to look at entrainment in the dam, and as that progresses, will reevaluate temperature control opportunities through a white paper. Kirk agreed that TWG needs to continue to push for that work and suggested looking at additional funds to pursue feasibility issues as well.*
- *Peggy asked if GCMRC needs to do the overflight in FY 2020 prior to USGS moving into the new building because of the lack of extra money once overhead costs go up. Scott agreed that costs would be higher in FY 2021, so this is something to consider if GCMRC cannot find funding within the current program or from another funding source.*
- *Melinda noted that, in response to concerns raised during a previous BAHG call, a follow-up conversation with Reclamation and the Navajo Nation was held to discuss cultural resources line items.. Emily was on the March 30 follow-up call with Melinda, Bill Chada, Richard Begay, Kathleen Callister, and Lee Traynham to address some of the projects from the BAHG call. Emily stated that some of the projects had been brought up after the TWP was developed. Also, some projects were potentially outside the GCD AMP scope because they were outside the affected area of dam operations. Emily understood from the call that Melinda and Richard would look at reframing*

projects, so they are within GCD AMP confines and determine whether the Navajo Nation is still interested in projects that others within the organization had identified some time ago. Melinda informed Emily that the Navajo Nation did discuss these items and submitted the reports Reclamation asked for on March 30. Emily advised Melinda that Reclamation would work on getting funding for those projects.

- *Melinda stated she recognized that some of the Navajo Nation proposed projects were outside the affected area. Melinda questioned why Lucas Bair's socioeconomics project, which covers the Navajo Nation, received funding while Navajo Nation projects that were closer to the Glen Canyon Dam did not receive funding. Melinda stated she found that upsetting to know but does want to move forward on some of the already budgeted line items for cultural resources projects, specifically for tribal documentation, cultural sensitivity, and the TCP designation. Melinda also asked to have open communication for how these projects would move forward.*
- *Jim asked whether NPS was planning to do an economic impact study on the potential of spawning bed disturbance or electroshocking as it affects the fishery. Rob stated that NPS completed the environmental analysis and does plan to co-plan the spawning bed disturbance projects with GCMRC and AZGFD. Ken added that the work Lucas has been doing was related to the incentivized harvest and that NPS is focusing more on programs to be implemented immediately. Jim asked if NPS would consider the electroshock and bed disturbance and their economic impact on the community and fishery. Rob clarified that NPS did address some comments on that section and would release the information as an Errata to the EA.*
- *David Rogowski stated that AZGFD expects to put out 40 radio-tagged triploid rainbow trout at 30-Mile and above [sic] the LCR. AZGFD also expects to place an underwater sonic receiver at Cathedral Wash. AZGFD expects to manually track the fish this week, next week, and then once a week for three months. David clarified that this work was not funded by GCD AMP.*
- *Kirk Young stressed the importance of looking at the native fish contingency fund balance to ensure there was enough there to respond to emergency situations. Emily reminded the group that, due to the switch to appropriated dollars, Reclamation currently has no access to the Native Fish Contingency Fund, and that during the last AMWG meeting, Brent Rhees stated Reclamation would find the money to react appropriately to any emerging needs related to the conservation measures.*
- *Kirk supported restoring capacity at GCMRC*
- *Kirk stated that at the last TWG meeting, TWG was trying to find more quantitative assessments for the West Grand Canyon HBC population and suggested tagging that work onto aggregation trips and adding an additional Diamond down trip to do a recap trip.*
- *Kirk also suggested using eDNA to analyze samples, putting money toward getting an assessment of aquatic invasive species distribution, and getting a better idea of adult razorback sucker distribution outside the spawning season. Seth agreed that eDNA is an easy and inexpensive way to get early detection for issues TWG wants to address.*
- *Shane stated that the next step for BAHG is to schedule a couple of meetings, work through budgeting issues and plan for the June meeting. Seth added that once BAHG provides a recommendation to TWG, TWG will present its recommendation to AMWG in the June meeting.*
- *Seth stated that Shane will continue as the BAHG chair for the current discussion, but he has asked for someone else to lead the BAHG next. Seth asked that anyone who is interested contact Seth.*

Discussion of Emerging Issues and Request for Agenda Items for the next meeting

Presenters: Seth Shanahan, TWG Chair

Presentation Summary: The next meeting is June 11 & 12. TWG expects to have the agenda available this week and asked that TWG members suggest some agenda items.

Discussion:

- *Seth stated that there would be a budget discussion and that GCMRC would walk through a discussion of the new website. Seth also asked that Dave Rogowski provide an update if he has data on the triploid trout stocking.*
- *Vineetha Kartha asked if would be too early to ask for an indication of how bug flows are impacting the HBC food base. Scott agreed that having an update on the agenda would be a good idea, but he would need to discuss the amount of data available with Ted Kennedy and Jeff Muehlbauer.*
- *Peggy Roefer asked to discuss the pros and cons of doing a power plant flow spring HFE.*
- *Jim Stroger stated that John Jordan and John Hamill with Trout Unlimited requested the GCMRC to present initial findings from the high flow event workshop to AMWG in written summary for review and discussion. There was also an action item or motion for GCMRC to identify experimental flow options that would consider high valued resources of concern to the GCD AMP to fill critical data gaps and reduce scientific uncertainties. GCMRC was asked to present this information to TWG for review and discussion and then report it to AMWG in August 2019.*
- *Melinda Arviso-Ciocco stated that the Navajo Nation river trip would be occurring during the next TWG meeting.*
- *Jim asked that NPS provide an update on the EA. NPS hopes to have everything in place for the EA by June and should be able to provide an update.*
- *Kirk Young asked to add information on the work Marianne Crawford did with Reclamation engineers to look at adding power generation to the bypass and using that to cool water. Emily Omana Smith stated she would follow up e on the modeling and report back to the group.*

Public Comment

Comment/Discussion:

- *There were no public comments.*

Meeting Adjourned at 12:00 pm

Key to Glen Canyon Dam Adaptive Management Program
Acronyms

ADWR – Arizona Dept. of Water Resources	EA – Environmental Assessment
AF – Acre Feet	eDNA – Environmental DNA
AZGFD – Arizona Game and Fish Department	EIS – Environmental Impact Statement
AIF – Agenda Information Form	ESA – Endangered Species Act
AMP – Adaptive Management Program	FACA – Federal Advisory Committee Act
AMWG – Adaptive Management Work Group	FEIS – Final Environmental Impact Statement
AOP – Annual Operating Plan	FRN – Federal Register Notice
ARM – Annual Reporting Meeting	FWS – United States Fish & Wildlife Service
ASMR – Age-Structure Mark Recapture	FY – Fiscal Year (October 1 – September 30)
BA – Biological Assessment	GCD – Glen Canyon Dam
BAHG – Budget Ad Hoc Group	GCES – Glen Canyon Environmental Studies
BCOM – Biological Conservation Measure	GCT – Grand Canyon Trust
BE – Biological Evaluation	GCMRC – Grand Canyon Monitoring & Research Center
BHBF – Beach/Habitat-Building Flow	GCNP – Grand Canyon National Park
BHMF – Beach/Habitat Maintenance Flow	GCNRA – Glen Canyon Nat'l Recreation Area
BIA – Bureau of Indian Affairs	GCPA – Grand Canyon Protection Act
BO – Biological Opinion	GLCA – Glen Canyon Nat'l Recreation Area
BOR – Bureau of Reclamation	GRCA – Grand Canyon National Park
BWP – Budget and Work Plan	GCRG – Grand Canyon River Guides
BT – Brown Trout	GCWC – Grand Canyon Wildlands Council
CAHG – Charter Ad Hoc Group	GSA – General Services Administration
CAP – Central Arizona Project	GSF – Green Sunfish
CESU – Cooperative Ecosystems Studies Unit	HBC – Humpback Chub (endangered native fish)
cfs – cubic feet per second	HFE – High Flow Experiment
CFMP – Comprehensive Fisheries Management Plan	HMF – Habitat Maintenance Flow
CMINS – Core Monitoring Information Needs	HPP – Historic Preservation Plan
CMP – Core Monitoring Plan	IFF - International Federation of Fly Fishers
CPI – Consumer Price Index	IG – Interim Guidelines
CRBC – Colorado River Board of California	INs – Information Needs
CRAHG – Cultural Resources Ad Hoc Group	KA – Knowledge Assessment (workshop)
CRCN – Colorado River Commission of Nevada	LCR – Little Colorado River
CRE – Colorado River Ecosystem	LCRMCP – Lower Colorado River Multi-Species Conservation Program
CREDA – Colorado River Energy Distributors Assn.	LTEMP – Long-Term Experimental and Management Plan
CRSP – Colorado River Storage Project	LTEP – Long Term Experimental Plan
CWCB – Colorado Water Conservation Board	maf – Million Acre Feet
DAHG – Desired Future Conditions Ad Hoc Group	MA – Management Action
DASA – Data Acquisition, Storage, and Analysis	MATA – Multi-Attribute Trade-Off Analysis
DBMS – Data Base Management System	MLFF – Modified Low Fluctuating Flow
DOE – Department of Energy	MO – Management Objective
DOI – Department of the Interior	MRP – Monitoring and Research Plan
DOIFF – Department of the Interior Federal Family	NAU – Northern Arizona University (Flagstaff,

AZ)

NEPA – National Environmental Policy Act

NHPA – National Historic Preservation Act

NNFC – Non-native Fish Control

NOI – Notice of Intent

NPCA – National Parks Conservation
Association

NPS – National Park Service

NRC – National Research Council

O&M – Operations & Maintenance
(Reclamation Funding)

PA – Programmatic Agreement

PBR – Paria to Badger Creek Reach

PEP – Protocol Evaluation Panel

POAHG – Public Outreach Ad Hoc Group

Powerplant Capacity = 31,000 cfs

R&D – Research and Development

RBT – Rainbow Trout

RFP – Request for Proposal

RINs – Research Information Needs

RIP – Recovery Implementation Plan

ROD Flows – Record of Decision Flows

RPA – Reasonable and Prudent Alternative

SA – Science Advisors

SAEC – Science Advisors – Executive

Coordinator Secretary – Secretary of the
Interior

SCORE – State of the Colorado River Ecosystem

SHPO – State Historic Preservation Office

SOW – Statement of Work

SPG – Science Planning Group

SSA - Species Status Assessment

SSQs – Strategic Science Questions

SWCA – Steven W. Carothers Associates

TCD – Temperature Control Device

TCP – Traditional Cultural Property

TEK – Traditional Ecological Knowledge

TES – Threatened and Endangered Species

TMC – Taxa of Management Concern

TMF – Trout Management Flows

TWG – Technical Work Group

TWP - Triennial Work Plan

UCRC – Upper Colorado River Commission

UDWR – Utah Division of Water Resources

USBR – United States Bureau of Reclamation

USFWS – United States Fish & Wildlife Service

USGS – United States Geological Survey

WAPA – Western Area Power Administration

WY – Water Year