FINAL SUMMARY

BIOLOGY COMMITTEE MEETING
19-21 February 2019
Webinar/Conference Call

Attendees

Biology Committee Members

Bill Miller – Southern Ute Indian Tribe
Jacob Mazzone – Jicarilla Apache Nation, BC Chair
Brian Westfall – Bureau of Indian Affairs
Stephen Davenport – U.S. Fish and Wildlife Service (Region 2)
Mark McKinstry – U.S. Bureau of Reclamation (BOR)
Benjamin Schleicher – U.S. Fish and Wildlife Service (Region 6)
Vincent Lamarra – Navajo Nation
Harry Crockett – State of Colorado
Matt Zeigler – State of New Mexico
Tom Wesche – Water Development Interests
David Mueller – Bureau of Land Management
vacant – Conservation Interests

Peer Reviewers

Steve Ross – University of New Mexico
Brian Bledsoe – University of Georgia
Wayne Hubert – Hubert Fisheries Consulting
Mel Warren – U.S. Forest Service

Program Management

Melissa Mata, U.S. Fish and Wildlife Service (Region 2)
Scott Durst, U.S. Fish and Wildlife Service (Region 2)
Eliza Gilbert, U.S. Fish and Wildlife Service (Region 2)

Other Interested Parties

Steve Platania – American Southwest Ichthyological Researchers, L.L.C.
Stephanie Clark Barkalow – American Southwest Ichthyological Researchers, L.L.C.
Martinique Chavez – American Southwest Ichthyological Researchers, L.L.C.
Michael Farrington – American Southwest Ichthyological Researchers, L.L.C.
Aaron Wedemeyer – American Southwest Ichthyological Researchers, L.L.C.
Henry Day – Arizona Public Service (APS)
Keith Gido – Kansas State University
Sky Hedden – Kansas State University
Casey Pennock – Kansas State University
Zach Ahrens – Utah Department of Wildlife Resources

Brian Hines – Utah Department of Wildlife Resources
Katie Creighton – Utah Department of Wildlife Resources
Susan Behery – U.S. Bureau of Reclamation
Ryan Christianson – U.S. Bureau of Reclamation (CC)
David Speas – U.S. Bureau of Reclamation (BC Alternate)
Tracy Diver – U.S. Fish and Wildlife Service (Region 2)
Weston Furr – U.S. Fish and Wildlife Service (Region 2)
Bobby Duran – U.S. Fish and Wildlife Service (Region 2) (BC Alternate)
Nathan Franssen – U.S. Fish and Wildlife Service (Region 2)
Jill Wick – State of New Mexico (BC Alternate)
Colleen Cunningham – State of New Mexico
Christina Noftsker – State of New Mexico (CC Alternate)
Carrie Padgett – Water Development Interests (BC Alternate)
Daniel Lamarra – Navajo Nation (BC Alternate)
Jerrod Bowman – Navajo Nation Department of Fish and Wildlife
Kim Yazzie – Navajo Nation Department of Fish and Wildlife
Jojo La – State of Colorado (CC Alternate)
Matt Owens – North American Coal
Jamie Shockey – City of Farmington
Melissa Trammel – National Park Service
Kenneth Hyde – National Park Service
Nathan Carthcart – Alaska Department of Game and Fish

Wednesday 20 February 2019

Introductions and changes to agenda

- The meeting was held via webinar/conference call due to meeting cancellation in Durango due to inclement weather.

Approve draft summary from 4, 6 December 2018 BC meeting; review Action Item list

- Zeigler's comments were incorporated into the final draft summary. Wesche motioned to approve the summary. Schleicher seconded and the motion was passed with no objections.

2018 project reports/presentations

2018 hydrology and 2019 operations - Christianson

- The peak on the Animas never topped 2,000 cubic feet per second (cfs) and was extremely early (first week of May). Animas flows at Farmington was less than 10 cfs and fell to 0 cfs several times throughout the summer. The Animas contributed little flow from July to mid-October.
- Lower San Juan gages daily average peak was never much more than 1,500 cfs. The weekly average target baseflow maintained close to 500 cfs during the lowest period from July to mid-October. No flow targets were met in 2018.
- 2019 is not a perturbation year with eight qualifying events between July and December.
- 2019 water operations based on current prediction, although above average snowpack, dry soil moisture is still resulting in below-average inflow forecasts and no spring peak release. Minimum releases of 200-500 cfs will be required to meet minimum target baseflows. The 2019 most probable forecast operation meets only the 2,500 cfs flow goal.

- Reclamation suggested a potential maintenance release for this spring (minimum ramp required to 5,000 cfs, 24-36 hours at 5,000 cfs, minimum ramp down). A maintenance release has two main benefits: 1) To move some sediment to restore then maintain the channel to the safe channel capacity of 5000 cfs. 2) To remind the public of periodic 5000 cfs releases, to discourage building in the floodplain. Reclamation plans to coordinate channel survey at three points along the San Juan River between the dam and Farmington. These are the same points used in 2017 before and after spring peak release. This is to determine how much sediment is in the channel prior to the release and then again after the release to see the change. Reclamation will be coordinating with San Juan County Office of Emergency Management (SJCOEM) in the coming months.
- The BC recommends that a process be developed to determine when maintenance releases are needed and not just a judgement call. In addition, the BC is concerned how this maintenance releases will impact reaches lower on the San Juan River with the potential of depositing sediment in critical habitat areas. Finally, the BC would like to see the maintenance proposal and provide comments at the next Navajo Operations meeting April 23, 2019. Reclamation agreed to provide the draft for review.

Rare fish stocking summary - Furr

- Phase II Colorado Pikeminnow Stocking: the Program decided to stock approximately 10% of young-of-year (YOY) above the Public Service Company of New Mexico (PNM) Weir in 2018 (~50,665 at Bloomfield, NM-Verde del Rio Park). Remaining 89% were stocked at, or below the weir (~194,928 at PNM Weir and ~185,130 at Shiprock Bridge).
- In 2017, the .stocking target changed to 6,500 Razorback Sucker annually with PIT tagged fish ≥300 millimeter (mm). The 2018 Razorback Sucker stockings included 3,381 from NAPI, 4,812 from Ouray NFH-GVU and 1,472 from Southwestern Native ARRC.
- Razorback Sucker augmentation plan is being updated to include the most recent information on apparent survival rates by the May BC Meeting.

NAPI ponds - Bowman

- Navajo Nation started filling Hidden Pond on March 29, 2018 and received 7,500 Razorback Suckers from SNARRC on April 23, 2018. Fish were delayed and stressed upon arrival due to mechanical issues with the delivery truck.
- Repairs were made at the NAPI ponds. Hidden pond got a new pilot valve and both Avocet Ponds were serviced to get the automatic shutoff operational. Additional repairs will be needed to address wear and tear on the flange at West Avocet and the pilot line at Hidden pond.
- During the grow-out season Aquatic Consultant Inc. treated the ponds monthly for vegetation control.
- Sample counts occurred between June and August and only Razorback Suckers >300 mm were stocked. Sample counts that were stocked out include 90 from East Avocet, 46 from West Avocet, and 41 from Hidden pond. Passive harvest included 405 from East Avocet and 146 from West Avocet. Active harvest included 1,062 from Hidden pond, 825 from East Avocet, and 1,219 from West Avocet.
- A tank was setup at East Avocet to conduct a flow conditioning study with fish harvested during passive harvest. Initial test run was executed and only 146 were stocked out into the San Juan River. There were electrical issues that tripped the breaker and pumps shutoff causing fish to die during the conditioning study. The conditioning study will be reassessed to prevent fish kills in the future.

PNM passage - Yazzie

- PNM selective passage was operated for 127 days from June 28 through November 1, 2018. The passage was operated non-selectively March to June.
- In 2018, 164 Razorback Sucker went through the passage when it was operated non-selectively. When the passage was operated selectively, another 82 Razorback Sucker and a total of 171 Colorado Pikeminnow (including 52 adults) were passed.

Larval fish monitoring - Farrington

- Riverwide catch for Colorado Pikeminnow in the 2018 larval fish survey consisted of 54 Age-0 and 5 Age 1+. Age-0 (mesolarvae to juveniles) Colorado Pikeminnow Age-0 were captured between River Mile (RM) 89.8-3.3. This is a substantial reduction in distribution of Age-0 Colorado Pikeminnow compared to the two previous years. Age-1 Colorado Pikeminnow numbers were the lowest ever recorded. Spawning by Colorado Pikeminnow has been documented for six consecutive years and 9 out of the last 10 years. Back-calculated spawning dates suggest a relatively broad spawning period of 25 days for 2018.
- Riverwide catch for Razorback Sucker in the 2018 larval fish survey consisted of 1,833 Age-0 and no Age 1 Razorback Sucker. Age-0 (protolarvae to juvenile) Razorback Sucker were captured between RM 179.8 and RM-17. Upstream distribution of Age-0 fish increased by 21.1 RM to the confluence of the Animas and San Juan rivers. More early juvenile of Razorback Sucker were collected in 2018 than any previous survey year. Early juvenile Razorback Sucker were distributed in nearly 160 miles of the San Juan River and included the largest juveniles collected during the tenure of this study. Backwater habitats found in lateral canyon and washes continue to be the most productive habitat for Age-0 Razorback Sucker. Spawning by Razorback Sucker has been documented for 21 consecutive years.

Small-bodied monitoring - Zeigler

- Small-bodied monitoring effort was truncated in 2018. New Mexico Department of Game and Fish conducted small-bodied monitoring in Reach 2 and Reach 3. In total 12 primary channels, 6 secondary channels and 4 zero velocity channel sites were sampled in 2018. No Age-0 or Age-1 Colorado Pikeminnow were captured. However, 6 wild Age-0 Razorback Sucker were captured (three in pools, 2 in run/shoals and 1 in backwater habitats).
- 1,234 fish were captured in Reach 3 and 21% were native fish. There was a significant increase in nonnatives.
- Recommendation for future sampling efforts is to sample earlier in the year for Razorback Sucker to detect smaller size class. This would require submission of a new or modification of their existing scope of work. This should not be a conflict with larval work.

Catfish predation - Hedden

- The first objective is to determine the daily ration of Channel Catfish-stomach evacuation rate. Stomach evaluation rates were evaluated by feeding Channel Catfish PIT tagged Fathead Minnows and made observation for 2, 4, 6, 8 and 12 hours with temperatures ranging from 8 and 27 ºC. Evacuation rates were slower at colder temperatures than warmer temperatures. There is no difference in the time of day for the amount of food consumed.
- The second objective is to determine the incidence of endangered species in the diet of Channel Catfish. Fish were a small proportion of diet in April and May. Only two Colorado Pikeminnow were

detected in the 3,438 stomach samples observed. Speckled Dace was the most frequently consumed native fish and overall 7.6% of catfish sampled consumed fish.

- The third objective is to determine the predatory threat of Channel Catfish. Biomass of Colorado Pikeminnow consumed is approximately 12,040 grams, which equates to approximately 611 individual Colorado Pikeminnow per year. Approximately 3,114 grams or 158 individual Colorado Pikeminnow are estimated to be saved via nonnative mechanical removal efforts. Piscivory rate is highest mid-July. Note that age-1 Colorado Pikeminnow were unusually rare across other SJRIP sampling efforts in 2018. No Razorback Suckers were observed in stomach samples during this study. Perhaps the analysis can be conducted based on proportion of endangered fish in the overall fish community.
- The next steps is to evaluate turbidity and flow and any relationship that may exist with predation. There is still one more sampling effort, however, it will be reduced by one trip.

Larval Razorback Sucker growth rates – Clark-Barkalow

- The objectives of this study were to: 1) determine daily growth rates of larval Colorado Pikeminnow and Razorback Sucker by otolith aging, 2) investigate relationship between age and length to develop growth curves for Colorado Pikeminnow and Razorback Sucker, and 3) determine spawning dates for Colorado Pikeminnow and Razorback Sucker to compare actual spawn dates with those estimated by the Colorado Basin model.
- Several growth models were developed using von Bertalanffy, Logistic and Gompertz and several alternative models using linear, log linear models and a polynomial models. The polynomial model worked best for Colorado Pikeminnow. A linear model proved to be the best for Razorback Sucker.
- Actual spawn dates for Colorado Pikeminnow began in June through July. The Colorado Basin model predicted earlier peak spawning compared to the new San Juan specific model shifting a little later in July. Razorback Sucker spawning dates began mid-March through July. The Colorado Basin model predicted earlier peak spawning events versus the new San Juan specific model predicted similar to the actual spawning dates.
- These models should be used to predict flow releases to benefit spawning periods. It is recommended that the model be improved when necessary to consider other environmental variables. This work shows the need for system-specific data.

Lower canyon spring sampling - Hines

- Utah Division of Wildlife Resources (UDWR) evaluated nonnative species and rare fish monitoring in the lower San Juan River in Utah because that reach had not been recently sampled and compared 2018 data to past years.
- Colorado Pikeminnow catch-per-unit-effort has not changed over time since 2009 and Razorback Sucker have increased. Channel Catfish CPUE increased after removal of Channel Catfish ceased in the lower canyon section of the San Juan River, primarily juveniles and adults. Size structure of Channel Catfish has increased over time. Preliminary results indicate salt treatment and total length has a positive effect on recap rates during spring sampling.

Lake Powell-San Juan River Razorback Sucker study - Pennock

- Population estimates in Neskahi-Great Bend area was 455-647 Razorback Sucker for samples from April-June in 2017 and 2018. Population estimate at the waterfall is 755 Razorback Sucker for samples from February-April 2017. In total 1,377 Razorback Sucker were detected at the waterfall

from 2015-2018, suggesting that the Population size at the waterfall is not likely > 2000 Razorback Sucker, however it must be kept in mind that recapture rates are low and there is un-sampled habitats.
- 89% of Razorback Suckers translocated above the waterfall in 2016 and 2017 were re-encountered back in Lake Powell.

Update McElmo project - McKinstry
- The McElmo project proposal was emailed to the BC for technical review. Farrington and a few other mentioned that there are lots of upsides and little downsides with this project. This project is an effort to tackle the Razorback Sucker recruitment bottleneck between the larval and juvenile life-stage. There is no big issue of hybridization of other native suckers. Razorback Sucker spawning has been documented in McElmo at least 7 miles upstream of the confluence. Stocked larvae will be distinguished from wild via OTC marking and genetics sample can be collected from wild juveniles to determine which are wild-produced and those that are the result of stocking.
- Navajo Nation did not understand the approval process, and why the Nation would need to get permission from the Committees to pursue this project.
- McKinstry asked the BC to provide comments by March 15 to revise and finalize for submission to the Service and Navajo Nation by March 30.

Thursday February 21, 2019

Comparing fish community composition above and below the waterfall - Ahrens
- The goal of the project is to determine if the waterfall is a spatial limit to invasion and a barrier to migration of native fish. The first objective is to evaluate species composition, size structure and trophic structure (i.e. species interaction) and determine differences above and below the waterfall. The second objective is to determine how these differences may influence population vital rates in various hypothetical fish passage scenarios.
- Below the waterfall there few other nonnatives beside Channel Catfish and Common Carp. There were 23 unique Colorado Pikeminnow and 21 of those were unmarked, and there were 62 unique Razorback Sucker.
- Catch rates and nonnative richness above and below the waterfall for nonnative fish did not differ. Potential invasive fish species below the waterfall include Green Sunfish, Largemouth Bass, Striped Bass and Walleye.
- The size structure of both Razorback Sucker and Colorado Pikeminnow are larger in length below the waterfall compared to above the waterfall. However, Razorback Sucker relative weights is greater above the waterfall.
- The next step of this study is to simulate passage effects on vital rates. Scenarios will include: 1) No passage, leave as is, 2) Full passage, restore river channel, 3) Selective fish passage, sort and move and 4) “Ecological filters” per Rahel and McLaughlin 2018.
- Problems and shortcomings of project: 1) limited nonnative piscivore capture (possibly poor timing), 2) no isotopic information from reservoir Razorback Sucker captures, 3) no isotopic signature for wild YOY, juvenile endangered fish and 4) lack of captures above the waterfall to conduct an adequate catch per unit effort comparison below the waterfall.

Habitat monitoring - Lamarra

- Habitat monitoring used videography collected on September 11, 2018 when the Four Corners gage was at 526 cfs (low compared to previous years). There was no significant runoff event, and the hydrograph was storm event driven. 2018 was the lowest wetted area observed since 1992, with approximately 14.5 million m^2.
- Island area and count was very low due to the abandonment of side channels. Island losses occurred in all but Reach 3. Low numbers of islands indicates a loss of complexity.
- Backwaters are located at the tail end of abandoned side channels, and at the confluence of the San Juan and dry washes. Backwaters accounted for 29% of wetted habitat. Low velocity habitat area returned to 2013 levels with an area of 52,861 m^2. Embayments contributed the most area (16,400 m^2) mostly due to a single embayment in Phase II.
- At River Mile 119 there is a side channel that in past years contributed significant amount of low-velocity habitat. In 2018 vegetation encroachment was observed in this channel and management actions may need to be taken. Four Corners Bridge project could possibly contribute to improving condition at this site, and the Service should consider this as an option if mitigation is necessary for that future Section 7 consultation.

Phase III and re-recommendation decision - PO

- The purpose of this agenda item is to determine if the BC wants to continue with their recommendation of Phase III.
- There were some concerns from the BC that this recommendation is coming back from the CC. The BC re-recommendation was based on: 1) some BC members may have unvoiced reservations of the project and 2) a number of questions from Mr. Tom Pitts and New Mexico Interstate Stream Commission.
- The PO, KB, and McKinstry addressed CC questions but some were unanswerable without doing the project.
- This project should be framed as a recruitment enhancement project and not a restoration project.
- The PO stated that there are capital funds available to implement this project and other habitat projects. The BC was under the impression that Phase III would be the only possible project because of no other ideas or monies available. The PO stated that money is not the problem, but ideas are limited for habitat management. Phase III is not the only possible solution, other projects can be implemented simultaneous.
- The BC made a recommendation to continue with their original recommendation to the CC.
- The BC Chair will develop a letter of support for Phase III on behalf of the BC and attach the response to CC comments (following BC review). Any BC comments on the responses to CC concerns are due to the PO by 28 February.
- In addition, the BC would like to seek approval of the Phase III prior to May meeting to begin all necessary permitting requirements to implement this project during winter low-flows in 2019/2020, as well as conduct a workshop later this year.

Colorado Pikeminnow adaptive stocking management plan - Zeigler

- The preferred option is Management Alternative 4, with two decision points. First, if a spring release is projected on April 1st no fish are produce. Second, if fish are produces, the decision to stock them will be based on whether the density of age-0 Colorado Pikeminnow from small-bodied monitoring. If the density of age-0 Colorado Pikeminnow is less than 0.6 fish/10m^2, then hatchery fish will be stocked.

- Measurements of success include the following: 1) correct prediction of Colorado Pikeminnow spawning 4 out of 5 years, 2) spawning Colorado Pikeminnow produce densities of wild young-of-year greater than or equal to 0.1 fish/10m^2, 3) Abundance of Age-2+ Colorado Pikeminnow increase in the river and 4) Survival of wild Age-1, Age-2, and Age-3 Colorado Pikeminnow are greater than hatchery fish
- If we do not stock what are the options for disposition of fish: 1) stock fish below waterfall, 2) stock fish in Animas at Durango, CO, 3) holdover fish in actively managed pond, 4) holdover fish in passively managed pond (i.e. net pen in Lake Powell), 5) give Age-0 fish to another program and 6) destroy fish.
- This adaptive management plan should be included in the next revision of the Colorado Pikeminnow Augmentation plan, which may need approval by the Coordination Committee.
- Zeigler will receive comment till March 18, 2019.

General discussion 2018 results and progress towards recovery

Future planning - McKinstry

APS and waterfall fish passage engineers' field trip

- In January 2018, BOR and the Service conducted a field trip to the APS weir and the Piute Farm waterfall with engineers from BOR to obtain their expert opinion on possible solutions for fish passage in these areas.
- For APS, the engineers suggested the idea of constructing a wedge ramp was likely preferable from an efficiency and cost perspective to construction of a natural like bypass on the opposite side of the river from the intake system, especially as there would be issue with constructing such a bypass on private property.
- For fish passage at the waterfall engineers believed both options (a natural bypass that would function as a fish passage or reconnecting the old river channel) were feasible but both could be expensive.
- The BOR engineers will produce a trip report which could lead to a 30% design with feasibility options for APS. For the waterfall, the trip report will detail pros and cons for the Biology Committee to use to decide whether to continue moving forward with developing a way to provide passage.
- Both NPS and the Navajo Nation would need to be consulted as NPS manages the land around the waterfall but the Navajo Nation owns it. Federal environmental compliance will be required but may not be too complicated because the area currently proposed for passage locations are sediment deposits from Lake Powell.

PIT antenna

- Previously PNM Fish Passage had a log-boom antenna installed at the exit of the passage to detect PIT-tagged fish that are swimming through the facility when it is operated in the non-selective mode. The function of the log boom in front of the trash rack is to assist in the reduction of large debris impinging on the trash rack. This log-boom was not built for this application even though it did detect over 100 fish using the fish passage.
- This antenna was improved by building a wire antenna that was wrapped around the log boom inside routed 4x4 boards. The routed 4x4 boards were attached to the log boom and provide a channel for the wire antenna to rest in and provide protection from debris and impacts. This design also keeps the antenna in a fixed configuration so tuning it is easier.

- Future work at PNM trash rack may need to be considered if the bar opening are not large enough to pass large fish. Size of opening between the bars is 3.8 inches. We could be limiting larger Razorback Sucker from moving upstream.

Hogback and Fruitland updates

- Hogback proposal is to add PIT-tag antennas in the Hogback non-selective fish passage. In addition, the VFDs at Hogback, which cause interference with PIT-tag antennas are not going to be replaced. Replacement is not going to occur because funding is no longer available and replacement costs run over a million dollars.
- A proposal for Hogback PIT-tag antenna SOW needs to include a plan with objectives.

Budget Update

- The BOR's funding, which was included in a Department of Energy appropriation, was received in January. The benefit of obtaining the funds through an appropriation is that BOR can allocate the funds all at once rather than quarterly distributions, which is what was required through use of power revenues. The 2019 funds did not include a cost of living adjustment but there was flexibility in the 2019 AWP that allows for balancing of that AWP. All contracts with principle investigators are set up beside NMDGF, whose contract expired.

Future waterfall projects and upstream floating antenna

- Monitoring fish loss over the waterfall with the installation of a floating PIT tag antenna just upstream of the waterfall.
- McKinstry will work on a proposal for presentation at the May BC meeting.

2020 priorities and potential projects – BC

- Based on the catfish predation study, nonnative fish removal is in question. However, everyone must remember that there is still one more year for the predation study and that the Service considers nonnative fish removal ESA compliance. The Service has not made a determination based on the new information.
- In the interim it is recommended that a nonnative fish removal SOW be submitted by improving nonnative fish removal efficiency by sampling during winter to capture larger Channel Catfish when water visibility should be improved and flows are low.
- Some BC members suggested telemetry studies that focus on habitat relationships.
- The small-bodied principle investigator will include additional work in their SOWs to target small juveniles with earlier sample trip and take habitat measurements.
- An investigation of where fish are going in the Animas or upstream reaches of the San Juan is in order given the detection of larval Razorback Sucker at the confluence and passing of both Colorado Pikeminnow and Razorback Sucker adults at PNM. Possibly more telemetry work incorporating aerial flights would aid detection.

Sub-adult and adult Colorado Pikeminnow fin clips

- PO will distribution fin clips kits to all appropriate field staff

Annual Meeting

- Annual Meetings will be held in Farmington, New Mexico May 14-16, 2019. BC Meeting on May 14, Annual Meeting on May 15 and CC Meeting on May 16.

BIOLOGY COMMITTEE ACTION ITEM LOG (Updated 7 March 2019)						
Item No.*	Action Item	Meeting/ Origination	Responsible Party(s)	Due Date	Revised Due Date	Date Completed
1	Provide RBS/CPM stocking/capture/recapture data		PIs to PO	Before Jan. 1		
2	Provide Preliminary Draft Report Presentations		PI	At Feb. meeting		
3	Review LRP		BC	At fall meeting		
4	Review Peer Review Comments from the February and May meetings		BC	At fall meeting		
5	Provide Draft Reports		PIs to PO	By end of March		
6	Scopes of Work		PIs to PO	By end of March		
7	Provide Final Reports		PIs to PO	By end of June		
8	Annual Data Delivery		PIs to PO	By June 30		
9	T&E Species Data		BC to PO	By Dec. 31		
10	Compile T&E data and Program progress into summary to address overall Program recovery goals/objectives for presentation		PO/BC	At May meeting		
11	Distribute consolidated data and list of annual data collected and available in the Program's database		PO to BC	By Jan. 31		
12	Recapture analysis on PIT tagged fish		Durst	By March		

BIOLOGY COMMITTEE ACTION ITEM LOG (Updated 7 March 2019)						
Item No.*	Action Item	Meeting/ Origination	Responsible Party(s)	Due Date	Revised Due Date	Date Completed
13	Coordinate CPM stocking closely with BOR to avoid negative impact due to high flows/releases		PIs	Annually		
14	Revise RBS Augmentation Goals (based on the outcome of experimental stocking and analysis by Franssen and Durst). What is the appropriate numbers of fish to stock?	5/10/10	NMFWCO/PO	05/2011 – provide update and extend as needed	Ongoing	
15	Pursue effects study on Hg/Colorado Pikeminnow with other groups/programs	1/14/10	PO lead		Ongoing	
16	Include benchmarks for recovery in LRP (amended to also included in Pathways document and monitoring protocols)	12/5/14	Mata	01/5/2015	Ongoing	
17	Status updates for the LRP	12/2/15	PIs to Mata	02/23/2016	Ongoing	
18	Make Program peer-reviewed publications available to Program participants	11/29/16	PO (Mata)	02/21/2017	Ongoing	
19	Disposition of Razorback <300 mm TL	02/21/17	NMFWCO	05/16/2017	Ongoing	11/28/2017 TBD 2019
20	Draft a plan for Colorado Pikeminnow stockings	02/21/17	PO, NMFWCO, and NMDGF	02/21/2017	ongoing	
21	Coordinate aerial flights for base flow imaging	11/28/17	BC (Lamarra)/PO (Franssen)	02/20/2018	Ongoing	
22	APS present on Morgan Lake to Coordination Committee after one year of operation.	02/20/18	APS	05/30/2019		

BIOLOGY COMMITTEE ACTION ITEM LOG (Updated 7 March 2019)						
Item No.*	Action Item	Meeting/ Origination	Responsible Party(s)	Due Date	Revised Due Date	Date Completed
23	Maintenance Release proposal for 2019	02/21/19	BOR	03/30/19		
24	New Waterfall SOW	02/21/19	KSU	03/30/19		
25	McElmo Project updated SOW	02/21/19	Navajo Nation/BOR	03/30/19		
26	Develop a habitat workshop	02/21/19	PO	05/14/19		
27	Phase III re-recommendation memo	02/21/19	BC Chair	03/01/19		
28	BC comments to PO on Phase III responses to CC concerns	02/21/19	BC to PO	02/28/19		
28	Phase III presentation in May if not sooner	02/21/19	BIA/PO	05/15/19		
29	Nonnative Fish Removal SOW	02/21/19	NMFWCO	03/30/19		
30	RBS Augmentation Plan	02/21/19	NMFWCO	05/15/19		
31	Send Comments on Stocking Adaptive Management Plan to NMDGF	02/21/19	BC	03/18/19		
32	Forward Water Development Interest Phase III questions to BC	12/04/18	PO	12/18/2018		
33	Draft response to Water Development Interests and New Mexico CC questions on Phase III	12/04/18	BIA and PO	02/19/2019		
34	Written description of McElmo project to BC	12/04/18	BOR	02/19/2019		
35	Provide BC with presentation and excel files from nonnative fish analysis	12/04/18	PO	12/18/2018		

BIOLOGY COMMITTEE ACTION ITEM LOG (Updated 7 March 2019)						
Item No.*	Action Item	Meeting/ Origination	Responsible Party(s)	Due Date	Revised Due Date	Date Completed
36	Determine funding mechanism for secondary channel maintenance	12/04/18	Franssen and BOR	02/19/2019		
37	Provide a letter to CC from BC requesting ability to see SOW budgets during review	12/04/18	Jicarilla, BIA, and BC	02/19/2019		
38	Send BC FY 2019 Peer Review SOW and received comments from BC on ways to revise SOW for 2020 as a science advisory group		PO and BC	12/18/2018 and 02/19/2019		
39	Review and comment to Behery on hydrology model documentation	12/04/18	BC	01/31/2019		

*Items were re-numbered after changes were made
Yellow highlight indicates annual action items
Green highlight indicates new action item
Red highlight indicates completed action items