



Glen Canyon

Adaptive Management Work Group Meeting

Wednesday, February 24, 2016
9:30 a.m. – 5:30 p.m.

Thursday, February 25, 2016
8:00 a.m. – 3 p.m.

Meeting Location	Hotel Room Block
Embassy Suites Phoenix-Tempe 4400 S. Rural Road Tempe AZ 85282 480-897-7444 <i>Complimentary shuttle to Sky Harbor Airport</i>	Rate: \$161 + tax (14.27%) Block Closes: January 23, 2016 Check in time: 3 p.m. Check out time: 12 p.m. Cancellation Policy = 24 hours before 6 p.m.

**Glen Canyon Dam Adaptive Management Work Group Meeting
February 24-25, 2016**

Meeting Packet Order

Tabs	Documents
	<ul style="list-style-type: none"> • Meeting Information Page • Meeting Packet Order • Federal Register Notice • WebEx Participant Information
Agenda	<ul style="list-style-type: none"> • Agenda for February 24-25, 2016, Meeting
Draft Minutes / Action Items	<ul style="list-style-type: none"> • Draft Minutes from August 26-27, 2015, Meeting
Budget	<ul style="list-style-type: none"> • AIF: Hopi Tribe's Monitoring Program
TWG Chair Report	<ul style="list-style-type: none"> • AIF: Technical Work Group Chair Report
GCMRC Updates	<ul style="list-style-type: none"> • AIF: 2016 Annual Reporting Meeting Update •
Hydrology & Hydrograph	<ul style="list-style-type: none"> • AIF: Basin Hydrology, Operations, and 2017 Hydrograph
Science Updates	<ul style="list-style-type: none"> • AIF: Humpback Chub Recovery Team Update • AIF: Razorback Sucker Research Update •
Tribal Liaison Report	<ul style="list-style-type: none"> • AIF: Tribal Liaison Report
Stakeholder Perspective	<ul style="list-style-type: none"> • AIF: Stakeholder's Perspective: The Upper Basin States (Colorado, New Mexico, Wyoming, and Utah)
AMP Assessment	<ul style="list-style-type: none"> • AIF: Adaptive Management Program Assessment
Science Advisors	<ul style="list-style-type: none"> • AIF: Science Advisors' Executive Coordinator FY2016 Workplan Update
Miscellaneous	<ul style="list-style-type: none"> • AMWG Committee Membership List • AMWG Membership (by entity) • Report and Recommendations Memo from PDAS Jennifer Gimbel to Secretary Sally Jewell dated November 12, 2015

SUPPLEMENTARY INFORMATION: The 12-member council advises the Secretary of the Interior, through the BLM, on a variety of planning and management issues associated with public land management in the Central California District, which includes the Bishop, Bakersfield, Hollister, Ukiah and Mother Lode Field Offices.

The meeting will include consideration by the RAC of proposed campground fee increases for the Bishop Field Office. The RAC charter states:

Upon the request of the Designated Federal Official (DFO), the Council may make recommendations regarding a standard amenity recreation fee or an expanded recreation amenity fee, whenever the recommendations related to public concerns in the State or region covered by the council regarding:

(A) The implementation of a standard amenity recreation fee or an expanded amenity recreation fee or the establishment of a specific recreation fee site;

(B) The elimination of a standard amenity recreation fee or an expanded amenity recreation fee; or

(C) The expansion or limitation of the recreation fee program.

The Council may make these recommendations for the BLM when the BLM's amenity recreation fees are at issue and it would facilitate implementation of the REA (Federal Lands Recreation Enhancement Act). With the concurrence of the Forest Service (FS) when their amenity recreation fees are at issue, the Council may also make these recommendations for the BLM and/or FS if that would facilitate the effective implementation of the REA.

The RAC will meet from 8 a.m. to 3 p.m. There will be a presentation on the fee proposal at 8:30 a.m. There will be a time for public comment on that and other issues from 9 a.m. to 10 a.m.

Information on the proposed fee increase is available on the web at <http://www.blm.gov/ca/st/en/fo/bishop.html>.

Additional ongoing business will be discussed by the council. All meetings are open to the public. Members of the public may present written comments to the council. Each formal council meeting will have time allocated for public comments. Depending on the number of persons wishing to speak, and the time available, the time for individual comments may be limited. The meeting is open to the public. Individuals who plan to attend and need special assistance, such as sign language interpretation and other

reasonable accommodations, should contact the BLM as provided above.

Este Stifel,
District Manager.

[FR Doc. 2016-01745 Filed 1-29-16; 8:45 am]

BILLING CODE 4310-40-P

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

[LLNV912000 L13400000.PQ0000
 LXSS006F0000; MO#4500089844]

Notice of Public Meeting: Bureau of Land Management Nevada Resource Advisory Councils

AGENCY: Bureau of Land Management, Interior.

ACTION: Notice of public meeting.

SUMMARY: In accordance with the Federal Land Policy and Management Act and the Federal Advisory Committee Act of 1972 (FACA), the Department of the Interior, Bureau of Land Management (BLM) Nevada will hold a joint meeting of its three Resource Advisory Councils (RACs), the Sierra Front-Northwestern Great Basin RAC, the Northeastern Great Basin RAC, and the Mojave-Southern Great Basin RAC in Las Vegas, Nevada. The meeting is open to the public and a public comment period is scheduled for February 11.

DATES: The three RACs will meet on Wednesday, February 10, from 8 a.m. to 3:15 p.m. and Thursday, February 11, from 8 a.m. to 4:30 p.m. A public comment period will be held on Thursday, February 11, at 3:30 p.m. The agenda and additional information and will be posted at <http://on.doi.gov/1bkJm1g>.

FOR FURTHER INFORMATION CONTACT: Chris Rose, telephone: (775) 861-6480, email: crose@blm.gov. Persons who use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 1-800-877-8339 to contact the above individual during normal business hours. The FIRS is available 24 hours a day, 7 days a week, to leave a message or question with the above individual. You will receive a reply during normal business hours.

SUPPLEMENTARY INFORMATION: The three 15-member Nevada RACs advise the Secretary of the Interior, through the BLM Nevada State Director, on a variety of planning and management issues associated with public land management in Nevada. The meeting will be held at the Alexis Park Resort, 375 E. Harmon Ave., Las Vegas, Nevada.

Agenda topics include an update on sage grouse, grazing and wild horses and burros; closeout reports of the three RACs; breakout meetings of the three RACs; and scheduling meetings of the individual RACs for the upcoming year. The public may provide written comments to the three RAC groups or to an individual RAC.

Comments may also be submitted by email to blm_nv_communications@blm.gov with the subject 2016 Tri-RAC Comment or by mail at the address provided below. Written comments should be received no later than Feb. 8. BLM Nevada Tri-RAC Comments, c/o Chris Rose, 1340 Financial Blvd., Reno, NV 89502.

Individuals who plan to attend and need further information about the meeting or need special assistance such as sign language interpretation or other reasonable accommodations may contact Chris Rose at the phone number or email address above.

Steve Clutter,
Chief, Office of Communications.

[FR Doc. 2016-01743 Filed 1-29-16; 8:45 am]

BILLING CODE 4310-HC-P

DEPARTMENT OF THE INTERIOR

Bureau of Reclamation

[RR04073000, XXXR4081X3,
 RX.05940913.70000000]

Notice of Public Meeting for the Glen Canyon Dam Adaptive Management Work Group

AGENCY: Bureau of Reclamation, Interior.

ACTION: Notice.

SUMMARY: The Glen Canyon Dam Adaptive Management Work Group (AMWG) makes recommendations to the Secretary of the Interior concerning Glen Canyon Dam operations and other management actions to protect resources downstream of Glen Canyon Dam, consistent with the Grand Canyon Protection Act. The AMWG meets two to three times a year.

DATES: The meeting will be held on Wednesday, February 24, 2016, from approximately 9:30 a.m. to approximately 5:30 p.m.; and Thursday, February 25, 2016, from approximately 8 a.m. to approximately 3 p.m.

ADDRESSES: The meeting will be held at the Embassy Suites Phoenix-Tempe, 4400 S. Rural Road, Tempe, Arizona, 85282.

FOR FURTHER INFORMATION CONTACT: Beverley Heffernan, Bureau of Reclamation, telephone (801) 524-3712;

facsimile (801) 524-3807; email at bheffernan@usbr.gov.

SUPPLEMENTARY INFORMATION: The Glen Canyon Dam Adaptive Management Program (GCDAMP) was implemented as a result of the Record of Decision on the Operation of Glen Canyon Dam Final Environmental Impact Statement to comply with consultation requirements of the Grand Canyon Protection Act (Pub. L. 102-575) of 1992. The GCDAMP includes a Federal advisory committee, the AMWG, a technical work group (TWG), a Grand Canyon Monitoring and Research Center, and independent review panels. The TWG is a subcommittee of the AMWG and provides technical advice and recommendations to the AMWG.

Agenda: The primary purpose of the meeting will be to receive updates on: (1) The Long-Term Experimental and Management Plan Environmental Impact Statement, (2) current basin hydrology, operations, and the 2017 hydrograph, (3) The Hopi Tribe's monitoring regimen, summary of key research results, and recommendations, and (4) science results from Grand Canyon Monitoring and Research Center staff. The AMWG will discuss the Science Advisors' Workplan, the Adaptive Management Program Assessment, and the Western energy grid and the evolving mix of power sources. The AMWG will also address other administrative and resource issues pertaining to the GCDAMP.

To view a copy of the agenda and documents related to the above meeting, please visit Reclamation's Web site at <http://www.usbr.gov/uc/rm/amp/amwg/mtgs/16feb24>. Time will be allowed at the meeting for any individual or organization wishing to make formal oral comments. To allow for full consideration of information by the AMWG members, written notice must be provided to Beverley Heffernan, Bureau of Reclamation, Upper Colorado Regional Office, 125 South State Street, Room 8100, Salt Lake City, Utah, 84138; telephone (801) 524-3712; facsimile (801) 524-3807; email at bheffernan@usbr.gov, at least five (5) days prior to the meeting. Any written comments received will be provided to the AMWG members.

Public Disclosure of Comments

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying

information from public review, we cannot guarantee that we will be able to do so.

Dated: January 11, 2016.

Beverley Heffernan,

*Manager, Environmental Resources Division,
Upper Colorado Regional Office.*

[FR Doc. 2016-01742 Filed 1-29-16; 8:45 am]

BILLING CODE 4332-90-P

INTERNATIONAL TRADE COMMISSION

[Investigation No. 731-TA-298 (Fourth Review)]

Porcelain-on-Steel Cooking Ware From China; Institution of a Five-Year Review

AGENCY: United States International Trade Commission.

ACTION: Notice.

SUMMARY: The Commission hereby gives notice that it has instituted a review pursuant to the Tariff Act of 1930 ("the Act"), as amended, to determine whether revocation of the antidumping duty order on porcelain-on-steel cooking ware from China would be likely to lead to continuation or recurrence of material injury. Pursuant to the Act, interested parties are requested to respond to this notice by submitting the information specified below to the Commission;¹ to be assured of consideration, the deadline for responses is March 2, 2016. Comments on the adequacy of responses may be filed with the Commission by April 14, 2016.

DATES: *Effective Date:* February 1, 2016.

FOR FURTHER INFORMATION CONTACT: Mary Messer (202-205-3193), Office of Investigations, U.S. International Trade Commission, 500 E Street SW., Washington, DC 20436. Hearing-impaired persons can obtain information on this matter by contacting the Commission's TDD terminal on 202-205-1810. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202-205-2000. General information concerning the Commission may also be obtained by

¹ No response to this request for information is required if a currently valid Office of Management and Budget (OMB) number is not displayed; the OMB number is 3117-0016/USITC No. 16-5-350, expiration date June 30, 2017. Public reporting burden for the request is estimated to average 15 hours per response. Please send comments regarding the accuracy of this burden estimate to the Office of Investigations, U.S. International Trade Commission, 500 E Street SW., Washington, DC 20436.

accessing its internet server (<http://www.usitc.gov>). The public record for this proceeding may be viewed on the Commission's electronic docket (EDIS) at <http://edis.usitc.gov>.

SUPPLEMENTARY INFORMATION:

Background.—On December 2, 1986, the Department of Commerce ("Commerce") issued an antidumping duty order on imports of porcelain-on-steel cooking ware from China (51 FR 43414). Following first five-year reviews by Commerce and the Commission, effective April 14, 2000, Commerce issued a continuation of the antidumping duty order on porcelain-on-steel cooking ware from China (65 FR 20136). Following the second five-year reviews by Commerce and the Commission, effective November 22, 2005, Commerce issued a continuation of the antidumping duty order on porcelain-on-steel cooking ware from China (70 FR 70581). Following the third five-year reviews by Commerce and the Commission, effective March 14, 2011, Commerce issued a continuation of the antidumping duty order on imports of porcelain-on-steel cooking ware from China (76 FR 13602). The Commission is now conducting a fourth review pursuant to section 751(c) of the Act, as amended (19 U.S.C. 1675(c)), to determine whether revocation of the order would be likely to lead to continuation or recurrence of material injury to the domestic industry within a reasonably foreseeable time. Provisions concerning the conduct of this proceeding may be found in the Commission's Rules of Practice and Procedure at 19 CFR parts 201, subparts A and B and 19 CFR part 207, subparts A and F. The Commission will assess the adequacy of interested party responses to this notice of institution to determine whether to conduct a full review or an expedited review. The Commission's determination in any expedited review will be based on the facts available, which may include information provided in response to this notice.

Definitions.—The following definitions apply to this review:

(1) *Subject Merchandise* is the class or kind of merchandise that is within the scope of the five-year review, as defined by the Department of Commerce.

(2) The *Subject Country* in this review is China.

(3) The *Domestic Like Product* is the domestically produced product or products which are like, or in the absence of like, most similar in characteristics and uses with, the *Subject Merchandise*. In its original determination, its full first five-year

WEBEX "Participant" INFORMATION

Wednesday, February 24, 2016

PARTICIPANT Information:

<https://ucbor-events.webex.com/ucbor-events/onstage/g.php?MTID=e01fe5a5303cb3a1ad59afcccaf637913>

Phone #: 877-913-4721

Passcode: 3330168

Thursday, February 25, 2016

PARTICIPANT Information:

<https://ucbor-events.webex.com/ucbor-events/onstage/g.php?MTID=eafacb5f6287bf082ee46fc5eef85474>

Phone #: 877-913-4721

Passcode: 3330168

Agenda

GLEN CANYON DAM ADAPTIVE MANAGEMENT PROGRAM
ADAPTIVE MANAGEMENT WORK GROUP MEETING, FEBRUARY 24-25, 2016
 Embassy Suites--Phoenix/Tempe, 4400 South Rural Road, Tempe, Arizona, 85282, 480-897-7444
 Phoenix Ballroom B

Teleconference and Webinar Information: 877-913-4721, passcode 3330168

Wednesday Link:

<https://ucbor-events.webex.com/ucbor-events/onstage/g.php?MTID=e01fe5a5303cb3a1ad59afcccaf637913>

DRAFT AGENDA

START TIME ¹ (Duration)	Wednesday, February 24, 2016 Topic, Presenter, and Purpose ²	Materials/ Tabs
9:30 (:30)	<p>Welcome and Administrative: Jennifer Gimbel, Secretary's Designee <i>Information and discussion</i></p> <ul style="list-style-type: none"> • Introductions and Determination of Quorum (15 members) • Approval of August 26-27, 2015, Meeting Minutes • Action Item Tracking Report • Progress on Nominations and Reappointments • Long-Term Experimental Management Plan (LTEMP) Draft Environmental Impact Statement update • Farewell to Beverley Heffernan, Manager, Environmental Resources Division as she retires • Introduction of Kathleen (Kathy) Callister, Beverley Heffernan's replacement as Manager, Environmental Resources Division • Introduction of Katrina Grantz, Glen Knowles' replacement as chief of the Adaptive Management Group 	<p>Agenda</p> <p>Draft Minutes/ Action Items</p>
10:00 (:45)	<p>Hopi Tribe's Monitoring Program: Leigh Kuwanwisiwma and Mike Yeatts, Hopi Tribe <i>Information and discussion</i></p> <ul style="list-style-type: none"> • Presentation (30 minutes) • Q&A, discussion (15 minutes) <p><i>Purpose:</i> To increase understanding of the Hopi Tribe's monitoring program.</p>	<p>Budget</p>
10:45 (1:00)	<p>Technical Work Group Report: Vineetha Kartha, Arizona and TWG Chair; Bill Stewart, AGFD TWG member and Trout Ad Hoc Group Chair; and Larry Stevens, Grand Canyon Wildlands Council AMWG and TWG member <i>Information, discussion, and possible action</i></p> <ul style="list-style-type: none"> • Presentation (30 minutes) <ul style="list-style-type: none"> ○ Annual Reporting Meeting ○ Findings from TWG's consideration of the Lees Ferry Trout recreational trout fishery recommendations from the angler groups 	<p>TWG Chair Report</p>

START TIME ¹ (Duration)	Wednesday, February 24, 2016 Topic, Presenter, and Purpose ²	Materials/ Tabs
	<ul style="list-style-type: none"> ○ Spring HFEs ● Q&A, discussion, and possible action (30 minutes) <p><u>Purpose:</u> To increase understanding of discussion and actions from the TWG meeting; consider motions recommended by the full TWG and AMWG members.</p> <p>Motions to be considered during this agenda item (see Agenda Item Form for more information):</p> <p><u>Motion #1:</u> The AMWG accepts the December 9, 2015, Grand Canyon Monitoring and Research Center (GCMRC) Technical Memo (Memo) of the Lees Ferry Trout Fishery Management Recommendations (Recommendations) subject to the following:</p> <ol style="list-style-type: none"> 1. Any actions resulting from the Recommendations must be fully consistent with the “Law of the River” and Department of the Interior (DOI) policy considerations. 2. Recommendations that fall under the purview of water and natural resource management agencies such as Bureau of Reclamation, National Park Service, United States Fish and Wildlife Service, Arizona Game and Fish Department, and AMWG Tribes will require additional evaluation with these management agencies for further consideration. 3. Recommendations that address dam operations are expected to be considered and evaluated in light of the ongoing Long-Term Experimental and Management Plan (LTEMP) Environmental Impact Statement (EIS). <p>In addition, the AMWG directs the TWG to consider these Recommendations and the Memo as future work plans are developed.</p> <p><u>Proposed addition to Motion #1:</u> The AMWG directs the TWG to consider the Lees Ferry Trout Management Recommendations and the GCMRC Technical Memo when it reviews the GCDAMP Triennial Work Plan and Budget for FY 2017 and makes a recommendation to AMWG in June, and to report the results of that review with any recommended changes to the FY 2017 budget and work plan at the August 2016 AMWG meeting.</p>	
11:45 (1:30)	LUNCH	

START TIME¹ (Duration)	Wednesday, February 24, 2016 Topic, Presenter, and Purpose²	Materials/ Tabs
1:15 (1:30)	<p>2016 Annual Reporting Meeting Update: Scott VanderKooi and Paul Grams, GCMRC</p> <p><i>Information and discussion</i></p> <ul style="list-style-type: none"> • Presentation (60 minutes) • Questions, responses, and discussion (30 minutes) <p><u>Purpose:</u> To increase understanding of research and monitoring results from the last year that was presented at the Annual Reporting Meeting.</p>	GCMRC Updates
2:45 (:30)	<p>Humpback Chub Recovery Team Update: Rich Valdez, SWCA, Recovery Team Leader (in person), Tom Czaplak and Tom Chart, U.S. Fish and Wildlife Service (via telephone)</p> <p><i>Information and discussion</i></p> <ul style="list-style-type: none"> • Presentation (20 minutes) • Q&A, discussion (10 minutes) <p><u>Purpose:</u> To increase understanding of the activities and plans of the new USFWS Humpback Chub Recovery Team.</p>	Science Updates
3:15 (:15)	B R E A K	
3:30 (:30)	<p>Basin Hydrology, Operations, and 2017 Hydrograph: Lee Traynham, Bureau of Reclamation</p> <p><i>Information and discussion</i></p> <ul style="list-style-type: none"> • Presentation (15 minutes) • Q&A, discussion (15 minutes) <p><u>Purpose:</u> To increase understanding of water supply, forecasted hydrologic conditions, and projected reservoir conditions and operations for the current and upcoming water years, to assist the AMWG in developing recommendations to the Secretary on the operation of Glen Canyon Dam for water years 2016 and 2017. Begin to prepare the AMWG to consider a recommendation on the 2017 hydrograph later this year.</p>	Hydrology & Hydrograph
4:00 (1:00)	<p>Adaptive Management Program Assessment: Mary Orton, The Mary Orton Company, LLC</p> <p><i>Information and discussion</i></p> <ul style="list-style-type: none"> • Presentation (20 minutes) • Q&A, discussion (40 minutes) <p><u>Purpose:</u> Provide an overview of the AMP Assessment Report and an opportunity to discuss the report, so that stakeholders can better understand each other's interests and concerns, and potentially improve the structure and operation of the program.</p>	AMP Assessment

START TIME ¹ (Duration)	Wednesday, February 24, 2016 Topic, Presenter, and Purpose ²	Materials/ Tabs
5:00 (:15)	Public Comment	
5:15	ADJOURN FOR THE DAY	

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² Action may be by consensus or a vote; and either may be a recommendation to the Secretary of the Interior or feedback to presenter(s) or to subordinate groups.

GLEN CANYON DAM ADAPTIVE MANAGEMENT PROGRAM
ADAPTIVE MANAGEMENT WORK GROUP MEETING, FEBRUARY 24-25, 2016
Embassy Suites--Phoenix/Tempe, 4400 South Rural Road, Tempe, Arizona, 85282, 480-897-7444
Phoenix Ballroom B

Teleconference and Webinar Information: 877-913-4721, passcode 3330168

Thursday Link:

<https://ucbor-events.webex.com/ucbor-events/onstage/g.php?MTID=eafacb5f6287bf082ee46fc5eecf85474>

DRAFT AGENDA

START TIME¹ (Duration)	Thursday, February 25, 2016 Topic, Presenter, and Purpose²	Materials/ Tabs
8:30 (:15)	<p>Welcome and Administrative: Jennifer Gimbel, Secretary's Designee</p> <ul style="list-style-type: none"> • Introductions and Determination of Quorum (15 members) 	Agenda
8:45 (:45)	<p>Stakeholders' Perspective: The Upper Basin States (Colorado, New Mexico, Wyoming, and Utah): Don Ostler, Executive Director and Secretary, Upper Colorado River Commission (AMWG and TWG alternate for Wyoming and New Mexico)</p> <p><i>Information and discussion</i></p> <ul style="list-style-type: none"> • Presentation (30 minutes) • Q&A, discussion (15 minutes) <p><u>Purpose:</u> To allow stakeholders to better understand each other's concerns and interests.</p>	Stakeholder's Perspective
9:30 (:30)	<p>Tribal Liaison Report: Sarah Rinkevich, Federal Tribal Liaison for the Glen Canyon Dam Adaptive Management Program</p> <p><i>Information and discussion</i></p> <ul style="list-style-type: none"> • Presentation (20 minutes) • Q&A, discussion (10 minutes) <p><u>Purpose:</u> To increase understanding of the activities of the tribal liaison.</p>	Tribal Liaison Report
10:00 (:15)	B R E A K	
10:15 (1:00)	<p>Science Advisors' Executive Coordinator FY2016 Workplan Update: David Braun, Sound Science</p> <p><i>Information and discussion</i></p> <ul style="list-style-type: none"> • Presentation (30 minutes) • Q&A, discussion, and action (30 minutes) <p><u>Purpose:</u> Increase understanding of the FY2016 workplan and the development of the FY2017 workplan.</p>	Science Advisors

START TIME ¹ (Duration)	Thursday, February 25, 2016 Topic, Presenter, and Purpose ²	Materials/ Tabs
11:15 (:30)	Razorback Sucker Research Update: Mark McKinstry, Reclamation <i>Information and discussion</i> <ul style="list-style-type: none"> • Presentation (15 minutes) • Q&A, discussion (15 minutes) <p><u>Purpose:</u> To share and celebrate the results of this research.</p>	Science Updates
11:45 (:15)	Public Comment	
12:00	Wrap-up and Adjourn: Jennifer Gimbel, Secretary's Designee <ul style="list-style-type: none"> ▪ Please fill out the meeting evaluation sheet at your place. 	

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² Action may be by consensus or a vote; and either may be a recommendation to the Secretary of the Interior or feedback to presenter(s) or to subordinate groups.

Draft Minutes/Action Items

**Glen Canyon Dam Adaptive Management Work Group Meeting
August 26-27, 2015**

August 26, 2015

Start Time: 9:30 a.m.

Conducting: Jennifer Gimbel, Principle Deputy Assistant Secretary for Water and Science

Facilitation: Mary Orton, The Mary Orton Company, LLC

Committee Members/Alternates:

Charley Bullets, So. Paiute Consortium (phone)
Tom Buschatzke, State of Arizona
Chris Cantrell, Arizona Game and Fish Department
Kerry Christensen, Hualapai Tribe
Jayne Harkins, State of Nevada
Leslie James, CREDA
Sam Jansen, Grand Canyon River Guides
Lynn Jeka, Western Area Power Administration
John Jordan, Int'l Fed. of Fly Fishers/Trout Unlimited
Chip Lewis, Bureau of Indian Affairs
John McClow, State of Colorado
Eric Millis, State of Utah

David Nimkin, National Parks Conservation Assoc.
Don Ostler, State of New Mexico
Daniel Picard, U.S. Bureau of Reclamation
Steve Spangle, U.S. Fish and Wildlife Service
Tanya Trujillo, State of California
Dave Uberuaga, National Park Service (GRCA)
Steve Wolff, State of Wyoming
Mike Yeatts, The Hopi Tribe
VACANT, Navajo Nation
VACANT, Pueblo of Zuni
VACANT, San Juan Southern Paiute Tribe

Committee Members Absent:

James deVos, Arizona Game & Fish Department
Loretta Jackson-Kelly, Hualapai Tribe
Leigh Kuwanwisiwma, Hopi Tribe

Ted Rampton, UAMPS
Larry Stevens, Grand Canyon Wildlands Council

USGS/Grand Canyon Monitoring and Research Center

Lucas Bair, Economist
Kyrie Fry, Communications & Outreach Coordinator
Paul Grams, Program Manager

Dave Lytle, Director, SBSC
Scott Vanderkooi, Chief, GCMRC

Interested Persons:

Adam Arellano, WAPA
Melinda Arviso-Ciocco, Navajo Nation (phone)
Mary Barger, U.S. Bureau of Reclamation
Cliff Barrett, UAMPS (phone)
Rob Billerbeck, National Park Service
David Braun, Sound Science LLC
Chris Budwig, Trout Unlimited
Peter Bungart, Hualapai Tribe (phone)
Shane Capron, WAPA/TWG Vice Chair
Lori Caramanian, DOI
Bill Chada, U.S. Bureau of Reclamation
Jennifer Crandell, CRC/Nevada
Marianne Crawford, U.S. Bureau of Reclamation
Kevin Dahl, National Parks Conservation Assoc.
Crystal Dean, WAPA
Deborah Dixon, State of New Mexico
Kurt Dongoske, Pueblo of Zuni
Lesley Fitzpatrick, U.S. Fish & Wildlife Svc (phone)
Kevin Garlick, CREDA
Todd Gaston, U.S. Bureau of Reclamation
Ed Gerak, CREDA
Maude Grantham Richards, Tri-State G&T/CREDA
Katrina Grantz, U.S. Bureau of Reclamation
Jessica Gwinn, U.S. Fish & Wildlife Service
Martha Hahn, NPS/GRCA
John Hamill, Int'l Federation of Fly Fishers, TU
Lynn Hamilton, Grand Canyon River Guides

Paul Harms, State of New Mexico
Chris Harris, State of California (phone)
Brian Healy, National Park Service (phone)
Beverley Heffernan, U.S. Bureau of Reclamation
Vineetha Kartha, State of Arizona
Robert King, State of Utah (phone)
Glen Knowles, U.S. Bureau of Reclamation
Ted Kowalski, State of Colorado
Jane Lyder, National Park Service
Lisa Meyer, WAPA
Jessica Neuwerth, State of California
Brent Rhees, U.S. Bureau of Reclamation
Dr. Sarah Rinkevich, DOI Joint Tribal Liaison
Brian Sadler, WAPA
Seth Shanahan, SNWA
Stacey Smith, U.S. Bureau of Reclamation
Robert Snow, DOI/Solicitor's Office
Bill Stewart, Arizona Game & Fish Department
Rosemary Sucec, NPS/GLCNRA
Justin Tade, DOI/Solicitor's Office
Pat Tease, U.S. Bureau of Reclamation
Shana Tighi, U.S. Bureau of Reclamation
Camille Touton, DOI
Jason Tucker, U.S. Bureau of Reclamation
Bob Unnasch, Sound-Science, LLC
Tim Vigil, WAPA
Chris Watt, U.S. Bureau of Reclamation

Jeff Woner, CREDA

Recorder: Linda Whetton, USBR

Welcome and Administrative. Ms. Gimbel welcomed the members and general public. Introductions were made of Bill Chada (new archeologist with Reclamation) and Camille Touton (DOI Counsel). Lori Caramanian has accepted a position with the FWS Solicitor's Office in Denver; Ms. Touton will fill her position. A roll-call was taken and a quorum established. Mr. Peter Bungart (Hualapai Tribe) and Mr. Kurt Dongoske (Pueblo of Zuni) will represent their respective members but will not have voting rights at this meeting.

- Approval of May 28, 2015, Meeting Minutes. **Motion (proposed by Jayne Harkins and seconded by Steve Wolff) to approve the minutes of the May 28, 2015 meeting as written.**
This motion was approved by consensus.
- Action Item Tracking Report (**Attachment 1**). Two items will be closed: Outreach efforts were made to the Havasupai Tribe to join the AMWG and they declined to be official members; and the deadline passed for technical questions regarding hydropower modeling .
- Progress on Nominations and Reappointments
 - New AMWG Member: Daniel Picard (Reclamation)
 - New AMWG Alternates: Chris Cantrell (AGFD), Meghann Olson (Southern Paiute Consortium), and Brian Sadler (WAPA)
 - Reappointed AMWG Members: Charley Bulletts (Southern Paiute Consortium) and Larry Stevens (Grand Canyon Wildlands Council)
 - Reappointed AMWG Alternates: Garry Cantley (BIA), Beverley Heffernan (Bureau of Reclamation) Robert King (State of Utah), , and Mike Yeatts (Hopi Tribe)
 - Clarification made that Kevin Dahl is TWG member and Dave Nimkin is TWG alternate representing NPCA.
- New GCMRC Chief – Mr. Scott VanderKooi was selected for the position vacated by Dr. Jack Schmidt.
- Recognition of Dr. Dave Garrett – Ms. Gimbel said Dr. Garrett did a wonderful job as the Executive Director for the Science Advisors and asked if anyone would consider proposing a motion to recognize his contributions to the GCDAMP.
Motion (proposed by Don Ostler, seconded by Lynn Jeka) to consider a motion honoring Dave Garrett.
This motion was approved by consensus. Specific language will be provided at tomorrow's meeting.
- Update on Science Advisor Contract – Reclamation awarded the SA contract to Sound Science LLC, an independent group of advisors based out of Boise, Idaho. Dr. David Braun will serve as the executive director and coordinate assignments. He introduced himself and said he is keenly aware of the complex history of the program, the role that scientific investigations play in the adaptive management process, and the need for transparency.
- AMWG Charter Renewal – The charter was signed and filed on August 24, 2015. Some editorial changes were made and a redline/strikeout version will be sent to the AMWG.
- Commemorating Jason Thiriot – Ms. Gimbel described Jason as the AMWG's best cheerleader with his positive attitude and willingness to serve in the program. He was chair of the Public Outreach AHG and was responsible for creating and managing the GCDAMP "wiki" website. Ms. Harkins said she appreciated all his efforts and the work he did for the State of Nevada. He was passionate about the AMWG and was looking forward to working on the administrative history of the program. She thanked everyone for their thoughts and care to his family and the Colorado River Commission of Nevada. A moment of silence was observed. Ms. Gimbel thanked Ms. Kartha for setting up a fundraiser with the Diamondbacks Baseball Team to help support the Thiriot Children Memorial Fund. An card to his family was sent around the room for signatures, with an envelope for donations to the family. A round of applause was given.

FY 2016 Budget and Work Plan (Attachment 2 = AIF and PPT) – Mr. Glen Knowles. The budget is in the second year of a three-year fiscal budget. The three-year budget was approved in August 2014, and the AMWG is requested to approve the second year again to meet federal regulations. The proposed budget for FY16 is \$11,077,616 with Reclamation's portion at \$2,180,075 and GCMRC at \$8,897,541. Carryover funds from Reclamation's portion of the budget may be used to address the problem of green sunfish in Glen Canyon. Mr. VanderKooi reported that GCMRC's overhead rates are lower than projected as a result of GSA renegotiating their leases. The current estimate for GCMRC moving into their new buildings is 2017 or later. The longer the delay, the lower the rates will be. Mr. Capron said the

TWG reviewed the budget and is recommending the AMWG approve the FY16 budget. He referenced the draft budget motion on the AIF.

Motion (proposed by Chris Cantrell, seconded by Eric Millis): AMWG recommends to the Secretary of the Interior for her approval the Final FY 2015-17 Triennial Budget and Work Plan from the Bureau of Reclamation and the Grand Canyon Monitoring and Research Center as recommended by AMWG August 28, 2014, for implementation in FY 2016, with a FY 2015 corrected CPI of 1.7% and corrections to the GCMRC overhead rates.

This motion was approved by consensus.

Basin Hydrology and 2016 Hydrograph (Attachment 3a = AIF and PPT) – Ms. Kátrina Grantz.

Storage is 94% of average for Lake Powell. Most of the inflow was from snowmelt from the April-July timeframe. Projections are made for the next water year in August and the most-probable inflow forecast is 88% of average. There's a lot of uncertainty at this point with a minimum probable of 59% to a maximum of 156%. In addition, there is a 10% chance it could be higher and a 3% chance it could be lower. The probable minimum, the most probable, and the probable maximum release projections are all under the Upper Elevation Balancing Tier. The first two scenarios show 9.0 maf releases with a projected April shift to Balancing. The Probable Maximum shows a 11.4 maf release with a projected April shift to Equalization. Depending on the April 24-month study projections through the end of the water year, it will be determined whether there is an adjustment to balancing releases, whether to stay at 8.23, or whether there will be equalization releases. If it is dry between now and April, there's a chance that an adjustment will not be made to the balancing releases. If it is wet between now and April, there's a chance that they would not move to balancing but would have equalization releases.

Dam Maintenance Schedule. Ms. Grantz reviewed the dam maintenance schedule through WY2016. Ongoing maintenance is required at the dam and Reclamation works closely with WAPA in scheduling to ensure water can be moved during turbine downtimes. Seven units must be available to conduct an HFE.

2016 Annual Hydrograph Background. Mr. Snow reminded the group that passage of a hydrograph is grounded in the Grand Canyon Protection Act which passed in 1992 and specifically stated that the Secretary would "adopt criteria and operating plans separate from and in addition to those specified in section 602(b) of the Colorado River Basin Project Act of 1968." Beginning January 1, 1972 and yearly thereafter the Secretary transmits a report to Congress and the Colorado River Basin States describing the actual operation under the adopted criteria for the preceding compact water year and the projected operation for the current year.

Ms. Kartha said the TWG was presented with sediment and financial results from the DOI-DOE analysis of operational scenarios for the WY 2016 hydrograph. The anticipated range of conditions and objectives for 2016 remain similar to previous years; therefore, the targeted approach adopted in 2012-15 hydrographs is being recommended again for the 2016 hydrograph. She also clarified that the original Agenda Item Form (AIF) had an error in the text of the motion to approve the hydrograph. A new AIF was distributed with the superfluous paragraph removed.

Ms. Grantz presented the proposed hydrograph for 2016 and said there are three targeted months of consideration. In June, August and September great attention is paid to the volumes particularly for release and hydrology. If the annual release ends up being less than 9.0 maf, the releases for June would be 600-650 kaf, 800 kaf in August, and 600 kaf in September. As the annual volumes increases, so must the release volumes in order to get all the water out within the water year. The proposed hydrograph recommends slight decreases in June, August, and September from what would typically be done. That water needs to go somewhere to keep the annual volume the same so there will be slight increases in December, January and July.

Motion (proposed by Tom Buschatzke, seconded by Lynn Jeka): AMWG recommends to the Secretary of the Interior for her approval the WY2016 Hydrograph for Glen Canyon Dam.

- **Annual Release Volumes** will be determined by the 2007 Interim Guidelines and shall be reviewed and adopted through the normal annual operating plan process (in consultation with the Basin States as appropriate).
- **Monthly Release Volumes** are anticipated to shift depending upon: (1) the projected Annual Release Volume, (2) power plant capacity, and (3) the magnitude of a potential High Flow Experiment.
- **Monthly Release Volumes** may vary within the targets identified below. Any remaining monthly operational flexibility will be used for existing power production operations under the Modified Low Fluctuating Flow (MLFF) alternative selected by the 1996 ROD and contained in the 1995 FEIS and in compliance with all applicable NEPA compliance documents (HFE EA, NNFC EA, 2007 Interim Guidelines). Monthly release volumes proposed in this hydrograph will not affect operating tier determinations for Lakes Powell and Mead under the 2007 Interim Guidelines.

Release objective for June is:

600 to 650 kaf for annual releases below 9.0 maf
800 kaf for annual releases of 9.0 maf to less than 9.5 maf
900 kaf for annual releases of 9.5 maf to less than 10 maf
Greater than 900 kaf for annual releases 10 maf and greater

Release objective for August is:

800 kaf for annual release below 9.0 maf
900 kaf for annual releases of 9.0 maf to less than 10 maf
Greater than 900 kaf for annual releases 10 maf and greater

▪ **Release objective for September is:**

600 kaf for annual releases below 9.0 maf
700 kaf for annual releases of 9.0 maf to less than 10.0 maf
800 kaf or greater for annual releases of 10.0 maf or greater; up to power plant capacity for high equalization releases

Monthly Release Volumes will generally strive to maintain 600 kaf levels in the shoulder months (spring and fall) and 800 kaf in the December/January and July/August timeframe.

Additionally, the Bureau of Reclamation will continue to apply best professional judgment in conducting actual operations and in response to changing conditions throughout the water year. Such efforts will continue to be undertaken in coordination with the DOI/DOE agencies and in consultation with the Basin States as appropriate, to consider changing conditions and adjust projected operations in a manner consistent with the objectives of these parameters as stated above and pursuant to the Law of the River.

This motion was approved by consensus.

Lees Ferry Recreational Trout Fishery Management Recommendations (Attachment 4) – Mr.

Jordan. The National Park Service Comprehensive Fishery Management Plan (CFMP) Environmental Assessment for the Colorado River between Glen Canyon Dam and Lake Mead was published in May 2014. The intent of the CFMP is to maintain a thriving native fish community within Grand Canyon National Park and a highly valued recreational trout fishery in the Glen Canyon National Recreation Area. The AMWG recreational fishing representation and the angling community, with the cooperative participation of the Arizona Game and Fish Department, recognized that provisions of the CFMP for both the recreational trout fishery and the fishery as a whole would benefit from more detailed proposed actions. As a result, those entities developed the Lees Ferry Recreational Trout Fishery Management Recommendations, and they hope that they will be adopted to fit within the CFMP.

While the report offers 15 recommendations, he focused on the three major issues: (1) aquatic food base, (2) excessive recruitment of young trout, and (3) water temperatures. The recommendations will benefit humpback chub, riparian wildlife species, hydropower production, sand conservation, and

archaeological site preservation. They would like to have their recommendations evaluated by GCMRC and have a discussion with the TWG.

Because a draft motion wasn't included in the pre-meeting materials, Ms. Gimbel asked for a motion that the AMWG would consider the Lees Ferry motion. If that passes, then the motion would be considered tomorrow.

Motion (proposed by Chris Cantrell, seconded by Kerry Christensen): The AMWG will consider a motion on Fish Management Recommendations.

This motion was approved by consensus.

Non-Market Values for Alternative Operations of Glen Canyon Dam Panel – Mr. Lucas Bair introduced the panel members: Michael Hanemann, Arizona State University; Holly Doremus, UC Berkeley Law; John Duffield, University of Montana; and Hank Jenkins-Smith, University of Oklahoma.

- Nonmarket Values and Glen Canyon Dam (**Attachment 5a**) – Dr. Hanemann. The key to think about is demand and supply. Demand has to do with what something is worth to people while supply has to do with what it costs them to obtain it. Valuation addresses demand. Non-market valuation measures in monetary terms the value people place on items they may care for, regardless of whether those items are supplied through a market. Non-market valuation employs the same two concepts of value as market valuation, and subsumes market-valuation as a particular case. Hydropower and recreation (fishing, boating, etc.) are market values at Glen Canyon Dam. Non-market values at Glen Canyon Dam include preservation of an iconic area in a natural condition. He noted that the program has made much progress since the August 2010 hydropower panel he participated in. He noted his conclusions at that time were that the GCDAMP has made more progress in monitoring camping beaches than visitor experience. The current plan lacks a way to tie changes in flows to recreational and cultural values. It is not consistent with any meaningful form of adaptive management and cannot withstand sustained scrutiny. He said he hoped there had been improvement since then.
- Laws, Values, and Water Management Decisions (**Attachment 5b**) – Dr. Doremus. She described public values in the sense of our commitments, what we think is right or wrong in terms of what should do, not how much we would accept for pay to be able to consume something. Public decisions, including decisions about how we manage our public resources, are supposed to be reflect and connect to our societal values. Values are often contested, difficult to prioritize, and difficult to quantify which pose a number of challenges. Those challenges are dealt with in legislative ways (i.e., Endangered Species Act), by benefit-cost analyses, agency discretion, overlaying mandates, and water management decisions, all of which have advantages and disadvantages. She noted in any case, key questions to be answered include how should trade-offs be evaluated, particularly if there does not appear to be a comfortable metric across competing preferences.
- Glen Canyon Dam Operations: Passive Use Valuation History and Current Efforts (**Attachment 5c**) – Dr. Duffield. There are connections between ecosystem structure and function, services, policies, and values. He presented data from a study on annual values associated with alternative dam operations which indicated that consumer values would be more successful and reliable in a legal context if it followed a public referendum. It showed that if the dollar amounts were higher, people were inclined to take issues more seriously.
- Non-Market Values in Complex Coupled Systems: Theoretical Considerations and Pilot Study Results (**Attachment 5d**) – Dr. Jenkins-Smith. His presentation reviewed coupled human/natural systems (CHANS) and emphasized that people need to look at the diversity of stakeholders' values and then apply it to a GCD pilot study done by his group in 2014. They replicated the Welsh 1995 GCD study in order to compare variations and introduced alternative dimensions of value. The results of the 1995 study were almost identical to the same questions asked during the 2014 study. Additional questions allowed for respondents to indicate a negative value for changes in dam operations, and added preservation of rural ways of life to the mix, finding that many indicated preferences for the status quo. He noted in conclusion that structuring alternatives as a reference choice between two options allows respondents to consider bundles of distinct value attributes, in contrast to the Welsh et al. study on a single proposal for changing dam operations. Specifically, it allowed for expression of "willingness to pay" to retain the current operations.

Stakeholder's Perspective and HFE Effect on Beaches – The View from the Camp (Attachment 6)

– Mr. Sam Jansen.

- Stakeholder Perspective – The Grand Canyon River Guides was created in 1988 as an educational and environmental organization. Its mission is to protect the Grand Canyon, set the highest standards for the river profession, celebrate the unique spirit of the guide community, and provide the best possible river experience. The organization provides a river guide training seminar, a yearly training river trip, and a fall rendezvous, and publishes the Boatman's Quarterly Review. The guides worked with other groups and were instrumental in writing the Grand Canyon Protection Act. More information can be obtained from their website: <http://www.gcrq.org>.
- HFE Impact on Camping Beaches – The Adopt-A-Beach program was implemented in 1996 after the first historic "flood flow." It's a program that allows volunteer guides to keep close tabs on changes to the recreational resource – camping beaches in Grand Canyon. For people to enjoy and spend time in the canyon, they need camping beaches. The ideal camping beach is big, flat, accessible, in the right location, unoccupied, beautiful, and one of many. Often there are problems finding a good beach to camp since they've been shrinking since the dam was put in. Changes over time that have been noted: degraded parking, loading and unloading; cutbanks; vegetation encroachment; human impacts; and wind scour/deposition. The guides take pictures to document the changes and produce an annual report. A "campsite viewer" link has been linked to GCMRC's website:
<http://www.arcgis.com/home/item.html?id=f8dc5d198f254710997dc1fb1bf064cc>

Public Comments: None

Adjourned: 4:37 p.m.

Glen Canyon Dam Adaptive Management Work Group Meeting

August 27, 2015

Conducting: Jennifer Gimbel, Acting Secretary's Designee

Start Time: 8:04 a.m.

Facilitation: Mary Orton, The Mary Orton Company, LLC

Committee Members/Alternates:

Charley Bulletts, So. Paiute Consortium (phone)
Tom Buschatzke, State of Arizona
Chris Cantrell, Arizona Game and Fish Department
Kerry Christensen, Hualapai Tribe
Jayne Harkins, State of Nevada
Leslie James, CREDA
Sam Jansen, Grand Canyon River Guides
Lynn Jeka, Western Area Power Administration
John Jordan, Int'l Fed. of Fly Fishers/Trout Unlimited
Chip Lewis, Bureau of Indian Affairs
John McCLOW, State of Colorado
Eric Millis, State of Utah

David Nimkin, National Parks Conservation Assoc.
Don Ostler, State of New Mexico
Daniel Picard, U.S. Bureau of Reclamation
Steve Spangle, U.S. Fish and Wildlife Service
Tanya Trujillo, State of California
Dave Uberuaga, National Park Service (GRCA)
Steve Wolff, State of Wyoming
Mike Yeatts, The Hopi Tribe
VACANT, Navajo Nation
VACANT, Pueblo of Zuni
VACANT, San Juan Southern Paiute Tribe

Committee Members Absent:

James deVos, Arizona Game & Fish Department
Loretta Jackson-Kelly, Hualapai Tribe
Leigh Kuwanwisiwma, Hopi Tribe

Ted Rampton, UAMPS
Larry Stevens, Grand Canyon Wildlands Council

USGS/Grand Canyon Monitoring and Research Center

Lucas Bair, Economist
Kyrie Fry, Communications & Outreach Coordinator
Paul Grams, Program Manager

Dave Lytle, Director, SBSC
Scott Vanderkooi, Chief, GCMRC

Interested Persons:

Adam Arellano, WAPA
Melinda Arviso-Ciocco, Navajo Nation (phone)
Mary Barger, U.S. Bureau of Reclamation
Cliff Barrett, UAMPS (phone)
Rob Billerbeck, National Park Service
David Braun, Sound Science LLC
Chris Budwig, Trout Unlimited
Peter Bungart, Hualapai Tribe (phone)
Shane Capron, WAPA/TWG Vice Chair
Lori Caramanian, DOI
Bill Chada, U.S. Bureau of Reclamation
Jennifer Crandell, CRC/Nevada
Marianne Crawford, U.S. Bureau of Reclamation
Kevin Dahl, National Parks Conservation Assoc.
Crystal Dean, WAPA
Deborah Dixon, State of New Mexico
Lesley Fitzpatrick, U.S. Fish & Wildlife Service
Kevin Garlick, CREDA
Todd Gaston, U.S. Bureau of Reclamation
Ed Gerak, CREDA
Maude Grantham Richards, Tri-State G&T/CREDA
Katrina Grantz, U.S. Bureau of Reclamation
Jessica Gwinn, U.S. Fish & Wildlife Service
Kurt Dongoske, Pueblo of Zuni
Martha Hahn, NPS/GRCA
John Hamill, Int'l Federation of Fly Fishers, TU

Lynn Hamilton, Grand Canyon River Guides
Paul Harms, State of New Mexico
Chris Harris, State of California (phone)
Brian Healy, NPS/GCNP
Beverley Heffernan, U.S. Bureau of Reclamation
Vineetha Kartha, State of Arizona
Robert King, State of Utah (phone)
Glen Knowles, U.S. Bureau of Reclamation
Ted Kowalski, State of Colorado
Jane Lyder, National Park Service
Lisa Meyer, WAPA
Jessica Neuwerth, State of California
Brent Rhees, U.S. Bureau of Reclamation
Dr. Sarah Rinkevich, DOI Joint Tribal Liaison
Brian Sadler, WAPA
Seth Shanahan, SNWA
Stacey Smith, U.S. Bureau of Reclamation
Robert Snow, DOI/Solicitor's Office
Bill Stewart, Arizona Game & Fish Department
Rosemary Sucec, NPS/GLCNRA
Justin Tade, DOI/Solicitor's Office
Pat Tease, U.S. Bureau of Reclamation
Shana Tighi, U.S. Bureau of Reclamation
Camille Touton, DOI
Jason Tucker, U.S. Bureau of Reclamation
Bob Unnasch, Sound Science LLC (phone)

Tim Vigil, WAPA
Chris Watt, U.S. Bureau of Reclamation

Jeff Woner, CREDA

Recorder: Linda Whetton, USBR

Welcome and Administrative. Ms. Gimbel welcomed the members and general public. She made the following announcements:

- Leslie Fitzpatrick (USFWS), who has worked on issues important to the program for many years, will retire after 37 years of federal service.
- Martha Hahn (alternate for NPS) will retire in October.
- Lori Caramanian (Deputy Assistant Secretary, DOI) will be moving to Denver to accept a position with the FWS Solicitor's Office. She has worked with the AMWG for the past six years and will continue to work on the LTEMP EIS.

Members were reminded to complete the Meeting Evaluation Form at the conclusion of today's meeting.

Ms. Gimbel invited the two motions that the group had agreed yesterday to consider.

Motion (Proposed by Don Ostler, seconded by John McClow): The Adaptive Management Work Group formally recognizes the longstanding and significant contributions of Dr. L. David Garrett to the Glen Canyon Dam Adaptive Management Program (GCDAMP) in many different capacities, including first chief of the Grand Canyon Monitoring and Research Center (1996-1999) and the Executive Coordinator of the Science Advisors (2001-2013). Dr. Garrett has significantly helped the GCDAMP to address the many complex science and operational issues associated with Glen Canyon Dam and the Grand Canyon National Park and environs. The AMWG wishes to express our sincere thanks to Dr. Garrett and our warmest wishes for his happy and successful future. At the request of the Secretary's Designee, the group approved this motion unanimously.

Motion (proposed by John Jordan, seconded by Kerry Christensen): The AMWG requests the Secretary's Designee direct GCMRC to conduct a technical review of the Lees Ferry Recreational Trout Fishery Management Recommendations and report its findings to the TWG; and directs the TWG to evaluate the GCMRC review at its October 2015 meeting, and report its findings to AMWG at its February 2016 meeting.

This motion was approved by consensus.

Action Item: GCMRC will conduct a technical review of the Lees Ferry Recreational Trout Fishery Recommendations and report its findings to the TWG at their October 2015 meeting. The TWG will make a report to the AMWG at its February 2016 meeting.

Havasu Creek Translocation Update (Attachment 7) – Ms. Martha Hahn. Translocations of juvenile Humpback Chub from the Little Colorado River to other Colorado River tributaries within GRCA is one option proposed to attempt to establish a second population in Grand Canyon, as well as to meet NPS mandates for species conservation and contribute towards goals and objectives within the CFMP. Based on the Rich Valdez report in 2000, it was decided to begin translocation in Havasu Creek because it was more promising for the spawning population. The work began in May 2011 and to date, 1650 HBC have been translocated. Ms. Hahn noted the following positive indicators based on their monitoring:

- The chub have survived.
- Abundance is increasing.
- Translocated chub have been caught in the mainstem, sometimes over multiple years.
- Annual growth is as good or better as that documented in the Little Colorado River.
- Ripe males and females have been captured.
- 2013-2015 young-of-year and untagged two-year-olds have been captured, indicating they are reproducing in Havasu Creek.

Basin Fund and Revenue Overview (Attachment 8) – Ms. Lynn Jeka. Congress created the Colorado River Storage Project (CRSP) through the Colorado Storage Project Act of 1956. The Act authorized the Secretary of the Interior to construct, operate, and maintain the CRSP and participating projects. In the same Act, Congress authorized a separate fund in the Treasury of the United States to be known as the Upper Colorado River Basin Fund. Fifty-nine years later, the Western Area Power Administration’s CRSP Management Center works collaboratively in partnership with the Bureau of Reclamation to generate and market power from the CRSP Project, Collbran, Seedskadee, Dolores and Rio Grande projects (marketed together as the Salt Lake City Area Integrated Projects) and deliver it to firm electric service customers. With a total investment of \$2.375 billion, 11 power plants, 24 generating units, and 2,325 miles of transmission lines, CRSP and Reclamation provide clean, reliable, wholesale electric service to 130 wholesale customers in the west including 53 Native American tribes. The service territory spans Arizona, New Mexico, Nevada, Colorado, Utah, Texas and Wyoming. Responsibilities between Reclamation and Western are as follows:

Reclamation	Western
Owns, operates, and maintains dams and power plants	Owns and operates the transmission system infrastructure
Water management (reservoir management, irrigation, flood control, and water compact deliveries)	Supports grid reliability (regulation and reserve capacity)
Generates power which is delivered to Western at the plant transformers	Western markets, schedules and delivers energy to long term firm electric service customers
	Rate setting and repayment of project debt to U.S. Treasury from revenue
Joint responsibility for support for environmental activities related to CRSP and participating projects	

The following responses were captured from questions raised:

- *The Colorado River Salinity Control Forum deals with salt concentrations throughout the basin. It's funded 75% from appropriations and 25% from power revenues, with 15% from power revenues paid by the upper basin and the other 85% paid by the lower basin.*
- *The prevailing rate charged to customers is comparable to what is purchased. The rates depend on the market and vary whether buying off peak at night or on peak during the day. Current power prices are between \$25-35 a megawatt hour. Contracts are negotiated with the customers and they receive a contract rate of delivery. It's then estimated how much will be needed from generation and that's called sustainable hydropower. If you have a 100 megawatt contract and 90 megawatts of that is sustainable through hydropower, then the other 10 megawatts is used to sell the rights on their transmission lines. On our transmission lines they paid for as part of their rate, so we'll go out and buy that additional power for them and put it on the system for their use. That's the flow through. If there is a 100 megawatt contract and the sustainable hydropower is set at 90 but the dam can only deliver 80, WAPA has to firm up to 90. They have the right to ask us to buy on their behalf from being generator like Tri-State Generation, etc., to use that little gap between sustainable hydropower in the contract amount to move their own power across our lines because they paid for it.*
- *A Memorandum of Agreement (MOA) was entered into a number of years ago among the Upper Colorado River Basin states, BOR, CREDA and is used for a variety of operation needs and costs associated with lining ditches or repairing variable speed pumps, basically projects that were unfunded but that were tied directly to the CRSP purposes.*
- *With an 7.48 maf release year, a tremendous strain is put on the basin fund. At \$65 million a year we can't have many 7.48 in a 5-year rate period. Reclamation and WAPA have done an excellent job controlling costs and the current rate has been in place for 7 years to they've been able to maintain a very stable rate for the customers.*
- *John Jordan – From what you shared, it sounds like there must be some restraints or something that block you into always a net buyer of power. It would seem to me that if you're controlling the contract rates, can you explain the good news we were in that seller and buyer which would then result in benefits to your customers. Are you constrained by regulations or rules that say that you have to sell a certain amount of power, whether that blocks you into most of the time to buy additional power to have enough power available to customers?*
- *Congress sets the power rate to ensure that farmers and irrigators have the water that they need to raise their crops at a price that makes the food affordable for the rest of the country. There's been a very clear risk shift over time about how the customers obtain what power is needed to have that obligation to serve.*

That obligation to serve is really pretty good because the non-profit entities are their recipients by law. If people move into their service area, they have to have those systems that are in place to provide that power.

Lake Mead Issues and Lower Basin Shortage Preparedness – Mr. Buschatzke, Ms. Trujillo, and Ms. Harkins. To prepare for possible shortages in the Lower Basin and to guide Colorado River operations during low reservoir conditions, water delivery operations are described and contemplated in the 2007 Interim Guidelines. A shortage condition is determined when insufficient mainstream water is available to satisfy 7.5 million acre-feet of annual consumptive use in the Lower Basin states. A key factor for determining annual operations is the amount of storage (as measured by water elevation) in Lake Mead. Three factors that significantly affect the water levels in lakes Powell and Mead are: (1) the hydrology of the Colorado River, such as the amount of precipitation that falls within the basin and the resulting runoff that flows into the river and reaches the reservoirs, (2) Colorado River water use, such as the amount of water needed for agricultural and urban purposes in both the Upper and Lower Basins, and (3) Colorado River reservoir operations. The Colorado River Basin is now likely experiencing the lowest 16-year period in the observed historical record dating back over 100 years. Lake Mead annual outflow is about 1.2 maf more than the annual inflow. The result is an imbalance that causes Lake Mead to drop by 12 feet or more every year when there is a “normal” release of 8.23 maf from Lake Powell. Lake Mead elevation has fallen approximately 126 feet from 2000 to the end of 2014, bringing it closer to elevations critical to a shortage determination.

- Arizona – Shortage Preparedness (**Attachment 9a**) – Mr. Buschatzke. The Colorado River supplies approximately 40% of Arizona’s water needs. The remaining needs are met through use of other surface water supplies. If a shortage is declared on the Colorado River, Arizona bears the brunt of the reductions, with the Central Arizona Project taking most of the reductions. Arizona has been proactively building resilience and implementing innovative water management strategies to secure and manage its other water supplies. Arizona’s Groundwater Management Act is the most far-reaching groundwater management regulatory framework in the United States. Arizona’s engagement in collaborative long-term planning and comprehensive strategies has allowed water providers and private entities to store water supplies underground to reduce their vulnerability to shortage. Collectively, Arizona has stored over 8 million acre-feet (more than 2.5 trillion gallons) of water. The Arizona Department of Water Resources, along with other stakeholders such as the CAP, continue to work with the other Colorado River Basin States, Mexico and federal partners to implement proactive measures that will reduce the near-term risks of drought as well as address the long-term imbalances between supply and demands on the Colorado River system.
- Lake Mead and Lower Basin Shortage Preparedness (**Attachment 9b**) – Ms. Jayne Harkins. Lake Mead is currently at 37% of capacity and lake elevation is projected to decrease this summer to levels not observed since Lake Mead was filled. Reclamation modeling predicts continued decreases in lake elevations and a near equal probability of a Lower Basin shortage in 2017. If lake surface elevations continue to decline, there are risks of losing the ability to access and pump water. Design and construction of a new intake and pumping station are underway and when completed will have the ability to pump water at a depth of 860 feet. Lower water levels in Lake Mead have reduced the amount of potential energy generated at Hoover Dam. When lake elevations are high, more energy is produced from the weight (or head) of the water pushing through the turbines. Decreased power production often causes customers to purchase power on the open market at higher costs. At lower elevations, turbines run less efficiently and can cause operational issues. Reclamation believes that power can be generated to an elevation of 950 feet with less efficiency, but there is some uncertainty of operations at these low elevations. The physical and chemical properties of water released from Glen Canyon Dam can influence Lake Mead. Temperature and salinity between the river and lake can dictate the depth at which the water inserts itself into the lake. Water inserted at the top layer can reinforce stratification and lead to less oxygenated conditions. Increased sediment delivery that reaches the water intakes can impact water treatment costs.
- California Water Issues (**Attachment 9c**) – Ms. Trujillo. California has been experiencing unprecedented, multi-year drought with record-low snowpack in the northern California Sierra-Nevada Mountains, exacerbated by record-high temperatures. As a result of well below-average precipitation, the water supply for urban and agricultural contracts from the California State Water Project and federal Central Valley Project has been severely diminished over the past three years. Over 500,000 acres of irrigated land has been fallowed within California during each of the past three years due to lack of water. During these exceptionally dry years, the Colorado River provides a very important component of the water supply for over 19 million people in southern California in addition to providing water to irrigate over 800,000 acres of farmland. Their agency was created 75 years ago. Since 2003, California has reduced its average use of

Colorado River water by 800,000 acre-feet per year. Over \$2 billion has been invested in conservation efforts by California agencies. There are strong incentives for California to continue its efforts to coordinate with the other Basin States, federal agencies, and partners in Mexico through implementation of Minute 319 and potential successor agreements in efforts to bolster the strength of the Colorado River System, prevent Lower Basin shortages, improve water use efficiencies, and increase the amount of water stored in Lake Mead.

Tribal Liaison Report (Attachment 10) – Dr. Rinkevich and Ms. Jackson-Kelly reported on their recent activities:

- They had a very productive meeting at the Pueblo of Zuni two weeks ago regarding consultation on the LTEMP EIS process. Reclamation agreed to share copies of biological assessments and biological opinions with the Zuni and other tribes. The Zuni understand the AMP but do not agree with everything the DOI agencies do. They feel the DOI agencies are beginning to understand that the taking of life in the Grand Canyon is unacceptable and are glad they've stepped back from those actions.
- Sarah and Loretta attended the 29th Annual Southwest Native American Fish and Wildlife Society Conference in August and were able to network with others of similar interests and programs.
- The Tribally Led Integrated Stakeholder River Trip was held July 17-27, 2015 for the purpose of exchanging western science values and Native American perspectives. Participants conducted outreach and education for the Grand Canyon Youth Program, observed backwater fish seining and collecting fish data, and gained greater understanding of tribal concerns and values.
- Ms. Jackson-Kelly thanked those who participated in the river trip and continued describing some of the activities. At River Mile 31 in South Canyon Charley Bullets conducted an interpretation of the petroglyph writings. The Paiute acknowledge that rock writings are like a family book or genealogy.
- River Trip participants offered the following reflections on their experience:
 - *It was a remarkable experience. Learning the details of the tribal cultural resources was extremely valuable. All the tribal representatives took a great deal of time and energy to explain things. It was a unique experience in terms of getting those explanations from them. We had a virtual college professor assembly there (Larry Stevens, Sam Jansen, Scott VanderKooi, Brian Healy, Martha Hahn) and they're all committed to the canyon and are experts in their fields. Sam is a great guitar player. We learned a tremendous amount. (McClow)*
 - *It was a time to make new friendships and nurture old ones. I gained a real feeling for the spirituality of the place. Charley Bullets was a great speaker and he sang a lot of traditional songs. They taught us a couple of games. The wildlife was wonderful. Thanks to Loretta and Sarah for herding these cats in and out of the canyon safely. (Spangle)*
 - *I've been on the river four times but the depth and scope of what was there became more apparent to me. Participating with this group and others provided a way to understand the unique and special quality in this place. We spend time in these meetings talking about quantitative things – money, science, and trying to measure all that – but I think the element of the cultural and spiritual values that were reflected on the trip gave a whole different dimension to what's at stake. It's important to honor, respect, and understand that. This group had the opportunity to better understand the need to protect this place. (Nimkin)*
 - *I want to thank Sarah and Loretta for a fantastic opportunity. Everybody stepped up and everyone was present there. I thought it was tremendous. (Jansen)*
 - *In order to experience the full effect of the environment that you're experimenting with, I think a trip is always good. The camaraderie – talking and laughing, the cold, and all the elements of the ecosystem – help people experience it on a one-on-one basis. You're in the greatest canyon of them all. One of the highlights of the trip is that you truly don't know the person you're sitting next to at an AMWG meeting until you're sitting on a boat next to them. You truly do not know how much they appreciate who they represent, what they represent, and the knowledge they can share. You get to share the traditional ecological knowledge that the tribes have for the canyon (Bullets)*

GCMRC Science Updates (Attachment 11a) – Mr. Scott VanderKooi.

Rainbow Trout and Humpback Chub Updates – The Little Colorado River Confluence is the place where most spawning occurs. Many fish move in and out so there's a lot of observation occurring. Humpback Chub results:

- 2015 spring abundance estimate of 150-199 mm fish in the Little Colorado River was 921 (95% CI, 756 to 1,086)
- 2015 spring estimates of adult fish > 200mm in the Little Colorado River was 3,078 (95% CI, 2,597 to 3,559), considerably lower than recent years. Potentially due to early run timing, skipped spawning, or population decline.

- 2015 spawning run timing was similar to 2014. Lower number of detections could be due to skipped spawning or population decline.
- Lower condition factor observed in 3 of last 4 trips monitoring humpback chub in the mainstem Colorado R. near the LCR confluence. This supports the hypothesis of skipping spawning due to less energy available to devote to reproduction.

Rainbow Trout Natal Origins Study Sampling Design:

- Considerable declines in abundance in all reaches over the September 14 – January 15 interval. January and April 15 estimates downstream of LCR are below the non-native fish control trigger.

Integrated Tribal/Stakeholder Trip Fish Sampling – A baited hoop net was set at midday on July 20 for approximately 45 minutes at RM 61.5, which resulted in two rainbow trout with one recapture (originally tagged on 4/16/2015 at RM 63.4); and four humpback chub and three recaptures (original tagging dates of 9/21/2002 - 12.9 years at large; 10/2/2001 - 13.8 years at large; and 5/21/1989 - 26.2 years at large)

Gold King Mine Release – On August 5, there was an accidental release of approximately 3 million gallons of acidic, metal-rich mine wastewater into Cement Creek. By August 6, the plume had reached the Animas River. Reclamation responded by doubling the flow out of Navajo Dam on the San Juan River. By August 19, the traces of metal (aluminum and iron) in the San Juan River that had peaked 12-24 hours after plume was detected had returned to background levels. According to the Departments of Environmental Quality for the States of Colorado, Utah, New Mexico, and Arizona, the observable increase in metals from the mine posed minimal threat to drinking water, recreation, fish and wildlife, and agriculture even at peak concentrations. The metals deposited in Lake Powell will likely be covered by San Juan River sediment. A high sediment load and long reservoir residence time (approximately 7 years) should reduce downstream effects. The Environmental Protection Agency has come under a lot of criticism and has posted an incredible amount of information on their website. The states have also updated their websites.

- *Mr. Cantrell reported that AZGFD will continue to take baseline information and the other states are doing 1-month, 6-month, and 1-year monitoring to see if any of the metals show up or there are any declines in invertebrate populations.*
- *Mr. McClow said there are hundreds of mines like the Gold King Mine in and around Durango on the Animas River and everytime there is a heavy rainstorm, the Animas River gets a little bit yellow. Local agencies felt this spill wasn't as remarkable and people in Durango were more alarmed with the press coverage.*
- *Mr. Millis said Utah's Attorney General visited the site and that by the time the spill got into Utah, there wasn't that much concern.*
- *Ms. Dixon stated the New Mexico's municipalities get water from the Animas River and there were immediate concerns about people losing their agriculture and not being able to irrigate in time to keep it viable. The spill provided a good opportunity to improve communications with the EPA and other state representatives.*

Reclamation increased releases from Navajo Dam by 4,000 acre-feet and Mr. Rhees said the primary interest was the San Juan Recovery Program endangered species. The second week after the spill the EPA reached out to DOI for assistance. Reclamation offered to do a forensic review of what happened onsite and assisted with water quality and water sampling. Reclamation had done superfund work in the late 1980s and some expertise was provided from the Denver Technical Service. Reclamation will prepare a report within 60 days.

Green Sunfish in Glen Canyon – On July 6, Arizona Game & Fish captured 43 green sunfish at -12 mile in Glen Canyon. Agencies discussed the issue on August 4 and the following day, NPS gave approval to Reclamation and other agencies to conduct up to three removal efforts. The tribes were notified on August 7. The first removal effort occurred August 12-14 and resulted in 954 green sunfish captured. They will be preserved and delivered to the Pueblo of Zuni eagle aviary. The second removal trip is set for August 27-29. One troubling aspect of the removal effort was that over the first three passes of electrofishing by boat, the numbers caught increased each time. Usually, if the population is being significantly removed, the numbers will decrease each pass.

Sandbar and Sediment Update (Attachment 11b) – Dr. Paul Grams. During low flows, sand supplied by tributaries (like the Paria River) accumulates on bed and in eddies. High flows redistribute sand to build sandbars (beaches).

- Each of the HFEs in the past three years has resulted in sandbar deposition. They continue to erode in following six to twelve months. Ten months after HFEs, the bars are still larger than before the 2012-2014 period.

- Sand mass balance is computed for six reaches between Lees Ferry and Lake Mead. The first three years of the flood protocol has consisted of large sand inputs and relatively low dam releases. Floods built sandbars AND sand accumulated in the channel. Following high flows, sand erodes from beaches. Inputs between July 1 and August 25, 2015 are insufficient to trigger a fall 2015 HFE. The Paria would need 100 kilotons to plan for a fall HFE.

Long-Term Experimental and Management Plan EIS (Attachment 12) – Mr. Glen Knowles. The Cooperating Agency Draft EIS, Volume I was released on June 29, 2015. The Appendices, Volume 2, was released on July 31, 2015. A Public Draft EIS will be completed by the end of calendar year 2015.
Next Steps:

- September 30, 2015 - Cooperating Agency comment deadline
- October 2015 - Biological Assessment
- December 2015 – Public Draft EIS
- January/February 2015 – Public Meetings
- March 2016 – Biological Opinion
- May 2016 – Final EIS and Record of Decision

Mr. Jordan asked how the public reviews could be done with incomplete modeling results. Mr. Knowles said the analysis was completed and peer review of the models were done consecutively. Currently there is a process in place for peer review of both the methods and analysis of the models.

Mr. McClow requested that discussion of the Draft EIS be added to the February 2016 AMWG meeting agenda. Ms. Caramanian added that the AMWG could also consider making a recommendation to the Secretary on a preferred alternative.

Public comments:

Lynn Hamilton (Grand Canyon River Guides) – I enjoyed hearing Sam's talk about the river trip. It breathes the life of Grand Canyon back into the room. Even seeing pictures of Grand Canyon is so valuable. I'm thrilled you had an AMWG river trip and that it was such a great success. You learned a lot, came together as a group, and appreciated the resources. It occurs to me that 2016 will be the centennial of the NPS and it will be the 20th year of the ROD. If you've been on the river, picture in your mind a place that resonated for you or you learned something that opened your eyes as never before. We're here to protect those values.

Farewell to Members: Ms. Gimbel thanked Lori for her assistance with the program and wished her well in Denver. Steve Spangle presented Lori with a buck knife (for use on future river trips since she didn't have one). Reclamation gave her a Serena Supplee print. Brent Rhees expressed appreciation for Lori's help on the LTEMP EIS and from Dave Lytle for all the work she did on behalf of the USGS. Mr. Uberuaga commended Lori for her leadership. Ms. Caramanian said working on GCDAMP issues has been the best six years of her life. Next year she'll recognize 20 years as a federal employee. She has enjoyed working with Jennifer and Anne and learned so much about Western water law. She said the Colorado River is about relationships, building trust, and finding common ground with people who have different missions. The canyon is a place where you restore your soul.

Mr. Uberuaga thanked Martha for her years of federal service and contributions to the National Park Service. She will be honored by NPS staff back at the office. Martha said she's gained inspiration to be resourceful and has applied that to her new "net zero" home as she plans to do her part to conserve resources.

Wrap-Up and Adjourn: Ms. Jennifer Gimbel thanked everyone for their attentiveness and participation.

Adjourned: 2:40 p.m.

Next AMWG Meeting:

(Tu-W) February 24-25, 2016
Embassy Suites Phoenix-Tempe
4400 S. Rural Road

Tempe AZ 85282

Respectfully submitted,

Linda Whetton
Bureau of Reclamation
Upper Colorado Region

Summary of Actions Taken

The following actions were approved by consensus during this meeting, with the exception of the motion to honor Dr. Garrett, which, at the request of the Secretary's Designee, was approved unanimously:

- AMWG approves the minutes of the May 28, 2015 meeting as written.
- AMWG agrees to consider a motion honoring Dave Garrett.
- AMWG recommends to the Secretary of the Interior for her approval the Final FY 2015-17 Triennial Budget and Work Plan from the Bureau of Reclamation and the Grand Canyon Monitoring and Research Center as recommended by AMWG August 28, 2014, for implementation in FY 2016, with a FY 2015 corrected CPI of 1.7% and corrections to the GCMRC overhead rates. Passed by consensus.
- AMWG recommends to the Secretary of the Interior for her approval the WY2016 Hydrograph for Glen Canyon Dam.
 - Annual Release Volumes will be determined by the 2007 Interim Guidelines and shall be reviewed and adopted through the normal annual operating plan process (in consultation with the Basin States as appropriate).
 - Monthly Release Volumes are anticipated to shift depending upon: (1) the projected Annual Release Volume, (2) power plant capacity, and (3) the magnitude of a potential High Flow Experiment.
 - Monthly Release Volumes may vary within the targets identified below. Any remaining monthly operational flexibility will be used for existing power production operations under the Modified Low Fluctuating Flow (MLFF) alternative selected by the 1996 ROD and contained in the 1995 FEIS and in compliance with all applicable NEPA compliance documents (HFE EA, NNFC EA, 2007 Interim Guidelines). Monthly release volumes proposed in this hydrograph will not affect operating tier determinations for Lakes Powell and Mead under the 2007 Interim Guidelines.
 - Release objective for June is:
 - 600 to 650 kaf for annual releases below 9.0 maf
 - 800 kaf for annual releases of 9.0 maf to less than 9.5 maf
 - 900 kaf for annual releases of 9.5 maf to less than 10 maf
 - Greater than 900 kaf for annual releases 10 maf and greater
 - Release objective for August is:
 - 800 kaf for annual release below 9.0 maf
 - 900 kaf for annual releases of 9.0 maf to less than 10 maf
 - Greater than 900 kaf for annual releases 10 maf and greater
 - Release objective for September is:
 - 600 kaf for annual releases below 9.0 maf
 - 700 kaf for annual releases of 9.0 maf to less than 10.0 maf
 - 800 kaf or greater for annual releases of 10.0 maf or greater; up to power plant capacity for high equalization releases
 - Monthly Release Volumes will generally strive to maintain 600 kaf levels in the shoulder months (spring and fall) and 800 kaf in the December/January and July/August timeframe.

Additionally, the Bureau of Reclamation will continue to apply best professional judgment in conducting actual operations and in response to changing conditions throughout the water year. Such efforts will continue to be undertaken in coordination with the DOI/DOE agencies and in consultation with the Basin States as appropriate, to consider changing conditions and adjust projected operations in a manner consistent with the objectives of these parameters as stated above and pursuant to the Law of the River.

- The AMWG will consider a motion on Fish Management Recommendations.
- The Adaptive Management Work Group formally recognizes the longstanding and significant contributions of Dr. L. David Garrett to the Glen Canyon Dam Adaptive Management Program (GCDAMP) in many different capacities, including first chief of the Grand Canyon Monitoring and Research Center (1996-1999) and the Executive Coordinator of the Science Advisors (2001-2013). Dr. Garrett has significantly helped the GCDAMP to address the many complex science and operational issues associated with Glen Canyon Dam and the Grand Canyon National Park and environs. The AMWG wishes to express our sincere thanks to Dr. Garrett and our warmest wishes for his happy and successful future.
- The AMWG requests the Secretary's Designee direct GCMRC to conduct a technical review of the Lees Ferry Recreational Trout Fishery Management Recommendations and report its findings to the TWG; and directs the TWG to evaluate the GCMRC review at its October 2015 meeting, and report its findings to AMWG at its February 2016 meeting.

Key to Glen Canyon Dam Adaptive Management Program Acronyms

ADWR – Arizona Dept. of Water Resources	HMF – Habitat Maintenance Flow
AF – Acre Feet	HPP – Historic Preservation Plan
AGFD – Arizona Game and Fish Department	IG – Interim Guidelines
AIF – Agenda Information Form	INs – Information Needs
AMP – Adaptive Management Program	KA – Knowledge Assessment (workshop)
AMWG – Adaptive Management Work Group	KAS – Kanab Ambersnail (endangered native snail)
AOP – Annual Operating Plan	LCR – Little Colorado River
ASMR – Age-Structure Mark Recapture	LCRMCP – Lower Colorado River Multi-Species Conservation Program
BA – Biological Assessment	LTEMP – Long-Term Experimental and Management Plan
BAHG – Budget Ad Hoc Group	LTEP – Long Term Experimental Plan
BCOM – Biological Conservation Measure	MAF – Million Acre Feet
BE – Biological Evaluation	MA – Management Action
BHBF – Beach/Habitat-Building Flow	MATA – Multi-Attribute Trade-Off Analysis
BHMF – Beach/Habitat Maintenance Flow	MLFF – Modified Low Fluctuating Flow
BIA – Bureau of Indian Affairs	MO – Management Objective
BO – Biological Opinion	MRP – Monitoring and Research Plan
BOR – Bureau of Reclamation	NAU – Northern Arizona University (Flagstaff, AZ)
BWP – Budget and Work Plan	NEPA – National Environmental Policy Act
CAHG – Charter Ad Hoc Group	NHPA – National Historic Preservation Act
CAP – Central Arizona Project	NNFC – Non-native Fish Control
GCT – Grand Canyon Trust	NOI – Notice of Intent
CESU – Cooperative Ecosystems Studies Unit	NPCA – National Parks Conservation Association
cfs – cubic feet per second	NPS – National Park Service
CFMP – Comprehensive Fisheries Management Plan	NRC – National Research Council
CMINS – Core Monitoring Information Needs	O&M – Operations & Maintenance (USBR Funding)
CMP – Core Monitoring Plan	PA – Programmatic Agreement
CPI – Consumer Price Index	PBR – Paria to Badger Creek Reach
CRBC – Colorado River Board of California	PEP – Protocol Evaluation Panel
CRAHG – Cultural Resources Ad Hoc Group	POAHG – Public Outreach Ad Hoc Group
CRCN – Colorado River Commission of Nevada	Powerplant Capacity = 31,000 cfs
CRE – Colorado River Ecosystem	R&D – Research and Development
CREDA – Colorado River Energy Distributors Assn.	RBT – Rainbow Trout
CRSP – Colorado River Storage Project	RFP – Request for Proposal
CWCB – Colorado Water Conservation Board	RINs – Research Information Needs
DAHG – Desired Future Conditions Ad Hoc Group	ROD Flows – Record of Decision Flows
DASA – Data Acquisition, Storage, and Analysis	RPA – Reasonable and Prudent Alternative
DBMS – Data Base Management System	SA – Science Advisors
DOE – Department of Energy	Secretary – Secretary of the Interior
DOI – Department of the Interior	SCORE – State of the Colorado River Ecosystem
DOIFF – Department of the Interior Federal Family	SHPO – State Historic Preservation Office
EA – Environmental Assessment	SOW – Statement of Work
EIS – Environmental Impact Statement	SPAHG – Strategic Plan Ad Hoc Group
ESA – Endangered Species Act	SPG – Science Planning Group
FACA – Federal Advisory Committee Act	SSQs – Strategic Science Questions
FEIS – Final Environmental Impact Statement	SWCA – Steven W. Carothers Associates
FRN – Federal Register Notice	TCD – Temperature Control Device
FWS – United States Fish & Wildlife Service	TCP – Traditional Cultural Property
FY – Fiscal Year (October 1 – September 30)	TEK – Traditional Ecological Knowledge
GCD – Glen Canyon Dam	TES – Threatened and Endangered Species
GCES – Glen Canyon Environmental Studies	TMC – Taxa of Management Concern
GCT – Grand Canyon Trust	TMF – Trout Management Flows
GCMRC – Grand Canyon Monitoring & Research Center	TWG – Technical Work Group
GCNP – Grand Canyon National Park	UCRC – Upper Colorado River Commission
GCNRA – Glen Canyon Nat'l Recreation Area	UDWR – Utah Division of Water Resources
GCPA – Grand Canyon Protection Act	USBR – United States Bureau of Reclamation
GLCA – Glen Canyon Nat'l Recreation Area	USFWS – United States Fish & Wildlife Service
GRCA – Grand Canyon National Park	USGS – United States Geological Survey
GCRG – Grand Canyon River Guides	WAPA – Western Area Power Administration
GCWC – Grand Canyon Wildlands Council	WY – Water Year
HBC – Humpback Chub (endangered native fish)	
HFE – High Flow Experiment	

(Updated: 11/28/2014)

**GLEN CANYON DAM ADAPTIVE MANAGEMENT WORK GROUP
ACTION ITEM TRACKING REPORT**

Updated: September 1, 2015

Note: Items marked "Closed" will be removed from the next iteration of the report.

ITEM NO. / DATE	ACTION ITEM	ASSIGNED TO / DUE DATE	STATUS
Item 2006.Dec.02	<p>Secretary's Designee Limbaugh directed the Roles AHG to address Dr. Garrett's recommendations:</p> <ol style="list-style-type: none"> 1. Develop improved methods and/or procedures for managers to establish and articulate priorities for specific 3-5 year time intervals. 2. Develop improved methods for managers and scientists to permit effective tradeoff assessments. 3. Develop more effective scientist/managers collaborative working procedures. 4. Implement methods to monitor and improve the adaptive management process. 5. Implement methods to define future conditions for the CRE resources of concern. <p>2/19/14 Update: This will remain open as some items may evolve as the LTEMP EIS nears completion and have a better idea of where the science priorities are going as a result of the new long-term plan.</p>	Roles Ad Hoc Group	Open
Item 2012.Aug.01	<p>Glen Knowles will work with Anne Castle to compare the 2004 AMWG/TWG priorities and the Secretary's Designee's priorities as established in 2011. The Secretary's Designee will report to AMWG on the results of this comparison.</p> <p>2/19/14 Update: The science plan for the LTEMP EIS will establish the science priorities looking forward and is an independent process from the AMWG. Upon completion of the LTEMP, the AMWG would reconsider science priorities to integrate with the LTEMP and a possible referral to the TWG.</p>	G. Knowles A. Castle	Open

ITEM No. / DATE	ACTION ITEM	ASSIGNED TO / DUE DATE	STATUS
Item 2013.Feb.01	<p>The Charter Ad Hoc Group (CAHG) will assess the feasibility of adding Havasupai Tribe to AMWG, per Charter section 12 and considering operation costs, under Section 7. CAHG will draft a revised Charter that reflects its findings, if necessary.</p> <p><u>5/8/13</u>: Reclamation staff made contact with the tribe and will hold additional meetings to see if they want to join.</p> <p><u>2/19/14</u>: The Havasupai Tribe has been contacted and BOR is awaiting a response from them.</p> <p><u>8/28/14</u>: Loretta Jackson-Kelly, AMP Federal Tribal Liaison, requested AMWG keep this action item open so she may meet with the Havasupai Tribe to discuss AMWG membership. She will follow up with Reclamation staff on previous outreach efforts before meeting with the Havasupai.</p> <p><u>8/27/15</u>: Per Glen Knowles, the Havasupai are interested in the work of the AMWG and receive regular updates. They are not interested in being a member of the group at this time.</p>	<p>CAHG</p> <p>And</p> <p>Loretta Jackson-Kelly, AMP Federal Liaison</p>	Closed
Item 2015.Feb.25	<p>AMWG members were requested to send their technical questions on hydropower modeling to Rob Billerbeck and Glen Knowles in preparation for the WebEx/conference call to be held in two weeks with the hydropower experts on the LTEMP EIS.</p>	AMWG	Closed

Budget

Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
February 24-25, 2016

Agenda Item

Hopi Tribe's Monitoring Program

Action Requested

Information item only; we will answer questions but no action is requested.

Presenter

Leigh Kuwanwisiwma, Director, Hopi Cultural Preservation Office
Mike Yeatts, Archaeologist, Hopi Cultural Preservation Office

Previous Action Taken

N/A

Relevant Science

N/A

Summary of Presentation and Background Information

The Hopi Tribe has been involved with the Adaptive Management Program since its inception, and prior to that was a cooperating agency on the EIS for the Operation of Glen Canyon Dam. In 2003, the Hopi Tribe began developing a Long-term Monitoring Program to assess the health of culturally important resources along the Colorado River corridor from a traditional Hopi perspective; this program was approved by the AMP in 2007.

Our presentation will look at the cultural philosophy underlying the Hopi Long-term Monitoring Program, the culturally significant resources that are part of the program, and what has been learned to date.

TWG Chair Report

Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
February 24-25, 2016

Agenda Item

Technical Work Group Report

Action Requested

Motion requested. (The following motion is recommended by the Technical Work Group (TWG). However, no motion is officially made unless and until an Adaptive Management Work Group (AMWG) member makes the motion in accordance with the AMWG Operating Procedures.)

The AMWG accepts the December 9, 2015, Grand Canyon Monitoring and Research Center (GCMRC) Technical Memo (Memo) of the Lees Ferry Trout Fishery Management Recommendations (Recommendations) subject to the following:

- 1. Any actions resulting from the Recommendations must be fully consistent with the “Law of the River” and Department of the Interior (DOI) policy considerations.**
- 2. Recommendations that fall under the purview of water and natural resource management agencies such as Bureau of Reclamation, National Park Service, United States Fish and Wildlife Service, Arizona Game and Fish Department, and AMWG Tribes will require additional evaluation with these management agencies for further consideration.**
- 3. Recommendations that address dam operations are expected to be considered and evaluated in light of the ongoing Long-Term Experimental and Management Plan (LTEMP) Environmental Impact Statement (EIS).**

In addition, the AMWG directs the TWG to consider these Recommendations and the Memo as future work plans are developed.

(Also, **please see the Appendix** for a proposed change to this motion that will be presented at the AMWG meeting.)

Presenters

Vineetha Kartha, Chair, Technical Work Group (AMWG alternate from Arizona)
Bill Stewart, Chair, Trout Ad Hoc Group (TWG member from Arizona Game & Fish Department)
Larry Stevens, AMWG and TWG member from Grand Canyon Wildlands Council

Previous Action Taken

Motion Passed by AMWG on August 27, 2015:

The AMWG requests the Secretary's Designee direct GCMRC to conduct a technical review of the Lees Ferry Recreational Trout Fishery Management Recommendations and report its

findings to the TWG; and directs the TWG to evaluate the GCMRC review at their October 2015 meeting and report its findings to AMWG at its February 2016 meeting.

Relevant Science

N/A

Summary of Presentation and Background Information

2015 Annual Reporting Meeting

The 2015 Annual Reporting (AR) meeting was held on January 26-27, 2016. The AR meeting outlines progress, accomplishments, and information gained on projects included in GCMRC's Work Plan for the Glen Canyon Dam Adaptive Management Program (GCDAMP). The AR meeting provides a comprehensive review of approaches relative to adaptive management practices and a knowledge assessment of resources, identifies risk of treatment or potential benefit, and ascertains policy constraints. By nature, AR meetings are an integral part of the adaptive management cycle, allowing time to consider progress and determine if course changes need to be considered. The intent is to evaluate progress and to potentially develop recommendations for changes to the projects. Results of the AR meeting will be discussed further by the TWG at its April meeting, where the TWG will begin to consider potential changes to the FY17 workplan.

Evaluation of the GCMRC Technical Review of the Lees Ferry Recreational Trout Fishery Management Recommendations

At its August 2015 meeting, AMWG passed the following motion by consensus: "The AMWG requests the Secretary's Designee direct GCMRC to conduct a technical review of the Lees Ferry Recreational Trout Fishery Management Recommendations and report its findings to the TWG; and directs the TWG to evaluate the GCMRC review at their October 2015 meeting and report its findings to AMWG at its February 2016 meeting."

At its October 2015 meeting, the TWG considered the GCMRC technical review of the Lees Ferry Recreational Trout Fishery Management Recommendations (Recommendations). Discussion at the TWG meeting identified the following issues:

- Some of the Recommendations addressed dam operations. TWG members pointed out that dam operations were being addressed by the ongoing Long Term Experimental and Management Plan Environmental Impact Statement.
- Some of the Recommendations addressed policy issues and management considerations that were outside of the purview of GCMRC.
- GCMRC review did not cover all of the Recommendations and needed further clarification.

To meet the AMWG charge, the TWG formed the Trout Ad Hoc Group (TAHG) with the following charge: "The TAHG will evaluate the GCMRC technical review of the Lees Ferry Recreational Trout Fishery Management Recommendations (Recommendations) per the AMWG motion on 8/27/2015, and make a recommendation to the TWG at our January 2016 meeting. The TWG will consider the recommendation and make findings to the AMWG at its February 2016 meeting."

In a December 9, 2015 memo to the TWG chair, GCMRC submitted a final review in response to comments and suggestions received earlier from the TWG regarding points of clarifications and topics that were not included in their initial review. This review was limited to scientific and technical matters, and for recommendations where no scientific or technical information was presented, GCMRC refrained from commenting. As the science arm of the GCDAMP, GCMRC remains neutral on matters of policy and management issues.

The TAHG evaluated this final review of the Recommendations per the TWG charge and submitted to TWG the following conclusions and recommendation:

1. The TAHG review concluded that GCMRC review is generally comprehensive although it could be expanded in some areas.
2. Additional discussion/clarification is needed by the TWG and GCMRC on the scientific basis of the minimum flow recommendation and the need for stocking in the event of a catastrophic failure of the Lees Ferry trout fishery.
3. The TWG should identify outstanding research questions that should be addressed to better inform the implementation of the Lees Ferry Recreational Trout Fishery Management Recommendations.

TAHG Recommendation

The TAHG forwarded the following recommendation to the TWG:

The TAHG recommends that the TWG recommend that the AMWG accept the GCMRC technical review of the Lees Ferry Trout Fishery Management Recommendations based on the TAHG evaluating the GCMRC technical review of the Recommendations and finding the review to be comprehensive and the review to be supportive, neutral, or noncommittal on the individual recommendations with two exceptions. One exception being the Minimum Flow recommendation with agreement that research should continue to evaluate the effects of lower flows and to develop scientifically based minimum flows. The other exception being Stocking In the Event of a Catastrophic Failure and the impact on the dependent economic community be included in the determination for stocking and with the understanding that stocking is substantially determined by the provisions of the Park Service Comprehensive Fishery Management Plan and the Arizona Game and Fish Department's Fisheries Management Plan Colorado River – Lees Ferry (2015-2025).

In addition, the TWG requests that the AMWG, with the acceptance of the Lees Ferry Recommendations, instruct the TWG to consider the requirements for implementation of the Recommendations including additional research that should be included in the work plan.

TWG Motion

At its meeting on January 28, 2015, the TWG considered the TAHG recommendation and passed the following motion by consensus:

The TWG has reviewed the December 9, 2015, GCMRC Technical Memo (Memo) of the Lees Ferry Trout Fishery Management Recommendations (Recommendations) and finds it to be comprehensive. The TWG recommends that the AMWG accept the Memo subject to the following:

1. Any actions resulting from the Recommendations must be fully consistent with the “Law of the River” and DOI policy considerations.
2. Recommendations that fall under the purview of water and natural resource management agencies such as Bureau of Reclamation, National Park Service, United States Fish and Wildlife Service, Arizona Game and Fish Department, and AMWG Tribes will require additional evaluation with these management agencies for further consideration.
3. Recommendations that address dam operations are expected to be considered and evaluated in light of the ongoing Long-Term Experimental and Management Plan Environmental Impact Statement.

In addition, the TWG requests that the AMWG direct the TWG to consider these Recommendations and the Memo as future work plans are developed.

Spring HFE Discussion

The 2012 High Flow Experiment (HFE) Protocol is intended to determine whether and how multiple events can be used to better build sandbars and conserve sand over a long period. Under the HFE Protocol, high-flow releases are possible March-April and October-November, and the magnitude ranges from 31,500 cfs to 45,000 cfs. The frequency of HFEs will be determined by tributary sediment inputs, resource conditions, and a decision process carried out by the Department of Interior that consists of planning and budgeting, modeling, and decision and implementation. As a mitigation measure, the HFE protocol required the deferral of Spring HFEs in 2013 and 2014. In October 2015, a decision was made to not implement a 2015 Fall HFE in response to concerns regarding the presence of the green sunfish, even though the sediment trigger had been met for a Fall HFE.

In response to a request from a stakeholder who was concerned that the sediment accounting system in the Protocol would rarely, if ever, allow a Spring HFE, the TWG discussed the sediment accounting period and the process for planning a Spring HFE. Discussion at the TWG meeting identified the following issues:

1. Fall HFEs are unusual in the pre-dam period while HFEs in late March and early April were common.
2. Spring HFEs may be a useful tool for enhancing the aquatic foodbase and stimulating rainbow trout recruitment.
3. Some TWG members would like to see an HFE this spring in order to take advantage of the fall sediment inputs that were unused due to the green sunfish invasion, which required treatment and removal before an HFE could be implemented. However, the current Protocol requires sediment inputs to occur within the Spring HFE window for that decision to be considered, and carryover over sediment from one accounting period to another is not currently permitted as a trigger for an HFE.
4. The HFE protocol has been included, and modified, in the LTEMP EIS Hybrid Alternative. Concerns regarding implementation of Spring HFEs are best addressed through the LTEMP EIS.
5. The TWG felt that more information was needed on the effects of changing the sediment accounting period and on the frequency of HFEs on all the downstream resources (e.g., humpback chub, sediment, hydropower, trout) in order to understand if such changes would be reasonable to consider.

TWG Schedule for Calendar Year 2016

TWG Meeting: April 19-20

TWG Meeting: June 14-15

Potential Fish workshop & Protocol Evaluation Panel: Late Summer 2016

TWG Meeting: October 18-19

Appendix—Proposed Addition to Motion

After reviewing and considering the final motion passed at the recent TWG meeting, recreational fishing representation believes there would be benefit in broadening the task covered in the last sentence of the motion. Therefore, at the AMWG meeting in February, the recreational fishing stakeholders will present the follow language as either a separate motion or as an amendment to the motion on page 1 of this Agenda Item Form:

The AMWG directs the TWG to consider the Lees Ferry Trout Management Recommendations and the GCMRC Technical Memo when it reviews the GCDAMP Triennial Work Plan and Budget for FY 2017 and makes a recommendation to AMWG in June, and to report the results of that review with any recommended changes to the FY 2017 budget and work plan at the August, 2016, AMWG meeting.



United States Department of the Interior

U.S. GEOLOGICAL SURVEY

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Memorandum

To: Vineetha Kartha, GCDAMP Technical Work Group, Chair

From: Scott VanderKooi, USGS Grand Canyon Monitoring and Research Center, Chief

CC: Camille Touton, Department of Interior, Counselor to the Assistant Secretary for Water and Science
Beverly Heffernan, Bureau of Reclamation, Upper Colorado Region Environmental Resources Division Manager

Date: December 9, 2015

Subject: Technical review of the Lees Ferry Recreational Trout Fishery Management Recommendations

The USGS Grand Canyon Monitoring and Research Center (GCMRC) has prepared this memo in response to the following motion that was passed by consensus at the Adaptive Management Work Group (AMWG) meeting held in Phoenix, Arizona on August 26-27, 2015,

The AMWG requests the Secretary's Designee direct GCMRC to conduct a technical review of the Lees Ferry Recreational Trout Fishery Management Recommendations and report its findings to the TWG; and directs the TWG to evaluate the GCMRC review at their October 2015 meeting, and report its findings to AMWG at its February 2016 meeting.

An earlier version of this memo was submitted to DOI and Reclamation on October 19, 2015 and shared with the Technical Work Group (TWG) at its October 20-21, 2015 meeting. This updated and final draft was revised in response to comments and suggestions received from stakeholders and managers regarding points of clarification and topics that were not included in our initial review.

We appreciate the opportunity to review the final draft of the Lees Ferry Recreational Trout Fishery Management Recommendations and wish to thank the authors for engaging GCMRC and

cooperator scientists on multiple occasions during the development of this document. GCMRC and cooperator scientists were also afforded the opportunity to provide in-depth reviews of a draft that was completed and distributed to GCMRC as well as other agencies and organizations in April 2015. The reviews from individual scientists were provided to the authors in May 2015 and also shared in their entirety with the TWG and the Glen Canyon Dam Adaptive Management Program (GCDAMP) in an e-mail sent to the GCDAMP e-mail list by Linda Whetton on June 2, 2015.

We understand and appreciate the challenges of revising reports and manuscripts in the face of multiple and often contradictory reviews and wish to recognize the efforts put forward by the authors to address the comments and concerns of the many reviewers. We appreciate that several of the comments and concerns included in the reviews from GCMRC and cooperator scientists were addressed in this final draft. Our review follows.

In the final draft of the Lees Ferry Recreational Trout Fishery Management Recommendations, we believe the authors have done a good job of synthesizing key science issues in developing many of their management recommendations. However, there are some recommendations or portions of recommendations that have language and logic used to support them that we don't believe are consistent with current scientific understanding. There are also topics where scientific consensus is lacking. We identify areas of concern and discuss topics where there is disagreement in our comments below. Comments from GCMRC are limited to scientific and technical matters, thus for recommendations where no scientific or technical information is presented, we indicate that GCMRC was not able comment. As a science agency, USGS remains neutral on matters of policy and cannot support or oppose management recommendations. Therefore, we indicated which topics we believed fell in the realm of policy and areas where decisions would need to be made by management agencies. As stated above, GCMRC cannot comment on these topics or areas. Comments are organized by recommendation or section in the order they were presented in the final draft.

Aquatic Food Base Enhancement through Experimental Repatriation and "Bug Flows"

There are considerable amounts of data and a consensus among scientists that growth rates of trout in Lees Ferry can be poor and this, in turn, can limit the maximum size these fish can attain, so recommendations to explore options to improve growth by improving the food base make sense. There is not, however, consensus that experimental "bug flows" are likely to succeed. It was observed that past periods of steady flows, the summer and fall of 2000 and Memorial Day low flows for overflights for example, did not result in observations of insects from the orders Ephemeroptera, Plecoptera, or Tricoptera (EPT) following these events. The counter argument is that there was not any sort of organized or sustained efforts monitoring aquatic insects after the

2000 steady flows so any response may have been unobserved and that other periods of low flows may have been too brief or only isolated events, thus not sufficient in duration or frequency to elicit any sort of measurable response. In addition, establishing EPT is not the only reason for conducting experimental “bug flows”. If the hypothesis that high mortality of eggs associated with hydropeaking is a critical factor limiting all aquatic insects, then the proposed flow experiment will benefit midge and blackfly production even in the absence of an EPT response. Given these reasons, GCMRC supports conducting experimental “bug flows” to improve our understanding of the aquatic food base in the Lees Ferry reach and the factors controlling productivity and diversity.

It should also be noted that there is uncertainty as to whether producing a more diverse invertebrate community is the only way to increase trout growth. For example, there are many lakes in British Columbia where large trout are produced in lakes with very small but highly abundant *Daphnia* and midge populations. One can grow larger trout with small bugs if the bug density is high. The authors may also wish to consider a broader range of alternatives than those presented in the document. For example, what about stream fertilization? There are many examples of increased production in small streams, and a few examples in very large systems (Arrow Lakes Kootenay Lake, Kootenai River below Libby Dam).

Any decisions concerning potential translocations of EPT species historically present in Glen Canyon are the responsibility of management agencies. If approved, experimental translocations could help answer questions and allow for the testing of hypotheses related to why EPT species are currently absent from Glen Canyon. We believe that this type of experimental approach would also speed learning.

Dam Operations

No scientific or technical information is presented regarding MLFF. In addition, any decision regarding revision of operations is a policy matter. For both these reasons, GCMRC cannot comment on this recommendation. We also note that revisions to Glen Canyon Dam operations are being evaluated as part of the ongoing Long Term Experimental and Management (LTEMP) Environmental Impact Statement (EIS) process. As mentioned above, we support conducting experimental “bug flows” to improve our understanding of the aquatic food base in the Lees Ferry reach and the factors controlling productivity and diversity.

Minimum Flows

There is little scientific evidence to date to support the recommendation to maintain minimum flows at 8,000 cubic feet/s (cfs) or at any other specific flow. We note that there have been months with 5,000 cfs minimum flows (most recently in fall before the fall steady flow

experiment) coincide with periods of normal growth and recruitment. We agree that research to evaluate effects of lower flows and to develop scientifically based minimum flows should continue. As stated above, revisions to Glen Canyon Dam operations are being evaluated as part of the ongoing LTEMP EIS process.

Fall and Spring High Flow Experiments (HFEs)

It is correct that the 2008 spring HFE enhanced the aquatic food base in Glen Canyon which, in turn, improved recruitment and survival of young rainbow trout. Conducting additional spring HFEs would provide additional information on how the aquatic ecosystem downstream from Glen Canyon Dam responds to these flows. It would also provide scientists an opportunity to quantify the responses of different resources and test a variety of hypotheses including those listed by the authors (i.e., controlling New Zealand mud snails, increasing aeolian sand availability and transport, re-establishing “natural ecological processes”). Spring HFEs are allowed under the HFE protocol currently in place, but require adequate sand inputs from the Paria River during winter and spring months in order to be triggered. Any decision to deviate from the HFE protocol is a policy matter on which GCMRC cannot comment. Potential revisions to the HFE protocol are being evaluated as part of the ongoing LTEMP EIS process.

Experimental Trout Management Flows

The authors state in this section that they believe the best approach to controlling trout densities is through increased invertebrate diversity and avoiding flows that result in excessing spawning and recruitment. It is likely that increasing diversity will provide some degree of stability for the invertebrate community and by extension redistribute the availability of invertebrates across more seasons (currently highest drift availability and growth occurs during the late spring early summer). This could benefit fish populations and also result in greater proportions of larger food items available to fish which, in turn, could improve growth particularly in larger fish. It should also be noted that an increase in food availability for fish could result in more spawning and, if environmental conditions are conducive for age-0 survival in summer and fall, an increase in recruitment.

The suggestion that trout management flows should only occur when the trout population is stable and includes a healthy abundance of all size classes is constraining and may be missing the underlying purpose of these flows. Trout management flows will only have utility when populations are becoming or already are unstable such as when recruitment rates are very high or populations are at unsustainable levels. It should also be noted that trout management flows are very likely to have a negligible effect on mature age classes (approximately 3 to 6 years old), and are designed to only impact young-of-year trout. Since the trout population is composed of approximately six age classes, trout management flows are likely to only affect one of the six

year classes making up the population at any one time. Given this, it seems unlikely that trout management flows pose a risk to the fishery or could result in a catastrophic loss to the fishery. Furthermore, trout management flows can be implemented in a forward titration mode to ensure that the resulting recruitment does not drop below the level required to achieve fishery objectives in the long term. This would be a very conservative approach so we add the caution that it would likely require many iterations, thus a considerable amount of time. We agree that a well thought out experimental design is a critical need prior to the implementation of any trout management flows.

We also note that there is not consensus that trout management flows are the best approach to managing the Lees Ferry trout population. The argument is that there is evidence that simple food webs, that are inherently unstable, are at least partly to blame for the boom-bust cycles in the Lees Ferry trout population. If correct, then efforts to address the root causes (e.g., by increasing invertebrate diversity and food web complexity or avoiding flows that result in overabundance of young trout) would help resolve issues of instability in this population.

Equalization Flows

The 2011 equalization flows did appear to have a strong effect on young rainbow trout survival and subsequent recruitment. The resulting year class led to the highest densities of rainbow trout ever observed in Glen Canyon and appeared to trigger a “boom and bust” cycle in the trout population that Arizona Game and Fish Department (AGFD) and GCMRC have monitored over the last few years. However, any recommendation to deviate from current equalization guidelines is a policy matter that GCMRC cannot comment on.

Fishing Regulations

While we understand the rationale for encouraging anglers to harvest trout in Lees Ferry, this would likely be a numerically ineffective method of reducing trout abundance in this reach of the river. This would be particularly true during periods of high trout abundance similar to what has been seen in recent years. We recognize, however, that revising fishing regulations is a management decision, thus is the responsibility of management agencies.

Marble Canyon Trout Fishery

Our previous comment applies here as well. We understand the rationale for encouraging anglers to harvest trout in Marble Canyon, however, this would likely be a numerically ineffective method of reducing trout abundance in this reach of the river and downstream. This would be particularly true during periods of high trout abundance similar to what has been seen in recent

years. Again, we recognize that revising fishing regulations is a management decision, thus is the responsibility of management agencies.

Riparian Vegetation Restoration

Any decision concerning riparian vegetation restoration in Glen Canyon is the responsibility of the National Park Service. As noted previously, the aquatic food base in Glen Canyon has low diversity and may be insufficient to support larger trout. Introduction of wood could improve productivity by providing habitat and refugia for species that comprise the aquatic food base as well as young trout. Experimental additions of dead tamarisk to the Colorado River in Glen Canyon could be used to test this hypothesis on a local basis. While riparian vegetation can support terrestrial insect abundance, the amount of habitat with shade and cover provided by shoreline vegetation in a river the size of the Colorado in Glen Canyon is proportionally quite small relative to other habitats available to fish. Given this, population level benefits to fish may be small and would be difficult to detect.

Stocking in the Event of a Catastrophic Fishery Failure

There are no criteria used for defining a catastrophic failure in the fishery so it's unclear when stocking would be implemented. Stocking criteria could be based on a number of metrics related to biology or population dynamics including trout abundance, survival, or growth. Angler satisfaction or catch rates could also be used, but it should be noted that these are likely to be more arbitrary and would not be as easy to quantify as measures of population status or trends. The authors might consider adding this topic to their list of Protocol Evaluation Panel (PEP) recommendations.

A notable observation that should be considered with regard to this recommendation is that the Lees Ferry fishery has survived over the last two decades without stocking, and has recovered on its own from two warm-temperature/high density situations (2004-2006, 2012-2014). While we agree with the authors' recommendation that any proposed stocking should not occur until after the causal factors of a failure have been identified and ameliorated, we note that excessive biomass of larger fish resulting from very large recruitment events may be the most likely cause of failures in this fishery. Prematurely adding biomass in these situations would only exacerbate the problem and slow down the natural recovery of the fishery.

We also caution that while stocking may have worked in the past, there is no guarantee that it will work now given differences in fish densities, the types and amount of food available to fish, and potentially other factors. Even under conditions where densities according to anglers are low, there still may be too many fish for the foodbase to support and have desirable growth rates. In this event, it is likely that stocked fish will simply be out-competed by the naturally produced

fish even if they are only present in low numbers. Developing a brood stock is a management decision. However, we believe it is highly uncertain that the timing of a collapse of the fishery could be determined accurately. Furthermore, anticipating a collapse far enough in advance such that stocking could occur more quickly than a natural recovery may not be possible.

As noted in our May 2015 review, we are skeptical of the feasibility of translocating trout from upper Marble Canyon to supplement the population upstream of Lees Ferry. One key issue is that population trends in upper Marble Canyon appear to track very closely with those upstream of Lees Ferry so there may not be many fish to move once trout numbers decline to the degree that translocations are deemed necessary.

Developing a contingency stocking plan and conducting any associated compliance is a management decision, thus is the responsibility of management agencies.

Low Dissolved Oxygen Response Protocol

Dissolved oxygen levels downstream from Glen Canyon Dam are directly influenced by conditions in Lake Powell which are, in turn, affected by a complex combination of factors. Concentrations of dissolved oxygen low enough to stress and even kill rainbow trout have been observed downstream of Glen Canyon Dam. Additional monitoring and reporting of dissolved oxygen levels can occur if approved by stakeholders and managers. Dissolved oxygen levels at the Lees Ferry gage are currently available online at GCMRC's website (http://www.gcmrc.gov/discharge_qw_sediment/station/GCDAMP/09380000). Developing an action plan to reduce or avoid negative effects of low dissolved oxygen is a management decision, thus is the responsibility of management agencies.

Temperature Control Device

Water temperature is a primary driver of biological processes in aquatic ecosystems. Predicted warming of water released from Glen Canyon Dam would increase the likelihood of invasive species becoming established in Glen and Grand Canyons. An invasion of warm water fishes would almost certainly have a strong adverse effect on native fish populations including the endangered humpback chub.

The ability to manipulate the temperature of water releases from Glen Canyon Dam would provide a means to experimentally determine flows and temperature regimes that could favor desired species and disadvantage undesired species. The recommendation to build a temperature control device, however, is a policy matter that GCMRC cannot comment on.

Bypass Tube Electrical Generation

Any decisions regarding structural modification to the Glen Canyon Dam outlet works to allow for power generation are policy matters thus, GCMRC cannot comment on this recommendation.

As stated by the authors, releases from the outlet works do immediately oxygenate the Colorado River downstream from the dam. They can also cool the temperature of the river when it is warm due to cooler reservoir temperatures at the depth of the intakes for the outlet works. It should be noted that these effects are temporary, only occurring during releases through the outlet works.

Introduce Turbidity

Rainbow trout predation rates on young humpback chub has been shown to be reduced even modest levels of turbidity in controlled laboratory trials. Field data, however, suggest that rainbow trout predation rates on young fish can be higher in the Colorado River at moderate turbidity levels. Differences between laboratory and field data suggest that in addition to turbidity, rainbow trout predation on humpback chub in the wild could be influenced by behavioral changes in both predator and prey, environmental conditions, or other factors. Given these differences, we believe additional research to improve understanding of how turbidity affects rainbow trout predation on humpback chub is warranted.

In our opinion, increasing Colorado River turbidity by artificially suspending Paria River sediment falls into the realms of policy and engineering rather than science thus, GCMRC cannot comment.

Monitoring and Measurement of Management Triggers

There is not consensus among cooperating agencies as to the best approaches and methods or appropriate level of effort to monitoring the Lees Ferry fishery. GCMRC scientists believe that while catch per unit effort (CPUE) based indices can be useful for tracking overall long-term trends in fish populations, they have limitations in terms of providing information regarding population dynamics (abundance, recruitment) and key process variables (survival, growth, movement, etc.) as well as testing hypothesis. Furthermore, GCMRC scientists believe that learning from flow alterations, including experimental management flows, will be more rapid if monitoring focuses on mark-recapture methods, which provide less ambiguous estimates of population responses to management actions.

In recognition of this lack of consensus, the following comment was included in the review of the May 2015 draft of this document provided by Scott VanderKooi and Charles Yackulic. Aside

from the specific reference to line numbers from the earlier draft, we believe the comment still applies so have included it here.

Rather than identifying particular projects and agencies to conduct them, we believe it would be more useful to focus on what information is needed to 1) understand how environmental factors, operations, and management actions affect the aquatic ecosystem in Glen Canyon, including the food base and fish populations, and 2) to effectively manage the fishery. Some sections are already written like this or close to it, see Lines 464-467 and 487-489. GCMRC is planning to hold a Protocol Evaluation Panel (PEP) for the entire GCDAMP fisheries program in FY2016. We prefer to wait for the recommendations of that panel of experts to identify best methods and approaches for monitoring the Lees Ferry fishery and Glen Canyon trout population in order to meet the science needs of the GCDAMP rather than to have them identified for us and our cooperators in this document.

We agree that additional monitoring for invasive species could improve our ability to detect potentially harmful organisms and respond rapidly to mitigate these threats. Were this increased effort approved by stakeholders and managers, a carefully designed surveillance plan would help ensure this monitoring was conducted in an effective and efficient manner. Water quality monitoring downstream from Glen Canyon Dam will continue through FY2017 as described in the GCMRC FY2015-17 workplan. Future water quality monitoring will likely be proposed to continue in future workplans given the importance of this information.

We appreciate the authors providing recommendations of topics to include in the planned PEP review of the GCDAMP fishery program. We will take these recommendations into consideration as we work with cooperating agency scientists and others to plan the PEP.

Regarding the recommendation to develop a stock assessment model, Josh Korman provided the following comments.

I don't understand the recommendation to develop a stock assessment model. An annual stock assessment model was developed for Lees Ferry as part of the Grand Canyon Ecosystem Conceptual Modelling effort (which ran from approximately 1998-2003). There was a time where some Arizona Game and Fish Department (AGFD) staff used this model (Scott Rogers and Dave Speas), but model use by AGFD eventually stopped and I have never seen it used in annual reporting by AGFD to provide a more integrated and useful interpretation of the long-term CPUE data. A much more detailed monthly stock assessment model was published in 2012:

Korman, J., Martell, S.J.D., Walters, C.J., Makinster, A.S., Coggins, L.G., Yard, M.D., and W.R. Persons. 2012. Estimating recruitment dynamics and movement of rainbow trout (*Oncorhynchus mykiss*) in the Colorado River in Grand Canyon using an integrated assessment model. *Can. J. Fish. Aquat. Sci.* 69: 1827-1849.

This model was used to interpret the historical record of CPUE in Lees Ferry and Marble Canyon by the authors. AGFD does not use this model to interpret the CPUE data in their reporting. In summary, we already have two stock assessment models. I suggest this section be reworded to say that existing stock assessment models should be used to provide a more robust interpretation of the CPUE time series if that time series is to be continued. No need to reinvent the wheel here.

The 2012 stock assessment modelling effort (Korman et al. 2012) pointed out some key uncertainties influencing predictions about the contribution of Lees Ferry recruitment to the population of trout near the Little Colorado River confluence area used by endangered humpback chub. Those uncertainties led to the Natal Origins project (NO). The NO monitoring effort provides direct measurements of key population metrics (recruitment, abundance, survival, growth, movement). If that approach continues to be used, a stock assessment model isn't needed, because we measure the demographic parameters of interest directly (via mark-recapture methods).

GCMRC Updates

**Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
February 24-25, 2016**

Agenda Item

2016 Annual Reporting Meeting Update

Action Requested

Information item only; we will answer questions but no action is requested.

Presenters

Scott VanderKooi, Chief, Grand Canyon Monitoring and Research Center
Paul Grams, Research Hydrologist, Grand Canyon Monitoring and Research Center

Previous Action Taken

N/A

Relevant Science

N/A

Summary of Presentation and Background Information

The January 2016 Annual Reporting meeting was held January 27-28, 2016 in Phoenix, Arizona followed by a one-day Technical Work Group meeting. The two-day meeting included presentations by Grand Canyon Monitoring and Research Center (GCMRC) staff, cooperators and collaborators, staff of sister federal agencies, and Tribal representatives. Speakers presented summaries of findings from work conducted as part of the FY2015-17 Glen Canyon Dam Adaptive Management Program budget and workplan and discussed insights of management significance.

Each of the three high-flow experiments implemented under the high-flow protocol since July 2012 resulted in **sandbar deposition** in Marble and Grand Canyons. Although sandbars have also eroded following each high-flow, the long-term monitoring sites were, on average, larger 10 months following each of the high flows than at any other time between 2009 and 2012. Because Paria River sand inputs have been relatively large and annual release volumes from Lake Powell relatively low, there has been maintenance or accumulation of sand since July 2012 in Marble Canyon and in Grand Canyon downstream from river mile 87. The segment of Grand Canyon between river mile 61 and river mile 87 has experienced net sand evacuation over this same period. We will report on progress made on research studies of sand bedload transport and interactions between vegetation establishment on sandbars and sandbar response to high flows.

FY2015 was the first year of a new project focused on developing **long-term monitoring protocols for cultural sites** and evaluating effects of aeolian sediment transport and other geomorphic processes on long-term archaeological site condition. Only a few days of field work

occurred in FY2015, as our main focus was on analyzing existing data and developing a new monitoring plan. Several iterations/drafts of the new plan for monitoring geomorphic change at archaeological sites prepared in consultation with the Bureau of Reclamation, National Park Service and the Tribes underwent extensive review and revision. GCMRC staff is proceeding with the plan for initial monitoring work and data collection during FY2016 and 2017. The monitoring plan will be re-evaluated by GCMRC and all stakeholders during 2017 when the current Triennial Work Plan is complete and the next work plan is drafted.

In FY2015 GCMRC staff worked with US Geological Survey colleagues Brian Collins and Skye Corbett to prepare for implementing the new monitoring plan and to transfer knowledge and obtain training with GCMRC's new lidar equipment and data processing software, as well as to develop long-term data storage and management protocols. The field training was performed at three sites in Glen Canyon in March 2015, and the resulting data were subsequently analyzed in relation to previous terrestrial lidar surveys and Digital Surface Models developed for Glen and Grand canyons in 2002 and 2009. These results will be incorporated into the first report of the new monitoring plan during FY2017. In addition to working on the new monitoring plan, the Project 4 team undertook Geographic Information System analyses to investigate how landscape characteristics of the terrain located between minimum and maximum river flow elevations influence the distribution and area of aeolian sand above the maximum flow elevation. The goals of these analyses are to identify statistical relations that can be used to: 1) model fluviially-sourced aeolian sand above the maximum regulated flow elevation using remotely sensed data; 2) identify potential characteristics related to fluviially-sourced sand that can be applied to future mitigation efforts; and 3) refine the conceptual understanding of connectivity between the modern active channel and the surrounding river corridor.

Summary **monitoring data for riparian vegetation** at random sites within river segments (surveyed in 2014), including Glen Canyon (surveyed in 2015), indicate that total foliar cover differs among segments (lowest between the Little Colorado River and Kanab Creek in the Eastern Grand Canyon segment). Among geomorphic features, foliar cover was greatest on channel margins. Woody vegetation cover is fairly constant across river segments. In Marble Canyon, cover of woody species on sandbars is notably higher than in the other river segments. Tracking of nonnative species cover identifies great cover in Western Grand Canyon. *Tamarix* sp. (tamarisk) is particularly frequent on channel margins in Marble Canyon, leading to high nonnative cover values for this segment. Sampled vegetation and complementary response guilds are being used in a retrospective analysis of sandbars to understand the control of sediment dynamics by vegetation and biogeomorphic succession. Preliminary analysis of plant community associations suggests the river corridor's plant assemblage changes with distance from the dam. The different community assemblages may respond differently to hydrology and may also have a different effect on sediment dynamics and sandbar response. As discussed in a restoration workshop convened in June 2015, both monitoring data and research that utilizes guilds can be used in the consideration of restoration priorities and approaches.

Aquatic insects are the primary prey for all species of native fish in Grand Canyon including humpback chub. Aquatic insects are also a key prey item consumed by rainbow trout in the Lees Ferry sport fishery. In FY2015, Project 5 continued to evaluate potential causes of low aquatic insect abundance and diversity in Glen, Marble, and Grand canyons. Collaborator Scott Miller at

Utah State University investigated the effect that brief desiccation had on survival of aquatic insect eggs. These experiments clearly demonstrate that brief exposure to air renders aquatic insect egg unviable. Specifically, egg hatching rates were less than 1% for all desiccation treatments of one hour or longer, whereas experimental controls (i.e., no desiccation) had egg hatching rates that exceeded 50%. Building on these experimental results, collaborator David Lytle of Oregon State University developed a life history-hydrodynamic model to determine how different types of egg-laying behaviors (e.g., open water vs. river edge) will influence the response of aquatic insect populations along a load-following river continuum. This model predicts that ecologically important insect species such as mayflies will be extirpated from rivers below load-following dams. These species have a basic life history trait of egg laying along shorelines predicated on river edge habitats that are eliminated by load-following. The model also predicts that even insect species with more generalized egg-laying behaviors such as midges will be depressed by load-following, exhibiting spatial periodicity in abundance related to the daily timing of load-following waves. Specifically, the model predicts abundance of midges should be greatest in reaches where the timing of daily minimum flows is in phase with the dusk timing of peak aquatic insect egg laying. Eggs laid in these locations will remain wetted throughout the day and will never be desiccated. These model predictions are supported by datasets compiled by GCMRC researchers including a >2500 sample citizen science dataset of aquatic insect abundance throughout Grand Canyon and comparison of aquatic insect diversity and load-following intensity across dammed rivers of the Western US. Thus, investigations by the Project 5 team demonstrate a life history bottleneck for aquatic insects arising from load-following operations that constrains their abundance and diversity downstream of load-following dams. These results have implications for the conservation and management of the native and desired nonnative fish populations in Glen, Marble, and Grand canyons that rely on aquatic insects as prey.

Annual estimates of spring **abundance of humpback chub** in the Little Colorado River for fish >150 mm and >200 mm declined noticeably in 2015. It is unclear if these declines are because of an actual decline in adult chub population abundances or due to reduced number of adults choosing to spawn because of poor body conditions among adult chub beginning in September 2014. Juvenile humpback chub survival estimates in the mainstem Colorado River near the Little Colorado River confluence for the interval from July 2014 to July 2015 were similar to those observed for the July 2013 to July 2014 interval. There is some, still fairly weak, evidence of increasing juvenile chub survival in the last half year as trout numbers have decreased. The trend in declining abundance of rainbow trout between Glen Canyon Dam and Lees Ferry stabilized in 2015 to levels of approximately 200,000 fish. Unlike in recent years (2012-2014), the relative condition of rainbow trout has increased. In contrast to observations made last year, abundance estimates for rainbow trout near the Little Colorado River confluence have decreased below trigger levels identified in the 2011 Biological Opinion for Nonnative Fish Control. No action is warranted at this time since other triggering criteria have not been met.

Hydrology & Hydrograph

**Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
February 24-25, 2016**

Agenda Item

Basin Hydrology, Operations, and 2017 Hydrograph

Action Requested

Information item only

Presenter

Lee Traynham, Hydraulic Engineer, Bureau of Reclamation, Upper Colorado Region

Previous Action Taken

By AMWG:

At the August 2015 Adaptive Management Work Group (AMWG) meeting, AMWG recommended to the Secretary of the Interior her approval of the Department of Interior – Department of Energy Proposed Hydrograph for Water Year 2016.

Relevant Science

N/A

Summary of Presentation and Background Information

The presentation will cover information pertinent to AMWG members regarding the current water supply and forecasted hydrologic conditions within the Upper Colorado River Basin. Projected reservoir conditions and operations at Lake Powell/Glen Canyon Dam, including the range of potential releases, for the current and upcoming water years will be discussed. This information is provided to assist the AMWG in developing recommendations to the Secretary on the operation of Glen Canyon Dam for water years 2016 and 2017.

The second portion of the presentation will briefly review the 2016 Hydrograph and provide an overview of the upcoming 2017 Hydrograph development process. In cooperation with the other federal agencies, Reclamation will begin the development of Interior's recommendation for the 2017 Hydrograph. This recommendation will be based upon information used to develop the 2016 Hydrograph and any new ideas that may become known through discussions. Reclamation will review the Hydrograph information and analyses with the Technical Work Group, and the Department of Interior will provide a recommendation for the AMWG's consideration later this year.

Science Updates

Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
February 24-25, 2016

Agenda Item

Humpback Chub Recovery Team Update

Action Requested

Information item only; we will answer questions but no action is requested.

Presenters

Rich Valdez, Senior Scientist, SWCA, Humpback Chub Recovery Team Leader

Tom Czaplá, U.S. Fish and Wildlife Service, Agency Lead (by telephone)

Tom Chart, U.S. Fish and Wildlife Service, Upper Basin Recovery Program Director, (by telephone)

Previous Action Taken

N/A

Relevant Science

See <http://www.coloradoriverrecovery.org/documents-publications/documents-publications.html>; <http://www.gcmrc.gov/publications/library.aspx> for relevant research and monitoring information.

Summary of Presentation and Background Information

The Humpback Chub is an endangered fish species that occurs as five populations in the Upper Colorado River Basin and one population in the Grand Canyon of the lower basin. Three recovery and conservation programs operate in areas occupied by the species, including the Upper Colorado River Endangered Fish Recovery Program, Glen Canyon Dam Adaptive Management Program, and Lower Colorado River Multi-Species Conservation Program. Each of these programs consists of stakeholders that may be affected by recovery activities for the Humpback Chub. (See <http://www.coloradoriverrecovery.org>, <http://www.gcdamp.gov/>, and <http://www.lcrmscp.gov/> for more information.)

In an effort to identify activities necessary for species conservation, a new Humpback Chub Recovery Team was appointed by U.S. Fish and Wildlife Service (USFWS) Regional Director Noreen Walsh in November 2015. The Team consists of a Team Leader (Rich Valdez), Agency Lead (Tom Czaplá), Science Subgroup, Implementation Subgroup, and Writing Subgroup, for a total of 22 Team members. The Team includes stakeholder representatives on the Implementation Subgroup as an addition to previous traditional Recovery Teams. The Team is expected to meet five times from November 2015 to December 2016, and a comprehensive Recovery Plan is expected to be delivered to the Regional Director for signature by July 2017.

The Recovery Team is delegated the responsibility of producing three reports: (1) Species Status Assessment, (2) Recovery Plan, and (3) Implementation Plan.

Humpback Chub Recovery Team Update, continued

A Species Status Assessment (SSA) describes the species needs, current condition, and future condition and viability. It is a document that provides a single source for species' biological information used by the USFWS for making Endangered Species Act-related decisions, including listings, consultations, permitting, Habitat Conservation Plans, and recovery planning. A SSA might lead to a Species Status Review in which the USFWS might determine that reclassification is warranted. A SSA for the Humpback Chub is expected to be drafted by May 2016.

A Recovery Plan will be drafted as the Second Revision of the Humpback Chub Recovery Plan, originally signed in 1979 and revised in 1990. The Plan will contain site-specific management actions and objective measurable criteria for recovery. The Plan will describe Strategy, Goals, Objectives, and Criteria for each Recovery Unit, and is expected to be drafted by August 2016. The Recovery Units are the upper basin, including the Green River and upper Colorado River subbasins; and the lower basin, including the mainstem and its tributaries from Glen Canyon Dam downstream to Lake Mead National Recreation Area.

The Implementation Plan will describe how each management action from the Recovery Plan will be implemented, and is expected to be drafted by October 2016. Each action will be numbered and prioritized in a step-down outline that will specify total duration of the action, responsible parties, and estimates of time and cost.

This recovery planning process is significant to stakeholders throughout the Colorado River System because it spells out the actions, criteria, time, and costs necessary to recover the Humpback Chub. As the first document in the process, the Species Status Assessment will enable the U.S. Fish and Wildlife Service to evaluate the current and future condition of the species and determine if downlisting and delisting are possible. The Recovery Plan and Implementation Plan will describe the actions necessary for recovery and the associated time and costs.

Glen Canyon Dam Adaptive Management Work Group
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Razorback Sucker Research Update

Action Requested

Information item only; we will answer questions but no action is requested.

Presenter

Mark McKinstry, Ph.D., Biological Scientist, Bureau of Reclamation, Upper Colorado Region

Previous Action Taken

This project is a requirement of the 2007 (USFWS 2007, Appendix A, p. 74) Coordinated Reservoir Operations Biological Opinion.

U.S. Fish and Wildlife Service. 2007. Final biological opinion for the proposed adoption of Colorado River interim guidelines for lower basin shortages and coordinated operations for Lake Powell and Lake Mead. USFWS, Phoenix, Arizona. December 12, 2007. Available at: <http://www.usbr.gov/lc/region/programs/strategies/documents.html#bo>.

Relevant Science

The following describes the relevant research or monitoring on this subject:

Kegerries, R., B. Albrecht, R. Rogers, E. Gilbert, W. H. Brandenburg, A. L. Barkalow, S. P. Platania, M. McKinstry, B. Healy, J. Stolberg, Emily Omana Smith, Clay Nelson, and H. Mohn. 2015b. Razorback Sucker *Xyrauchen texanus* research and monitoring in the Colorado River inflow area of Lake Mead and the lower Grand Canyon, Arizona and Nevada. Final report prepared by BIO-WEST, Inc., for the U.S. Bureau of Reclamation, Upper Colorado Region, Salt Lake City, Utah.

Summary of Presentation and Background Information

Since the mid 1990s, Razorback Suckers, *Xyrauchen texanus*, were considered extirpated from Grand Canyon. In 2010, the U.S. Bureau of Reclamation, Upper Colorado Region (Reclamation), and the Lower Colorado River Multi-Species Conservation Program initiated a joint project to evaluate Razorback Sucker use of the Colorado River Inflow Area of Lake Mead (CRI). That project was based on a Biological Opinion from the U.S. Fish and Wildlife Service (USFWS) that recommended Reclamation begin a project to "...examine the potential habitat in the lower Grand Canyon for the species, and institute an augmentation program in collaboration with USFWS, if appropriate" (USFWS 2007, Appendix A, p. 74). The "the lower Grand Canyon" was subsequently defined as Grand Canyon from Lava Falls rapid downstream to include the inflow portion in Lake Mead as well as several miles of Lake habitat (USFWS decision in 2008).

Initial surveys at the CRI showed that Razorback Sucker were using the area, including the lower few miles of river; and were spawning, with recently recruited fish identified. In 2014, Reclamation, in cooperation with National Park Service (NPS) and the contractors BioWest and American Southwest Ichthyological Researchers, began a project to further document Razorback Sucker use of Lower Grand Canyon. Nine sonic-tagged adult Razorbacks were released at Lava Falls with the goal that they would lead to concentrations (e.g., spawning areas) of other fish. A project was also begun to randomly sample for small fish and larvae. These techniques have worked in other areas of the Basin to identify spawning and habitat use by this fish species.

More than 40 sites were identified through random sampling for larval and small-fish surveys. Subsequent sampling during seven sampling trips in 2014 and 2015 each documented spawning by Razorback Suckers at all of the sample sites, indicating documentation that Razorback Suckers were using the area and were spawning from late February until June.

Lake Mead and the CRI are the only locations in the entire Colorado River Basin where Razorback Suckers are naturally spawning, recruiting, and maintaining a natural population without stocking.

The sampling has also identified extensive spawning by Humpback Chub, *Gila cypha*, and other native suckers including Flannelmouth, *Catostomus latipinnis*, and Bluehead, *C. discobolus*, suckers. In fact, the fish community in lower Grand Canyon is dominated by native fish, which comprise over 90% of the catch in larval and small-bodied samples. The composition of native fish in Grand Canyon is much higher than any other major river in the Colorado River Basin, suggesting that Grand Canyon serves as a native-fish stronghold. Some biologists have suggested that the proportion of native fish in Grand Canyon has shifted in the last few years, possibly as a result of warming water or other conditions that give them an advantage over nonnative species.

This work is planned to continue in 2016, with all work funded directly from Reclamation to NPS and contractors. At the conclusion of the 2016 field season, after the results are reported, Reclamation plans to convene another group of experts in Razorback Sucker ecology to identify what steps, both research and management, should be taken to benefit this species in the future.

Tribal Liaison Report

**Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
February 24-25, 2016**

Agenda Item

Tribal Liaison Report

Action Requested

Information item only; we will answer questions but no action is requested.

Presenter

Sarah Rinkevich, Federal Tribal Liaison for the Glen Canyon Dam Adaptive Management Program

Previous Action Taken

N/A

Relevant Science

N/A

Summary of Presentation and Background Information

Sarah Rinkevich will report on Tribal Liaison activities from September 2015 through February 2016. These activities included coordination meetings with the Grand Canyon Monitoring and Research Center and attending meetings of the Glen Canyon Dam Adaptive Management Work Group and Technical Work Group. In addition, summaries of consultations between Department of Interior and Tribes regarding the Long-Term Experimental Management Program Draft Environmental Impact Statement will be shared.

Stakeholder Perspective

Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
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Agenda Item

Stakeholders' Perspective: The Upper Basin States (Colorado, New Mexico, Wyoming, and Utah)

Action Requested

Information item only; we will answer questions but no action is requested.

Presenter

Don Ostler, Executive Director and Secretary, Upper Colorado River Commission (AMWG and TWG alternate for Wyoming and New Mexico)

Previous Action Taken

N/A

Relevant Science

N/A

Summary of Presentation and Background Information

The States are the primary water right holders for waters of the Upper Colorado River Basin, and as such are the primary beneficiaries of the Colorado River Storage Project (CRSP) reservoirs including Lake Powell.

This presentation will include the upper basin states':

- interest in managing water and power generation within the upper basin, and specifically their interest in the operations of Glen Canyon Dam,
- perspective on the Glen Canyon Dam Adaptive Manager Program,
- role as water rights holders,
- interest in hydropower,
- compact obligations and tensions, and
- interests and activities in addressing environmental and other resource issues associated with the operation of this system.

AMP Assessment

Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
February 24-25, 2016

Agenda Item

Adaptive Management Program Assessment

Action Requested

Feedback is requested from AMWG members.

Presenter

Mary Orton, AMWG Facilitator, The Mary Orton Company, LLC

Previous Action Taken

N/A

Relevant Science

N/A

Summary of Presentation and Background Information

The Mary Orton Company, LLC is under contract to the Bureau of Reclamation for Mary Orton to provide facilitation services for the Glen Canyon Dam Adaptive Management Program (GCDAMP), including the Adaptive Management Work Group (AMWG) and its Technical Work Group. Mary's scope of work for 2015 included a situation assessment of the GCDAMP.

The purpose and desired outcomes of the assessment are to:

- Allow all interviewees to understand others' concerns and interests, which can help the group collaborate on substantive issues.
- Invite concerns about structure and process to be expressed so they can be addressed.

The situation assessment report (final draft attached) was based upon data collected through voluntary interviews of 33 AMWG members and others. Interviewees' comments are not attributed to them or their organizations.

At the February meeting, AMWG members will be invited to discuss the report and may wish to:

1. **Ask clarifying questions of Mary and each other.** Members will have an opportunity to ask Mary questions about the report. In addition, they will be able to ask questions of each other to obtain more information about what was said by one stakeholder group or another.
2. **Discuss the assessment.** The report includes a number of recommendations from Mary for the AMWG to consider (see section beginning on page 5 of the report). AMWG members may have additional ideas for discussion.



The Mary Orton Company
TRANSFORMING HOW PEOPLE WORK TOGETHER

Glen Canyon Dam Adaptive Management Program Assessment Report

prepared under contract to the Bureau of Reclamation for the
benefit of the GCDAMP participants and stakeholders



by

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February 9, 2016

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Introduction

BACKGROUND ON THE GLEN CANYON DAM ADAPTIVE MANAGEMENT PROGRAM

Unless otherwise noted, quotes in this section are from the Glen Canyon Dam Adaptive Management Work Group (AMWG) Charter signed August 24, 2015.

According to the Bureau of Reclamation (Reclamation) website on the program, (<http://www.usbr.gov/uc/rm/amp/background.html>), “The [Grand Canyon Protection] Act (GCPA), and the [Final Glen Canyon Dam] Environmental Impact Study (EIS) [March 1995] are the guiding documents for development of the [Glen Canyon Dam] Adaptive Management Program (GCDAMP). The program meets the purpose and strengthens the intent for which the EIS was prepared, and ensures the primary mandate of the Act is met through future advances in information and resource management.”

The GCDAMP “provides for monitoring the results of the operating criteria and plans adopted by the Secretary of the Interior (Secretary), and for research and studies to suggest appropriate changes to those plans and operating criteria.”

According to the AMWG Charter, the authority for the establishment of the AMWG is from the GCPA and Federal Advisory Committee Act (FACA). The AMWG “provide[s] advice and recommendations to the Secretary relative to the operation of Glen Canyon Dam (GCD). The Secretary’s Designee is the Assistant Secretary for Water and Science (Assistant Secretary) who will serve as the Chair and the Designated Federal Officer to the AMWG. The AMWG will recommend suitable monitoring and research programs and make recommendations to the Secretary.”

(Consistent with the paragraph above, the role of the AMWG is to provide recommendations to the Secretary. References to “decision-making” by AMWG in this report refer to decisions regarding recommendations, or internal decisions left to AMWG.)

The Technical Work Group (TWG) consists of one person from each entity represented on the AMWG, plus a representative from Glen Canyon National Recreation Area. According to the TWG’s operating procedures, “[t]he TWG shall perform those tasks charged to them by the AMWG. Additional responsibilities of the TWG are to develop criteria and standards for monitoring and research programs; provide periodic reviews and updates; develop resource management questions for the design of monitoring and research by the Grand Canyon Monitoring and Research Center; and provide information, as necessary, for preparing annual resource reports and other reports, as required, for the AMWG.” The TWG makes recommendations to the AMWG and does not make recommendations directly to the Secretary.

The Grand Canyon Monitoring and Research Center (GCMRC), according to its website (<http://www.gcmrc.gov>), “is the science provider for the GCDAMP. In this role, the research center provides the public and decision makers with relevant scientific information about the status and trends of natural, cultural, and recreational resources found in those portions of Grand Canyon National Park and Glen Canyon National Recreation Area affected by Glen Canyon Dam operations.”

BACKGROUND ON FACA

As noted above, the AMWG is a Federal Advisory Committee. The role of a Federal Advisory Committee is to provide group advice and recommendations to the federal department or agency based on the federal agency's need for guidance on a specific issue. Under FACA, advisory committees are created to perform an essential duty or responsibility conveyed upon the executive branch by law or Presidential Direction. The Department or Agency has the role of "tasking" the Federal Advisory Committee, through its charter, meeting agendas, and meeting management, in order to get useful and targeted advice and recommendations, and ensure that the Advice received is relevant and objective to the issue.

The Designated Federal Officer (in the case of the AMWG, the Secretary's Designee) has the role of keeping the Federal Advisory Committee running smoothly and producing a work product that is of value to the Department of agency by preparing and approving clear, specific meeting agendas, attending all meetings, and working (sometimes with a facilitator) to manage meetings, keep on topic and within the role of the Federal Advisory Committee.

Please see <http://www.gsa.gov/portal/content/101010>, the General Services Administration's FACA website, for more information.

ROLE OF THE MARY ORTON COMPANY

The Mary Orton Company, LLC (TMOC) is a Bend, Oregon firm that provides conflict prevention and management services, primarily for environmental and public policy issues and conflicts. TMOC also provides facilitation, public involvement, and organization development services.

TMOC is under contract to the Reclamation to provide facilitation services for the GCDAMP, including the AMWG and TWG. Mary Orton served as the program's first mediator and facilitator from late 1999 through late 2012, and was engaged under contract again as facilitator starting in early 2015. Her scope of work for 2015 included this situation assessment, for which she completed all the interviews and wrote this report.

The role of TMOC is to provide a thorough, accurate, and impartial analysis of the situation, in order to assist the stakeholders of the GCDAMP to increase their mutual understanding of the interests and concerns of the other participants and to identify and mitigate any concerns with the program. TMOC is not an advocate for any particular outcome or interest except good process, and conducts its work in a fair, deliberate, and impartial fashion. TMOC staff is bound by the code of ethics of the Association of Conflict Resolution that reads, in part, "Impartiality means freedom from favoritism, bias, or prejudice." To that end, without endorsing any interviewees' opinions, all points of view expressed by interviewees were included in this report.

PURPOSE AND DESIRED OUTCOMES

The purpose of the interviews and this report, as noted in the interview protocol (Attachment A) is:

- To allow all interviewees to understand others' concerns and interests, which can help the group collaborate on substantive issues.
- To invite concerns about structure and process to be expressed so they can be addressed.

After working with the program for more than a decade, Mary had been gone for two years and many of the AMWG members had changed, so the interviews also allowed them to become acquainted with Mary and vice versa.

Specifically, in her task order, Mary was directed to:

- Interview by telephone AMWG members (and perhaps other key people) to determine their goals, what they think is going well with the AMWG/GCDAMP, what they think could be improved, and what they think could be accomplished with a retreat in FY16.
- Produce a public assessment report from the results of the interviews, without attributing comments to named interviewees, and including suggestions for improvements.

METHODOLOGY

This report is based upon data collected through voluntary interviews of AMWG members and others. AMWG members were invited to include their alternates and TWG members in their interviews. Mary Orton conducted 33 telephone interviews from October 1 through December 8, 2015. The average length was 78 minutes, and the range was from 36 to 121 minutes.

The interview questions (see Attachment A) were developed in response to the charge given the TMOC in the task order, and the protocol was reviewed and suggestions made for improvement by members of the group TMOC engages to plan AMWG meetings: the Secretary's Designee or her representative, the TWG chair, Reclamation staff, and the GCMRC chief.

The original list of interviewees included all AMWG members plus five additional persons. All interviewees were asked to suggest others who should be interviewed. Based on those recommendations, Mary chose five additional interviewees. TMOC thanks the interviewees who took the time to share their thoughts, opinions, concerns, and aspirations. All interviewees are listed in Attachment B.

The interviews and report structure were designed to encourage frank and open answers to interview questions. Interviewees were told that a report would be written, that their names would be listed as interviewees, and that their comments would be included in the report. They were also told that their comments would not be attributed to them or their organization. In addition, interviewees were invited to designate any part of their interview as confidential, in which case it would not be used in the report or shared outside TMOC.

To be more manageable and useful, comments are organized by stakeholder group. The groups are (in alphabetical order):

1. Department of the Interior (DOI)
2. Environmental and recreational interests
3. Hydropower interests
4. Native American Tribes
5. States
6. Others

Environmental and recreational representatives were grouped together because it is preferable to avoid groups of three or less to protect non-attribution. The groupings were reviewed with stakeholders and some changes were made in response to their preferences. For example, a member of the hydropower group asked that they be in a separate group and the other members of that group agreed.

TMOC encouraged feedback on the report. Interviewees were sent a draft version of the report and invited to alert Mary if something important they said was inadvertently not included in the report, and to provide feedback on any other aspect of the report.

See Attachment C for a list of abbreviations used in the report.

OVERALL IMPRESSIONS

As noted above, Mary worked with the GCDAMP for more than a dozen years starting in the late 1990s. Her strong impression from the current interviews was that the program is working well, and much better than in prior years when open hostility and harsh comments were the norm. Without prompting, many interviewees said the program used to be dysfunctional and is not any more, and provided specific examples of how and why the program was better than before. (See the “Interviewees’ Comments” section for the details.) It is clear to Mary that the group has done a lot of hard work to get to the current level of positive interactions and productive meetings.

In addition, as was anticipated, the report documents areas in which stakeholders believe the program could be improved. From the standpoint of having done many of these reports for various collaborative groups, Mary assures stakeholders that this is not unusual and it does not mean that the program is broken or dysfunctional. It simply points the way for possible improvements in the program.

The “Recommendations” section that immediately follows contains Mary’s suggestions for areas that the group could focus on for improvements. These include concerns that were both shared across several stakeholder groups and that she believed were important for the group to address.

Recommendations and Partial Synthesis

This section highlights certain issues that were mentioned by interviewees and synthesizes comments regarding those issues across stakeholder groups. (More information about each of these issues will be found in the “Interviewees’ Comments” section.) This section also contains recommendations for action to be considered by the GCDAMP participants from the interviewer and report author, Mary Orton.

Mary chose issues to highlight in this section when she (a) found them important or fundamental to the group and its functioning, (b) when they had strong positive or negative reactions from interviewees, and (c) when they were mentioned in at least four of the six stakeholder groups. Unless stakeholders’ comments are cited, this section consists of the author’s opinions.

Please note that because Mary focused in this section only on issues raised across multiple stakeholder groups, she notes in each section in how many stakeholder groups the issue arose, e.g., “five of six stakeholder groups.” Also, the terms “interviewee,” “interviewees,” and “some interviewees” should be viewed as interchangeable. The term “interviewees” is not intended to mean all interviewees and could mean one interviewee.

Mary acknowledges that interviewees and other stakeholders may find other issues more compelling and other courses of action more sensible than those she identifies in this section, and she encourages that discussion.

AREAS THAT STAKEHOLDERS AGREED ARE GOING WELL

There were two areas that interviewees across all or most stakeholder groups thought were going well, and about which no “needs improvement” comments were received.

Overall Functionality

At least some interviewees in five of six stakeholder groups, without prompting, said that collegiality among participants has greatly improved, contrasting it with high levels of conflict in prior years. They said the participants communicated well, talked about differences openly, and worked hard at collaboration. They said the level of trust, respect, and mutual understanding was much higher than earlier years, and the number of decisions made by consensus had greatly increased.

Related to this, interviewees in three stakeholder groups (DOI, Native American tribes, and states) had positive comments about how many of the decisions made by AMWG were by consensus. (AMWG’s operating procedures say that when consensus is not possible, a decision can be taken by supermajority vote.) Interviewees noted that, despite the fact that the AMWG operating procedures establish consensus as the preferred decision-making method, in earlier years voting had predominated. Now that consensus is emphasized, interviewees reported less frustration, more meaningful discussion, more mutual listening, and more decisions that took everyone’s points of view into account. Interviewees also said that DOI has been particularly responsive to AMWG recommendations when they were made by consensus.

Facilitation

At least some interviewees in all six stakeholder groups rated facilitation as “going well” and said that having facilitation increased productivity for AMWG and TWG. However, the interviewer was

the facilitator, and interviewees may have been reluctant to discuss problems with her directly. And, as one reviewer of the draft report noted, “the AMWG and TWG operated for two years without a facilitator, and the AMWG and TWG were able to continue to function.”

Mary recommends that participants be asked to evaluate her work in the coming year.

RECOMMENDATIONS FOR IMPROVEMENTS

The following section includes discussion and recommendations that reflect the point of view of the author.

Recommendation: AMWG Discussion of Several Fundamental Issues

Discussion and Recommendation

Mary recommends AMWG discuss the following four issues during the time set aside for that purpose at the February 2016 AMWG meeting, or at another venue. She makes this recommendation because these issues are important, there is dissatisfaction across several stakeholder groups, and there is disagreement among stakeholders. These four issues have similarities and could benefit from a simultaneous or sequential discussion. A retreat may be a good venue; interviewees were open to the idea of a retreat if the subject matter(s) and potential outcomes were important and relevant.

Synthesis of Views: Adaptive Management Approach

At least some interviewees in each of five stakeholder groups (DOI, environmental and recreational, hydropower, Native American tribes, and “others”) indicated dissatisfaction with how adaptive management is administered in the program. Specifically, they said that change comes too slowly.

By contrast, stakeholders in the states group explained why they prefer experimentation to new or modified management actions: because otherwise, the delicate balance of agreements among states and between states and the federal government could be upset.

As noted above, Mary recommends that AMWG members discuss this topic. Discussion on this topic could help clarify the different points of view, reduce frustration, and perhaps indicate a way forward that would be more satisfactory to stakeholders.

Synthesis of Views: Open Discussion and Making Recommendations

At least some interviewees in five of six stakeholder groups—all but hydropower—identified open discussion and/or making recommendations as issues of concern, even though this issue was not specifically asked about or prompted. Concerns included lack of discussion of important issues, lack of input into recommendations, and the feeling that recommendations to the Secretary by the AMWG had already been decided by the time the AMWG acted.

With regard to lack of creative open discussion, some interviewees said they were not comfortable talking about certain things in front of AMWG or TWG. Some cited the recent lawsuits as having developed stakeholder habits of not saying much in public. Others said that, particularly after the lawsuit, stakeholders might be valuing harmony over straight talk, which they said would be detrimental. Still others cited the formality of the meetings, and the various pre-meetings held by stakeholder groups, as a potential damper on open discussion.

As noted above, Mary recommends that AMWG members discuss this topic. Discussion could illuminate which issues stakeholders feel are important and not being discussed, and recommendations that could or should be made by the AMWG, and perhaps point the way to agreement on how to improve discussion and the process of making recommendations.

Some reviewers of the draft of this report recommended that a review of laws and organizational documents would assist in this discussion.

Synthesis of Views: All Interests Heard

While interviewees in some groups said they thought everyone had the opportunity to participate and everyone was heard, at least some DOI, hydropower, tribal, and “other” interviewees said they had concerns about all interests not being heard or not having equal influence at the table. At least some DOI and tribal interviewees specifically had concerns about how tribal representatives are treated. At least some “other” interviewees said that those who had difficulty compromising would feel less heard.

As noted above, Mary recommends that AMWG members discuss this topic. Discussion could open to door to understanding how to make sure everyone around the table feels heard, if possible; and perhaps lead to actions that could make it happen.

Synthesis of Views: Tribal Relationships and Participation

Though no question was asked on this subject, and neither was there a prompt, at least some interviewees in five stakeholder groups raised the issue of tribal relationships and participation, and interviewees in four said the issue needed improvement. This could be viewed as a subset of the “all interests heard” issue. Concerns raised included:

- Because of the cultural differences between tribal members and Westerners, communication and mutual understanding can be difficult.
- Specifically, Traditional Ecological Knowledge (TEK), or how tribal members understand and experience their environment, is so different from Western ways of knowing that some tribal representatives will not speak of it. Some have been told by their tribes to be silent, and others feel they will be ignored or ridiculed.
- Non-tribal interviewees said they wanted to hear more from tribal representatives and said they seemed not to be engaged. (The author wonders if the previous bullet point might help explain why.)
- Tribal and non-tribal interviewees said lack of engagement on the part of the tribes means less understanding of tribal points of view by non-tribal representatives.

As noted above, Mary recommends that AMWG members discuss this topic. Discussion, and especially listening to tribal representatives about what they want and need to fully participate, could lead to better understanding and possible improvements.

Synthesis of Views: Disagreements About Facts

Some reviewers of the draft report said that some assumptions or facts stated by interviewees were erroneous; such as that the Desired Future Conditions (DFCs) were not used in the Long-Term Experimental Management Plan (LTEMP) EIS. Mary encourages those reviewers to bring up those misconceptions and clarify them during the time set aside at the February AMWG meeting or at another venue.

Recommendation: Decide Whether to Update Goals and Objectives

Synthesis of Views

At least some interviewees in four of the six groups said that the program needs some kind of guiding document(s) to establish the direction of the program. They noted that AMWG and TWG spent years developing a Strategic Plan and DFCs, along with other guidance documents, which are now largely disregarded. Suggestions included finishing Phase 2 of the DFCs (quantification of the qualitative DFCs), a new or updated Strategic Plan, and reviewing the nine guiding documents in the GCMRC workplan (some of which date to 2004) to see which should be updated or eliminated.

Some interviewees said that priorities for the program need to be established and the program “could not do everything.” They often saw development of a guiding document or Strategic Plan as a way to establish those priorities. Others felt strongly that all resources should be valued and addressed in the program.

By contrast, at least some DOI interviewees said the only goal or objective AMWG has is to implement the LTEMP 20-year adaptive management plan. States interviewees thought the goals and objectives were shared and clear.

Discussion and Recommendation

Interviewees raised two fundamental questions with regard to goals, objectives, and priorities:

1. Should AMWG only respond to requests from the Secretary, or should it establish its own goals and objectives?
2. Should all resources of interest be of high priority in the program, or should the program (or the Secretary) decide which resources should be focused on?

If the Secretary wishes the AMWG to respond to the Secretary’s goals, objectives, and priorities, it may not make sense for AMWG to spend time on planning. Perhaps some direction from the Secretary or Secretary’s Designee is needed before action is taken.

Recommendation: Discuss the Future of the Program After the LTEMP ROD is Signed

Synthesis of Views

At least some interviewees in five of the six stakeholder groups brought up issues or concerns about the period after the LTEMP EIS Record of Decision (ROD) is signed. In their views:

- Participants will need to understand changes to the direction and operation of the program as well as their role in the future.
- Goals and purpose of the program should be reviewed.
- More AMWG and TWG meetings will be needed.
- There will be less need for the GCDAMP.
- Any damage to relationships may need to be addressed because some stakeholders were cooperating agencies and others were not.
- Reclamation should consider hiring a GCDAMP coordinator/ executive director.
- An outside entity should review the long-term need, intent, and effectiveness of the program, and develop an ongoing method to make sure everyone is listened to and is heard—and not only at the microphone.

Discussion and Recommendation

Based on the interviewees' comments, it appears there is uncertainty about the program because of uncertainty about what LTEMP will bring. Once the LTEMP ROD is signed, these issues and questions should be revisited and potentially considered as subjects for a retreat or other discussion venue.

Recommendation: Clarify Policies of “DOI Speaking With One Voice” and “Non-Voting Status of DOI Agencies”

Synthesis of Views

At least some interviewees in four stakeholder groups brought up the policy of DOI speaking with one voice. DOI agencies and states had mixed views (some were positive while others suggested improvement), while tribes and environmental and recreational interviewees suggested improvements were needed. While some interviewees believed the DOI pre-meetings were as benign as those of other stakeholder groups who meet to agree on strategy, others thought that more transparency would be a benefit to the program. Other comments were:

- when DOI agencies agreed on a policy, it means that a decision had already been made;
- DOI representatives are not supposed to speak or be asked questions; and
- transparency regarding technical differences is more important than regarding policy differences.

At least some interviewees in three stakeholder groups mentioned the non-voting status of DOI agency representatives. Some of the issues related to the policy of “DOI non-voting status” seem to be the same as those related to the policy of DOI speaking with one voice. Some felt that it was working well, that DOI representatives were fully participating, not exercising undue influence, and still able to influence policy through their chains of command. At least some DOI representatives were concerned that they were not supposed to speak up or were confused about their roles, and other interviewees were concerned that DOI representatives might not be speaking up as much and AMWG and TWG were missing important information as a result.

Discussion and Recommendation

When the non-voting policy for DOI representatives was first agreed to during the February 2011 AMWG meeting, it was made clear by the then-Secretary's Designee that it was desired and expected that DOI representatives would speak up about the issues under discussion. The minutes of that meeting say, “Speaking as a DOI representative, [the Secretary's Designee] said the DOI agencies understand the need for their active participation, and they would make that commitment to the AMWG.” The Secretary's Designee can clarify whether that is still the case.

The Secretary's Designee can clarify whether a DOI policy decision has finally been made when the DOI agencies agree.

The Secretary's Designee can also clarify roles: whether DOI agencies are viewed as stakeholders at the AMWG table, whether they are receiving advice from other stakeholders, or whether they have a different role.

The AMWG and TWG should clarify their operating procedures with issues such as whether non-voting members can make or second motions. Meanwhile, the author recommends that non-voting members refrain from making or seconding motions. The next time the Charter is considered for

renewal by Interior, AMWG can consider whether to make a recommendation regarding the non-voting status of the DOI agencies.

Recommendations: How to Address Other Issues

Unless AMWG wants to discuss them, the author recommends that issues raised with regard to meeting schedule, meeting location, and meeting management should be reviewed by the Secretary's Designee (or her designee), TWG chair, Reclamation staff, and the facilitator. Results of their discussion, including decisions or recommendations on actions, should be reported to GCDAMP participants.

Although the issue was not asked about or prompted, stakeholders in four groups said that the program needs an orientation for new members. The Secretary's Designee (or her designee), Reclamation staff, and the facilitator can discuss establishing an ad hoc group to design an orientation for approval by AMWG.

While concerns regarding the Science Advisors were expressed across all six stakeholder groups, no recommendation for action is made here because the new Science Advisors' Executive Coordinator has just been engaged and will be presenting at the February 2016 AMWG meeting.

With regard to the other issues needing improvement that were mentioned by interviewees in four or more stakeholder groups, AMWG members should bring up any of those issues during the time set aside for that purpose at the February 2016 AMWG meeting or in another venue. From Mary's perspective,

- Issues raised under "GCMRC and science" are mostly feedback for the GCMRC and U.S. Geological Survey.
- Issues raised under "DOI responsiveness" are mostly feedback for DOI.
- Some issues raised under "Stakeholders mix"—specifically, whether academic and scientific representation should be added to the AMWG—have already been discussed by AMWG and an agreement reached for the next two years until the Charter is up for renewal again. Per the Agenda Item Form for the Charter Ad Hoc Group (AHG) agenda item at the May 2015 webinar, "During the discussion on academic representation, it was determined that at this time, the group would like to see the results of DOI's commitment, explained on the call, to increase the desired academic presence over the near term via invited guests and appropriate use of the new Science Advisors contract. There was a consensus that at this time, the Charter Ad Hoc Group does not recommend the addition of an academic representative to AMWG, but does recommend that AMWG consider this proposal to remain 'active' and follow up on considering it during the charter renewal process that will be required by August 2017."
- Issues raised with regard to specific representatives and the process for choosing members is mostly feedback for the Secretary.
- The specifics of issues raised under "Stakeholders getting what they need" are addressed under other issues.
- Issues raised under "Secretary's Designee's position" are mostly feedback for the next Secretary.

Interviewees' Comments

The section describes, without attribution, the comments and opinions of the interviewees. It is intended to include the full range of opinions shared by interviewees, without indicating how many made one comment or another. As above, the terms “interviewee,” “interviewees,” and “some interviewees” should be viewed as interchangeable. The term “interviewees” is not intended to mean all interviewees and could mean one interviewee.

Neither Mary Orton nor TMOOC endorses the following comments and opinions; they are reported here because one or more interviewees said them.

DEPARTMENT OF THE INTERIOR PERSPECTIVES

Concerns and Interests

DOI interviewees said they were interested in making sure the GCPA is carried out, and in having GCD operate as a benefit to downstream resources while allowing Interior to carry out water delivery and hydropower production. Interviewees said that while environmental compliance was once viewed as a nuisance to be endured, now, due to situations such as that in the Klamath basin, stakeholders and water users understand that it is in everyone's best interests to comply, not only because of the environmental benefit but because it is the only way water users can continue to receive the water they need.

Because Interior is also responsible for the management of the AMWG as a FACA committee, DOI interviewees mentioned they were interested in having a FACA committee that functions smoothly and provides good collaborative advice from a broad partnership of stakeholders to the Secretary.

DOI interviewees also mentioned the goals of their individual bureaus and whether and how their participation in AMWG helps further those goals. Interviewees said that they wanted to find solutions that work for everyone as much as possible, while ensuring that their point of view was understood by others. Finally, interviewees who said they receive funding from the GCDAMP said that status adds to their concerns and interests with regard to the program.

Assessment of What is Going Well and What Needs Improvement

Adaptive Management Approach

At least some DOI interviewees said they were frustrated at the pace of change in management of the system. They said while AMWG exists to advise the Secretary on adoption of criteria and operating plans consistent with the GCPA, and adaptive management is intended to implement changes to management as more is learned about the ecosystem, little has changed since the 1996 ROD. Other interviewees mentioned that the 1995 Biological Opinion included triggers that, when met, should have resulted in changes in flows, but those changes never happened. (That Biological Opinion has since been revised.) Still other interviewees expressed the delicate nature of working within “The Law of the River” and said adaptive management actions can be approached through experimentation.

All Interests Are Heard

At least some DOI interviewees said participants should continually find ways to make sure all parties have equal influence or are listened to equally. For example, they said, meetings in a conference room are not the tribes' natural forum to express their opinions. Others thought an outside entity should periodically review the long-term need, intent, and effectiveness of the program after the LTEMP is finished, and develop an ongoing method to make sure everyone is listened to and is heard—and not only at the microphone.

Interviewees questioned whether stakeholders at the table were speaking from their own point of view, or speaking for the leadership of their organizations. Interviewees also said they thought the non-governmental representatives might believe they do not get what they need from the program because the government needs to run the dam according to “The Law of the River.”

Clear Goals and Objectives

At least some DOI interviewees said the GCDAMP's goals and objectives are clear because AMWG's sole goal is to provide good advice to the Secretary, and when the LTEMP ROD is signed, the program's sole objective will be to advise DOI on how to best implement that 20-year adaptive management plan.

Others said that the program lacked a shared vision to guide the program and aid in decision-making. Interviewees said there was a need for stronger strategic direction, perhaps in the form of a single Strategic Plan. At least some DOI interviewees noted the GCMRC budget and workplan document lists nine guidance documents, dated from 2004 to 2014. They said that this number of guidance documents is virtually the same as no guidance: everything can be a priority, the program can fund everyone's ideas, and no hard decisions need to be made.

DOI Non-Voting Status

At least some DOI interviewees said that, when the policy was first instituted that DOI representatives would not participate in AMWG and TWG decision-making, they had concerns. Specifically, they were concerned that those representatives would no longer participate in AMWG and TWG discussions. However, they said, they found that DOI representatives' participation has continued.

At least some interviewees said they became more comfortable with the policy of DOI bureaus speaking with one voice because of the DOI non-voting policy: it makes DOI representatives' roles clearer with regard to advising the Secretary.

Other DOI interviewees felt that their influence was lessened because of their non-voting status. They also reported confusion as to their role: were they stakeholders or were they being advised by stakeholders? Still others were confused about whether they were supposed to offer their opinions. Questions were also raised about whether DOI agencies could make a motion or second another's motion.

DOI Responsiveness

At least some DOI interviewees believe that DOI has been appropriately responsive to AMWG recommendations, particularly when the recommendations are made by consensus. They said that DOI has listened well and received much valuable input on important decisions. Interviewees said that the Secretary always explains when s/he was not able to adopt a recommendation, which they

viewed as part of being responsive. DOI interviewees also mentioned responsiveness by Reclamation and GCMRC, and that whenever a question is asked, the response is provided by the next meeting or before.

Others said that the level of involvement in this program exceeds the normal federal process. They felt that AMWG has too much influence with the Department because so many of its recommendations have been adopted. They suggested that the AMWG should respond to requests from the Secretary, instead of proposing recommendations on its own.

Interviewees said that if a proposal were anticipated from AMWG that a DOI bureau could not live with, DOI agencies are at the table so they can explain their objections and perhaps offer alternative proposals. They opined that this probably reduces the number of recommendations sent to the Secretary that are not implemented.

DOI Speaking With One Voice

At least some DOI interviewees said that while the intention of having all DOI agencies speak with one voice was designed to reduce conflict, the unintended consequence was that individual bureau opinions and internal DOI discussions have become opaque to the rest of the stakeholders. Others thought that non-DOI stakeholders now believe they cannot ask DOI bureau representatives their opinion, which many felt was antithetical to good discussion and decision-making. Some DOI interviewees also said they thought they were not supposed to speak up and that harmony was more valued than substance. Others said that the DOI pre-meeting was as benign as other stakeholder groups meeting in advance of an AMWG meeting to agree upon strategy.

Facilitation

At least some DOI interviewees said that facilitation improves productivity of the AMWG and TWG. They said that while some Secretary's Designees have facilitation skills, that may not always be the case, so facilitation support is important. Interviewees also said that with the reduced level of conflict in the program, there might be less of a need for facilitation; however, if personalities change, the level of need could change. DOI interviewees also mentioned that while work between meetings was vital for the success of the program, this would more likely be accomplished by the facilitator and not the Secretary's Designee.

GCMRC and Science

At least some DOI interviewees said they viewed GCMRC as an outstanding provider of data and information.

At least some interviewees noted that in the past, the results from GCMRC research would not be available for several years, which was frustrating for the stakeholders who felt decisions needed to be made based on up-to-date science. Now they feel that GCMRC has a more efficient publication cycle and is also willing to share draft data pre-publication. Interviewees specifically noted as beneficial the before-and-after photos on high flows which are posted on the GCMRC website, along with other website tools.

At least some DOI interviewees credited former GCMRC Chief Jack Schmidt for invigorating the program and the staff. They praised his willingness and ability to be open and direct about what is known and not known about the river system. Interviewees also credited Jack with strong outreach

to stakeholders, useful explanations of the science during and between meetings, and involving AMWG and TWG more deeply with GCMRC's budget and workplan formulation.

At least some DOI interviewees said that the recognition of the importance of, and willingness to use, science in decision-making in the GCDAMP was stronger than they had seen in any other program, and they credited GCMRC as well as its partners such as the U.S. Fish and Wildlife Service (FWS) and Arizona Game and Fish Department (AGFD).

At least some DOI interviewees had concerns about the sustainability of the GCMRC budget. They pointed out that the agency used to be primarily a contracting entity, and is now primarily doing its work in-house. Hiring full-time personnel to do the work means a budget that needs to grow every year. They expressed concern that the quality of the science will decline, both because less funding would be available for in-house work and also because less funding would be available for contractors. These interviewees felt diversity of science providers results in better science.

At least some interviewees said that GCMRC and Reclamation are producing lots of research and describing the system well, but not providing solutions to the issues and problems faced by the program. They felt that they should, at some point, move from research to solutions.

At least some DOI interviewees felt that the program needed to ensure the monitoring of critical resources. They said that there does not seem to be a consistent priority in the budget for monitoring, and that monitoring should be intentionally included in the program.

At least some interviewees suggested having someone from outside the program determine the purpose of the program, how the money is being spent, whether there are efficiencies that could be instituted, and whether money is being spent in an area that is no longer needed. At least some DOI interviewees also said that the budget development process should include asking contractors whether the proposed budget amount would adequately support their workplan.

Meeting Frequency and Modality

At least some DOI interviewees believed that there are a sufficient number of meetings. Others thought that when the LTEMP ROD is signed, there might need to be more, at least in the beginning. These interviewees felt that much coordination could be needed in the first five to ten years to establish each year's experimental program, as well as to coordinate with stakeholders and obtain their input. After that period, however, perhaps fewer meetings would be required; e.g., one face-to-face and one webinar per year. Still others thought that the program might be less needed after the LTEMP ROD is signed.

Meeting Management and Location

At least some DOI interviewees praised presentations at meetings regarding important discoveries and results of monitoring; as well as the meeting microphones, sound system, and webinar option. They mentioned that the meetings were well structured, with ample time for discussion and questions while keeping track of the time. They said that the federal family meetings before the AMWG help them work through internal issues.

Interviewees said they appreciated the brainstorming discussion at the August 2014 meeting, and suggested that it could be scheduled on an annual basis. If the minutes are taken in such a way that

comments are not attributed, people could express their concerns and have a discussion without forcing anyone into an uncomfortable position.

Interviewees also suggested improvements, including the following.

- Voting members have microphones, but there is not an opportunity during the meeting for the audience to participate verbally. Some felt that it might be acceptable if the process were designed to focus more time on the stakeholders at the table, while others felt that five minutes at the end for public comment is not true participation.
- Encourage stakeholders to send in their proposed motions early so they can be included in the agenda. If motions are proposed at a meeting, it slows things down and can lead to contentiousness. Postpone consideration of those motions to the next meeting.
- Set meeting dates earlier in order to procure hotels in preferable cities.
- Serve refreshments, if possible. This is a traditional tribal practice and it helps with productivity during the meeting.
- Ensure that AHGs meet only at the request of the larger body, whether AMWG or TWG.
- Make sure TWG is operating at the request of AMWG and not on its own.

Open Discussion and Making Recommendations

At least some DOI interviewees said they felt that people spoke openly and positively, and there were no discernible hidden motives.

Others said that open, creative discussion was in large part missing from AMWG meetings. They speculated that a defensive position on the part of some stakeholders was a habit born from the years the program operated with members engaged in a lawsuit, when stakeholders were probably being advised not to say much in public.

Interviewees suggested that having new ideas presented by outside speakers might help get people out of their “defensive shells” and voice their true opinions. Interviewees also said small group discussions, or brainstorming sessions in which comments are noted in minutes but not attributed, might be a way to encourage open discussion.

Orientation

At least some DOI interviewees indicated that they would like to have a basic agreed-upon orientation to GCDAMP for new members. This could include why the AMWG exists, various laws that affect the program, the history of the GCPA, the 1996 Glen Canyon Dam EIS ROD, and other information.

Overall Functionality

At least some DOI interviewees mentioned that in the recent past the AMWG and TWG were in quite a bit of conflict, evidenced in part by disagreements among DOI bureaus, minority reports to the Secretary, and a lawsuit that had been filed by a stakeholder against another stakeholder at the table. However, they said, the situation is quite different now with much less conflict. Interviewees credited the former Secretary’s Designee, Anne Castle, and her former Deputy, Lori Caramanian, with improving the situation. Interviewees also said facilitation of the TWG had helped in that venue.

DOI interviewees noted that the AMWG works well and productively together, and that most recent decisions have been decided by consensus instead of a divided vote. One interviewee remarked, “When people are not feeling threatened, they can really listen.”

Relationship Building

At least some DOI interviewees said that relationship building is important. They said they were interested in getting to know everyone better and were looking for ways to do so. The recent river trip was valuable for that purpose. Others said finding ways to be with each other during meetings would also be valuable.

Science Advisors

At least some DOI interviewees had a variety of views regarding Science Advisors. Some said they were not clear on what the Science Advisors do. Others felt that peer-reviewed science from GCMRC is good enough that the Science Advisors may not be needed. Still others looked forward to seeing how Science Advisors would be integrated and hoped that, instead of just peer review, they could provide a forum for discussion with the GCMRC scientists.

Secretary’s Designee Position

Some DOI interviewees said they did not have an opinion on whether the Secretary’s Designee should be an Assistant Secretary or someone at another level. Others said that the Secretary’s Designee should have natural resources background.

Still others said that the Secretary’s Designee should remain at the Assistant Secretary level. They had several reasons for this:

- It conveys the level of importance of this process—the only official multi-stakeholder dialogue on the Colorado River—and it deserves a high level of attention from DOI.
- It functions better when the Assistant Secretary leads it; it shows the stakeholders and all DOI agencies that this is the Secretary’s committee and the Secretary is involved and engaged.
- By law, it is the Secretary’s advisory committee, so the Secretary should be involved.
- The Assistant Secretary can direct the AMWG more effectively because of the level of authority.
- Sometimes DOI agencies do not agree, and in those cases, it is good to have someone in charge at that level.
- If the Secretary’s Designee were to be a high-level Reclamation person as in the past, the information exchange might be perceived as more biased or subject to sway from stakeholders.

Others thought that the GCDAMP does not need that level of oversight because of how far they have come. Still others said that the Secretary’s Designee should be a Regional Director from Reclamation.

Stakeholder Mix

Some DOI interviewees said that the AMWG and TWG currently have a good mix of stakeholders, and that everyone is represented. They also said there are extraordinarily bright people involved in the GCDAMP.

Others said the language in the GCPA directing the Secretary to consult with “[t]he general public, including representatives of the academic and scientific communities” means that Congress intended that AMWG seats should be provided for those two communities. They felt that it would be

important for these representatives to provide consistent feedback and to participate in decision-making.

Others felt that the compromise reached by the last iteration of the Charter AHG was a good one: that while seats for the academic and scientific communities would not be added, speakers from those communities would regularly be invited to address the AMWG. The thinking behind this was that outside perspectives would be helpful.

Finally, DOI interviewees said that there should be a formal process for choosing organizations representing the recreational, environmental, and hydropower marketing interests. They suggested the Secretary should ask if there is anyone in that community who is interested, and provide the opportunity for different entities to be part of the AMWG.

Stakeholders Getting What They Need

Some DOI interviewees indicated that they were getting what they needed from the GCDAMP. Others offered a more qualified affirmation: “we are making progress,” “things are getting better,” “I think we are getting what we need.” Others felt improvements were needed in order to answer that question affirmatively: making sure non-voting members fully participated in TWG, for example.

Structure

At least some DOI interviewees said that after the LTEMP ROD is signed, the idea of hiring a coordinator/ executive director should be reconsidered. This is because the job that Glen Knowles held was already more than one person could handle, and even more stakeholder involvement would be needed at that time.

Substantive Accomplishments

At least some DOI interviewees noted that AMWG has shown good progress in recommendations to the Secretary in recent years. These include the DFCs, high flow experiment (HFE) protocol, and the non-native fish control program. One said, “We saw an evolution from focus on process to positive steps forward on substantive items where we found consensus.”

Slow progress, interviewees said, is due to the inclusiveness of the process and the time it takes to include the disparate interests around the table.

Tribal Relationships and Participation

At least some DOI interviewees said that while the relationship between the Department and the tribal representatives had improved, it should be an “area of constant vigilance.” They said tribes often feel underappreciated, “in part because they are,” so this should be a focus for consciousness raising and continued improvement.

Other interviewees said that it is difficult to credibly incorporate TEK into the scientific process in a way that both scientists can respect and tribes can feel honored. They said that outreach to tribes by the Secretary’s Designee or the Secretary’s Designee’s staff, as well as by all federal agencies, was important, including separate meetings, visiting the reservations, and joining tribal river trips.

DOI interviewees said that AMWG should address what tribes consider most important, not what the AMWG wants to do for the tribes, and suggested the tribes want protection of archeological

sites. Others said that the tribal point of view was given too much weight, and that the tribes should expect consultation but not deferment to their wishes.

ENVIRONMENTAL AND RECREATIONAL INTERESTS' PERSPECTIVES

Concerns and Interests

Environmental and recreational interviewees said that their primary concerns are harm reduction for and protection of the entire Grand Canyon, and in some cases the entire Colorado River basin, including its natural processes, native fish, trout fishery, vegetation, beaches, and the visitor experience. Other concerns included making sure the adaptive management process works well and supporting the management agencies to do their jobs well. As you might expect with the diversity inherent in this group, each interviewee emphasized some of these concerns over others.

Environmental and recreational interviewees said that they are at the table to represent their constituents and represent them well. They said they were looking for a balance of power production with tribal, cultural, recreational, and native fish protection. Others mentioned the ongoing drought and impacts from a changing climate, and the importance of making sure the resources of interest continue to be protected during these difficult times.

Interviewees emphasized the importance of peer-reviewed science as a basis for decision-making and for adaptively managing the ecosystem. They also mentioned the need to better understand the interactions between trout and humpback chub.

Environmental and recreational interviewees also mentioned the importance of connections and networking with others with an interest in the Grand Canyon. They said it is important to understand the perspectives of and have a personal connection with all stakeholders.

Assessment of What is Going Well and What Needs Improvement

Adaptive Management Approach

At least some environmental and recreational interviewees said that the GCDAMP is more of a science project than adaptive management, because much science is produced but changes in management come more slowly than normal in adaptive management processes. They said that in a true adaptive management program, when something new is learned, a change is made in management, the results evaluated, and then more action is taken. Interviewees also said that more could be changed besides dam management, and gave the crisis work on the green sunfish as an example.

Some said that other adaptive management processes have scientists and technical people who evaluate the science, rather than (as in the GCDAMP) a second body of stakeholders, the TWG. Others suggested that some of the \$10 million per year being spent on science could be spent on management, with management changes made as soon as feedback is received.

All Interests Are Heard

Some environmental and recreational interviewees said that the program is open enough so that if someone has something to say, it is welcomed; and if a stakeholder is not contributing, it is because they choose not to. They said that it is stakeholders' responsibility to speak up and advocate. While stakeholders will not get everything they want, they definitely have the ability to participate.

Others pointed out that their resources can be extremely limited, particularly compared to other stakeholders, and sometimes they cannot participate to the extent that they would like to. Therefore, it might be more accurate to say that they definitely have the **opportunity** to participate.

Clear Goals and Objectives

At least some environmental and recreational interviewees said the program needs strategic management, strategic questions, and science guidelines. (“Science guidelines” would identify the key science questions and how the program will approach them, and the result of such guidelines should be consistency in data collections and long-term datasets.)

DOI Non-Voting Status

At least some environmental and recreational interviewees said they had concerns when DOI members became non-voting that the Interior representatives would not participate as much. However, they have not seen a reduction and are satisfied with the level of participation and responsiveness.

DOI Responsiveness

At least some environmental and recreational interviewees said DOI had been either responsive to recommendations from AMWG or “as responsive as they could be.”

DOI Speaking With One Voice

At least some environmental and recreational interviewees hoped that the DOI bureau representatives could share the diversity of thought and opinion among them with the larger AMWG.

Experience in Grand Canyon

At least some environmental and recreational interviewees said that the experience of being in the Grand Canyon was important for GCDAMP participants, and that more have had this experience in the last few years thanks to the recent tribal river trip and the Glen Canyon trip with dinner at Lees Ferry. However, they said, some managers have not had personal interaction with Grand Canyon.

Interviewees said that river trip opportunities should be offered annually or bi-annually, and should highlight more than the science. People on the trips should also have ample time to experience the Canyon and relationships with others through hiking and other exploration.

Facilitation

At least some environmental and recreational interviewees said it was important to ensure future AMWG meetings were facilitated. Interviewees said that it was too much to ask the Secretary’s Designee to provide all the facilitation functions, including meeting preparation and management. Interviewees cited benefits of facilitation including clear motions, inclusive discussion, and keeping the meetings on point and on time. They said that when discussions were emotionally and economically charged, the use of facilitator has been particularly valuable. Interviewees also said the right facilitator was as important as facilitation in general.

At least some environmental and recreational interviewees said that when budget was being discussed and some of the parties at the table were potential recipients of funding, it would be

particularly important to have facilitation at TWG. At other times, advice from a facilitator might be useful for the TWG chair.

GCMRC and Science

At least some environmental and recreational interviewees said that GCMRC is filling a critical role and is an important resource and benefit to the stakeholders. They noted that the understanding of the Colorado River ecosystem and how it works, especially in the realm of sediment and fish, has progressed to a point where it is useful in policy decisions and can ensure those decisions have a basis in reality. They also praised the responsiveness of the GCMRC personnel to questions from stakeholders.

Areas of possible improvement were also noted. Environmental and recreational interviewees suggested that long-term monitoring should be a stronger emphasis in the program, to be able to detect change and support adaptive management. While research may be easier, an adaptive management program must have a solid, long-term monitoring program.

At least some interviewees said the science program was focused on fish and sediment, and a broader understanding of the ecosystem and human interactions with it should be obtained. Interviewees said it has made sense to focus on fish and sediment as resources that could help improve the entire ecosystem; however, after the LTEMP ROD is signed, there should be a review of the goals and purpose of the program and possible re-direction of the science.

At least some environmental and recreational interviewees said that voices external to GCMRC are usually not included, and more projects should be performed by outside contractors. They said that the GCMRC had created a bureaucracy larger than envisioned in the 1996 ROD. Because of this, major themes and impacts could be missed because GCMRC does not have the expertise on staff; e.g., long-term nutrient impacts from the dam or ecosystem modeling.

Some environmental and recreational interviewees said that there is a lack of knowledge in the program of ecosystem processes, and thus uncertainty about how to improve them. This was attributed to including too much in the GCMRC workplan without a sense of priority. Interviewees said that the program needs to improve the connection with the rest of the basin, especially the reservoirs that bound the Colorado River ecosystem, and that the lack of monitoring data from those reservoirs was impeding good decision-making in the GCDAMP.

Others pointed out that they were focused on making sure that any scientific pronouncements of relationships between trout and humpback chub were valid and proven and not just hypotheses.

Written reports were also requested, even if they were much shorter than the traditional papers, for those who are unable to attend the two-day annual reporting meetings. Interviewees also suggested using other areas as controls for experiments.

Meeting Frequency and Modality

At least some environmental and recreational interviewees thought the number of meetings, and the mix of two face-to-face and one webinar annually, were appropriate. They mentioned that the TWG meetings held by telephone in the past were difficult because you cannot understand people as well without the personal interaction. Also, it is easier for a few people to dominate on a conference call. One said, "You have to sit across the table for a truly collaborative process."

Meeting Management and Location

At least some environmental and recreational interviewees praised how the meetings are organized and managed, mentioning specifically that information is regularly sent out (including on emerging issues like green sunfish), lists are kept of what has been done and not done, and meetings are run openly. Linda Whetton was specifically mentioned as filling a critical role and communicating well. Interviewees also mentioned that consensus is too slow, but it works as well as it can.

Some suggestions were made for improvements, including:

- Distribute PowerPoint presentations the morning of the day of the presentation, because afterwards is less useful.
- Have photos of the Grand Canyon in the meeting rooms.
- Do not hold meetings in Phoenix in the summer.
- Test different meeting locations, including Grand Canyon and Flagstaff for AMWG and Grand Canyon, Williams, and Tusayan for TWG meetings.

Open Discussion and Making Recommendations

Some environmental and recreational interviewees said there was openness and good communication among all the parties.

Others said the meetings are “too tightly scripted and defined.” They feel that as a result, they are precluded from discussing important or core issues. Diverse voices might encourage more meaningful dialogue and honest discussions about what stakeholders want to achieve and want to protect. Interviewees also said that there needed to be more time for questions during the meeting.

Orientation

At least some environmental and recreational interviewees said the program should provide an orientation for new members.

Overall Functionality

At least some environmental and recreational interviewees said they believed the GCDAMP functioned well. They thought it served as a model for other large federal-state programs. The regular meetings and carefully structured organization were cited as positive and beneficial.

At least some of these interviewees noted some uncertainty about whether the National Park Service (NPS) and Reclamation would cooperate in management of the GCDAMP in the future as they have been doing for the LTEMP EIS.

Public Outreach

At least some environmental and recreational interviewees said that while the GCDAMP Wiki website was a good start, more needs to be done to strengthen the program’s public outreach. There are few to no public voices at the TWG or AMWG meetings. The public still does not know about the program, and it will probably take a professional public relations effort to do the job well.

Relationship Building

At least some environmental and recreational interviewees said that relationship building was an important aspect of their participation in the GCDAMP. This occurs during meetings at which all the interested parties are together, and also during river trips.

Science Advisors

Some environmental and recreational interviewees said they found the Science Advisors to be very valuable, looked to them for important outside commentary, and that they depended on what Science Advisors have to say. Others said they did not understand the role of the Science Advisors, even after several years. Still others said that the Science Advisors have not been functioning at all for the last year or two and it will take the new Science Advisors' Executive Coordinator a couple of years to get up to speed. This was viewed as a negative situation because there has been no recent external review of the science.

Secretary's Designee Position

When asked whether the Secretary's Designee should remain at the Assistant Secretary level, at least some environmental and recreational interviewees agreed that the Secretary's Designee should be a person holding a high level position, and most said it should be in the Secretary's office. Reasons given for this include:

- The Grand Canyon is important place, and the GCDAMP consists of diverse and high-level stakeholders.
- The subject matters discussed are serious and important and have national implications.
- There is no other place like the Grand Canyon and no other river system has such a diverse set of users.
- The more access to the higher levels of DOI, the more the program can accomplish.
- It ensures that the program is meaningful and appealing.
- Reclamation would not be viewed as a neutral party.

Stakeholder Mix

Some environmental and recreational interviewees said that AMWG consisted of a fair and broad set of stakeholders and the right people were at the table. Others felt that academic and scientific representatives should be at the table, as they were listed in the GCPA and their voices would be valuable.

Stakeholders Getting What They Need

Some environmental and recreational interviewees, asked whether they were getting what they needed from the program, said they were getting a little, or as much as they could. Others said the important thing was that they had a respected seat at the table, and it was incumbent upon them to be at the table and make their case clearly and effectively. One commented, "It is our responsibility to get what we need, not the program's responsibility to give it to us."

Some environmental and recreational interviewees noted that they do not have the same level of resources and ability to communicate outside the meetings as other stakeholders, and while that was challenging, they still felt heard. They also said that they were gaining incremental improvements and, while they would want more, they are gaining enough to stay at the table.

By contrast, others said that DOI appears to selectively ignore their comments and suggestions, even suggestions that would assist the bureaus to advance their missions.

Substantive Accomplishments

At least some environmental and recreational interviewees would like to see the AMWG have a similar record of restoration, conservation, and habitat development as the Lower Colorado River

Multi-Species Conservation Program (MSCP), and suggested that more support from the NPS would promote that goal.

Tribal Relationships and Participation

While there was some concern expressed by environmental and recreational interviewees that the Havasupai Tribe does not participate in the GCDAMP, interviewees were pleased that there was good representation and participation from the other affected tribes.

HYDROPOWER INTERESTS' PERSPECTIVES

Concerns and Interests

Hydropower interviewees were interested in maintaining and enhancing the availability, affordability, and value of hydropower generated from the dam. They were also interested in maintaining the flexibility of that hydropower.

The value of hydropower increases when it is generated at peak demand times. Cost, usefulness, and value are interchangeable terms. Hydropower is inherently flexible because it can quickly react to changing loads (demand) and system disturbances. This is important because use and generation need to be equal in electricity production. While a natural gas turbine is almost as flexible as hydropower, it cannot always be operational as hydropower can.

Hydropower interviewees also were interested in responsible stewardship of the Colorado River through compliance with the various environmental and cultural resource laws, such as National Historic Preservation Act (NHPA), GCPA, and Endangered Species Act (ESA). They said hydropower facilities could not continue to operate if they are irreparably damaging the environment and resulting in a jeopardy opinion.

Cost effectiveness was also important to hydropower interviewees, as their customers (tribes, municipalities, and other non-investor-owned utilities) pay all the costs of the Colorado River Storage Project, including the costs of the GCDAMP, other environmental programs, and irrigation assistance. The Congressional cap on funding for the GCDAMP was important to hydropower interviewees because they wanted to ensure prioritization and focus of the program. They emphasized that the program cannot be all things to all people.

Hydropower interviewees also were interested in making sure the GCDAMP process was a fair and good one. As one interviewee said, "Sometimes what is best for power is not the best for endangered species, and vice versa. We work hard to achieve a balance and make sure decisions are fair and equitable with no one resource bearing the brunt."

Assessment of What is Going Well and What Needs Improvement

Adaptive Management Approach

At least some hydropower interviewees said while this was an adaptive management program, AMWG is not making recommendations that result in change. As one stakeholder said, "The presentations are good and then nothing happens."

All Interests Are Heard

Some hydropower interviewees said all stakeholders have the opportunity to share their thoughts and views, and the facilitator ensures that happens. Others said that there is much political influence and everyone is looking out for their own interests, so it is difficult to take everyone's point of view into account. Interviewees said that while everyone has a voice, it is not clear that everyone believes their voices are heard; and sometimes a decision needs to be made despite opposition.

Clear Goals and Objectives

At least some hydropower interviewees were concerned about the lack of direction for the program. They said that the goals and objectives that had been agreed to were no longer being followed, and the science questions that once directed the program were outdated. As a result, the program seems to focus on the "important issue of the day."

At least some hydropower interviewees said that the program needs to do a better job of tradeoff analysis or cost-benefit analysis, and to acknowledge that the program cannot do everything. They suggested completing Phase 2 of the DFCs, the development of quantifiable DFCs. Phase 1 of the DFCs development took two years, and as one hydropower interviewee said, "We do not want to lose all that effort." During Phase 2, the trade-offs among the DFCs could be identified; for example, how would the operations to reach one goal affect the others? Others said the program seems to be focused on HFEs, but instead the main focus should be to preserve the humpback chub; and a consensus Strategic Plan would re-focus the program.

At least some interviewees also said the LTEMP EIS ROD could completely change the direction of the program, and it would be a challenge for the program participants to understand that change and how their role could transform in the future.

At least some hydropower interviewees said clarity is needed about the driver of the GCDAMP: is it bottom up, from the stakeholders; is it from the scientists; or is it top down from the Secretary? They remarked that in the space of two to four years, the AMWG and TWG agreed on science questions and DFCs, and then a memorandum from the Secretary's Designee established different priorities. Either the Secretary should send AMWG her/his priorities, or AMWG needs to complete the DFCs or a Strategic Plan.

DOI Responsiveness

Some hydropower interviewees felt that DOI was responsive to recommendations from AMWG, and that there was good information flow from Interior to the GCDAMP. Others said they thought issues were influenced by politics, and some issues were handled differently depending on the Administration. Still others said that the Secretary's office does not need to be quite so engaged, and the TWG chair and the GCMRC chief should be allowed to operate without as much oversight.

Facilitation

At least some hydropower interviewees said facilitation was of benefit to the program.

GCMRC and Science

At least some hydropower interviewees were positive about the science provided by the GCMRC and expressed respect for the scientists. It was important to them that people understand that every action has a result, and it may not be immediate. The possibility of green sunfish being pushed downstream by an HFE was an example of unintended consequences. One said, "The program is

useful for understanding relationships and consequences, understanding that actions equal consequences, and that the latter come over a long period of time.”

At least some interviewees also suggested that opposing or contrasting viewpoints to those of GCMRC could be brought into the AMWG meetings so members could hear other opinions.

Meeting Frequency and Modality

At least some hydropower interviewees said they prefer face-to-face meetings to webinars, particularly when decisions need to be made, because one can understand the other participants better when everyone is in the same room. Also, the AMWG has more time to make decisions during face-to-face meetings. Some would like to have three face-to-face meetings each year, and others would like to avoid the third trip. However, if there is no decision to be made, interviewees suggested that there be no meeting at all or a webinar. Some suggested the meeting schedule should depend on what was on the docket for the year, instead of being on a regular schedule. Some also felt that TWG could meet more frequently were it not for budget constraints.

Meeting Management and Location

At least some hydropower interviewees made two suggestions for improvements for meeting management:

- Make it clear why each item is on the agenda, and what participants are supposed to do with information.
- As one interviewee said, “Never, ever meet in Phoenix in August again.”

Science Advisors

At least some hydropower interviewees said the Science Advisors’ role, and the idea of independent eyes on the science program, was very important. They also mentioned that the Protocol Evaluation Panels were essential, and that it had been a long time since the last one. There was some uncertainty about whether the positive contributions to the program would continue under the new contract because the new contractor is unknown.

Secretary’s Designee’s Position

Some hydropower interviewees said the level of the Secretary’s Designee did not matter to them. Others thought it should remain at the Assistant Secretary level because of the gravity of the responsibility of the GCDAMP and the relative lack of bias at that level.

Stakeholder Mix

At least some hydropower interviewees said the representation on the AMWG and TWG was balanced and included representatives from all stakeholders who have an interest in the Grand Canyon. At least some hydropower interviewees expressed concern about whether the National Parks Conservation Association and NPS had divergent interests, and whether two national environmental organizations might provide better representation on the AMWG. Others said that the changes in environmental representation were a detriment to the program because the new organizations have different interests and priorities and the program and its participants had to adjust to the change.

Stakeholders Getting What They Need

At least some hydropower interviewees said they were getting what they needed from the program: they had the opportunity to provide their perspectives, felt free to speak and were heard, and

acknowledged that sometimes decisions need to be made despite opposition. As one interviewee said, “You do not always get everything you want from a collaborative process.”

Tribal Relationships and Participation

At least some hydropower interviewees said they would like to hear more from the tribes, and were disappointed that some do not attend or do not participate in discussions.

NATIVE AMERICAN TRIBES’ PERSPECTIVES

Concerns and Interests

Tribal interviewees said that, just like the other groups of stakeholders, Native American tribes have different points of view, and they cannot be viewed as having the same opinions or sensitivities.

Tribal interviewees said that their connections to the Grand Canyon and the Colorado River ecosystem are profound and wide, and their experience of the area can be religious, spiritual, cultural, and historic, as well as scientific. Some said the Grand Canyon is sacred ground, so the impact of management actions (or their absence) reverberates perhaps in different ways than for other stakeholders. Others noted that tribes do not try to manage natural systems like Western culture does. Still others pointed out that many Native Americans were forcibly removed from the Grand Canyon, and while this is rarely if ever mentioned at the AMWG or TWG tables, it is in the forefront of many of their minds. They noted that although for Westerners that seems like ancient history, for Native Americans the past is very much experienced in the present.

Tribal interviewees said that being at the table, and being respected and heard by the other stakeholders and the Department of the Interior, are important interests for them. Regardless of the issue being discussed, they want their points of view to be considered and taken seriously.

Interviewees said that respect is a major component of any adaptive management program, and being able to look at issues from other perspectives can help the AMWG or TWG make difficult decisions. Interviewees said that part of consultation with tribes that is required by law for federal agencies is not only to involve tribal representatives in the GCDAMP, but also to talk with elected and religious leaders on the reservation. Consistent with tribal culture and joint decision-making by tribal leaders, interviewees pointed out that not all the tribal representatives are authorized to speak or act for their tribe.

Tribal interviewees also said that they were interested in better understanding of human and environmental relationships, ongoing learning, and flexible adaptation. They said that the entire Grand Canyon as well as its constituent parts were of vital interest to them. Specific resources of interest included sacred sites, shrines, salt mines, the salt trail, human remains, birds, wildlife, vegetation, plants and animals associated with springs and water, water quality, riparian areas, and all natural resources affected by GCD. Tribal interviewees indicated that some of these—the salt mines and trail and human remains, for example—were of utmost importance and the tribes might request to be the final decision-makers. Others said that their tribal interests include non-use values.

Assessment of What is Going Well and What Needs Improvement

Adaptive Management Approach

At least some tribal interviewees said that the original intent of the GCDAMP was to make changes to the preferred alternative in the 1996 ROD, Modified Low Fluctuating Flows (MLFF), if the

science indicated they were warranted. However, as one interviewee said, “The MLFF became more of a box than a starting point,” and changes have not been made.

All Interests Are Heard

Some tribal interviewees said that program participants have done well taking into account the different positions of the stakeholders, noting that it has been a number of years since they had a divisive discussion. Some said that others at the table tend to understand the tribes’ positions, even if they do not agree.

Some tribal interviewees also said that the change toward a consensus approach helped the tribes and the program. When all decisions were made by voting, many were frustrated because they did not feel heard or believe that they had the power to do anything. Also, it seemed there was no need for discussion because the votes had already been counted before the meeting.

Others said that while they are encouraged to speak up, suggestions and opinions from the tribes are ignored at times in ways that other stakeholders are not ignored. This was in part attributed to the difficulties of integrating TEK into a process where Western science has such a strong influence. Interviewees said TEK could offer reasons why something is happening in the ecosystem: why the humpback chub are here and not there, or why the environment is reacting in a particular way. However, sometimes it is not comfortable to mention it, and sometimes it is not accepted when it is mentioned. One interviewee said, “I do not bring up our traditional knowledge in the meetings because no one wants to hear it. ‘Old wives’ tales’ is how they see it.” Another said, “I shared this kind of thing [TEK] on the river trip. I have always been told, ‘Do not tell them certain things; they do not need to know about them.’ But I said I would tell them because if they do not hear it, they will not understand what I have to say at the stakeholder table. Maybe the five who were there will now understand. But what is that compared to the other 20 who were not there?”

These interviewees said that understanding culture is important in understanding people’s opinions and how they interact at the table, and it was important not to assume all stakeholders share the same worldview. For example, some tribes view even rocks and water as sentient: not with the consciousness of a human, but with self-awareness.

At least some tribal interviewees said that the concerns of the states were respected, listened to, and responded to by the Secretary more than the tribes. Interviewees also said that FWS and NPS have more influence at the table than anyone else, evidenced by two things: the focus on HFEs even though the only benefit is to river runners (NPS), and decisions made counter to tribal values because of the ESA (FWS).

At least some tribal interviewees suggested that researchers and the members of AMWG and TWG should participate in cultural and historic training regarding tribes, to increase their sensitivity to tribal perspectives about their associations with the Grand Canyon and to better understand the different points of view among the tribes.

Clear Goals and Objectives

At least some tribal interviewees said that the AMWG and TWG had been involved in development and approval of a Strategic Plan, DFCs, and strategic science questions, but they were no longer being used for guidance. They suggested looking at how relevant these guidance documents are

today, how things might have changed, and what might be done with these documents. As one interviewee, said, “If it was a good idea to have goals and objectives then, why not now?”

DOI Responsiveness

At least some tribal interviewees said DOI had been responsive to recommendations from the AMWG. Some tribal interviewees felt that some DOI employees had the tribes’ best interests at heart while others did not. Positive comments were offered about the DOI Tribal Liaison, Sarah Rinkevich, who was seen as genuinely trying to assist tribes.

DOI Speaking With One Voice

At least some tribal interviewees said that the decision to have DOI agencies speak with one voice had an unintended negative impact on tribes. They wondered if the Bureau of Indian Affairs, for example, was being asked not to speak in behalf of tribes. They suggested that more transparency would be a better policy.

Some thought it would be informative to understand the policy differences among the bureaus. Others thought that understanding the differences in technical issues would be even more important, even if they had policy unanimity.

Experience in Grand Canyon

At least some tribal interviewees said river trips were very important for a deep understanding of the Grand Canyon and of the tribal positions. They said they wished more AMWG members had participated in the 2015 tribal river trip. Others said DOI should fund a tribal river trip every two years, so the representatives could see the landscape about which they are making decisions. They said that the true meaning of the place does not appear by looking at photos or graphs on a screen in a meeting room. As one interviewee said, “The only way we can all understand is to be in the ecosystem and point out the situations.”

Facilitation

At least some tribal interviewees said facilitation greatly helps the program. Even when there is no overt conflict, it can help keep the meeting on track and on time. Interviewees said that the use of colored cards and posting ideas on the wall, as has been done at TWG, helps organize discussions so participants can be more productive.

GCMRC and Science

Some tribal interviewees said that GCMRC produces high-quality, cutting-edge science, and that the amount of science that is produced to help make decisions is a true benefit for the program. There was concern expressed about whether AMWG gives GCMRC adequate direction, and whether as a result the scientists study more of what they are interested in rather than what would benefit the program.

Other tribal interviewees said they believed that, instead of science driving decision-making in the program, political decisions are made and the science community is asked to support them. Interviewees mentioned, for example, that while trout predation on and competition with humpback chub has not been well tested, anecdotal and inferential evidence has become the basis for trout management actions that are not supported by adequate science.

Still other tribal interviewees were troubled by the focus on HFEs, because their benefit is only for beach building and they have a negative impact on other resources. Interviewees also said that there is still no cultural resources monitoring at the level of compliance with existing Programmatic Agreement, and they anticipate that the LTEMP process will not meet NHPA guidelines.

Meeting Frequency and Modality

At least some tribal interviewees said there was an adequate number of meetings now, and that more meetings might be needed when the budget is being developed. Interviewees said they prefer face-to-face meetings to webinars, because on a webinar they do not feel heard and are not as able to understand others.

Orientation

At least some tribal interviewees said that an introduction to the program for new AMWG and TWG members and alternates should be developed. It should cover substantive as well as process issues, the different interests, how AMWG and TWG function, and role of the Secretary's Designee and Secretary, among other items.

Overall Functionality

At least some tribal interviewees said that the collegiality of the GCDAMP was positive, and the longevity of the people involved was also of benefit to the program. Interviewees said the administrative history project would be helpful, particularly for newer appointees, as it is important to build on the program's history instead of forgetting it and risk repeating it.

Science Advisors

At least some tribal interviewees said they supported the Science Advisors and found their products useful, particularly to TWG members. They pointed out that the tribal representatives are not expert in all the resources, so a summary report is useful and helps them bring the tribal perspective.

At least some tribal interviewees said they were disappointed with the ineffectiveness of the previous Science Advisors and are hoping for more open engagement and discussion between TWG and Science Advisors. Previous reports went through the filter of the Executive Coordinator, which limited an open and constructive exchange. Tribal interviewees said that the AMWG should be better informed about what Science Advisors are supposed to be doing and should have input on what they do. Tribal interviewees also said that there often has been no Science Advisor in the cultural area.

Secretary's Designee Position

Some tribal interviewees had no opinion regarding whether the Secretary's Designee should remain at the Assistant Secretary level, while others thought it should remain there. They said that more involvement from the Secretarial level could help focus the program and keep it running smoothly. Without that involvement, there is more decision-making based on who can dominate the meetings. If the Secretary's Designee is in the Secretary's office, members can be assured that the information is getting to the Secretary. Also, at that level, the person is more likely to be neutral than a Reclamation appointee could be.

Still others thought the most important criterion was a Secretary's Designee who cares about the program and its stakeholders and who would be engaged in the program.

At least some tribal interviewees said that if the Assistant Secretary does not address an issue of importance to the tribes, the Secretary should step in and address that issue.

Stakeholder Mix

At least some tribal interviewees said it was helpful to have diverse interest groups involved. They also said that this was one of the few programs where tribes have been at the table since its initiation.

At least some tribal interviewees were concerned about the turnover in the AMWG and TWG, and said that it stymies progress when there are often new stakeholders at the table. Others urged that the appointees have management of the Grand Canyon in mind before being appointed, since the point of the AMWG was to solve problems.

At least some tribal interviewees were concerned that some stakeholders might care only about one resource and do not have the health of the resources of the Grand Canyon at the top of their priorities. Instead, they said, all resources should be considered equally important.

Stakeholders Getting What They Need

When asked if they were getting what they needed from the program, some tribal interviewees said they believed they had made an impact through the program and had mostly met their goals. Others said that they were not getting what they needed because tribes are not as valued as other stakeholders are.

At least some interviewees pointed out that Western science and tribal philosophy come from completely different worldviews in many cases. They said that tribal representatives want to see tribal opinions and positions valued and used in the decision-making process. However, as one interviewee said, “If it just becomes another check-the-box, ‘we talked to a tribe and we can move on,’ that would not achieve what the tribes are interested in.”

At least some tribal interviewees said that there was a lack of attention to tribal resources, and when experiments have negative impacts on tribal resources, mitigation is promised but not delivered.

Tribal Relationships and Participation

At least some tribal interviewees said that, while Native American participation in the program is still lacking, there have been improvements through encouraging more tribal presentations, mostly at TWG.

At least some tribal interviewees explained how difficult it was to explain TEK and relate it to Western science. They said that their way of knowing is often viewed as “old wives’ tales” and not taken seriously. For this reason, interviewees said, they do not speak up in the conference rooms. To counteract this, they suggested that tribes should be able to talk about it at the beginning of each meeting. They said the Stakeholder’s Perspective agenda item should also come early in the meeting.

At least some tribal interviewees said that those things of interest to the tribes (e.g., compliance with NHPA) are not integrated in the program in the same way as are, for example, ESA issues. As one interviewee said, “If it is cultural or tribal, people’s eyes glaze over and it is dealt with somewhere else.” Tribal interviewees said ESA compliance is coordinated through the GCDAMP, with research and monitoring performed by the GCMRC and outcomes fully integrated in the program. By

contrast, compliance with NHPA is unilaterally completed by Reclamation, and while it is reported to the GCDAMP to some extent, it does not seem to have the same level of discussion within GCDAMP. While the history is complicated, and there may have been good reasons years ago to keep the programs separate, they said the science and monitoring of cultural issues should be better integrated into GCMRC and the program.

At least some tribal interviewees also said that the development of a tribal consultation plan (TCP) is not going well. After the tribes recommended a very detailed TCP 15 years ago, DOI's current proposal is very short and commits federal agencies to nothing. These interviewees saw this as symptomatic of the GCDAMP, where tribes are treated as second-class citizens.

At least some tribal interviewees said that funding for tribal participation was established at \$95,000 per tribe in 1997. While costs have increased every year, the amount has never changed. Also, some tribes participate more than others. They suggested that tribes should propose an annual scope of work and budget for a scope of work that is not limited to \$95,000, and if they do what they said they would do, they should be compensated.

STATES' PERSPECTIVES

Concerns and Interests

State interviewees noted that water supply and delivery was a primary interest. Interviewees also said it was important for them to be able to fully develop their allocation of Colorado River water, in order to meet future water needs and obligations such as Native American water rights settlements. While many laws, regulations, court rulings, settlements, and interstate compacts (often collectively called "The Law of the River") govern allocation and delivery, state interviewees noted that AMWG recommendations to the Secretary could affect water delivery.

With regard to water delivery, state interviewees noted the issue of equalization flows, which some GCDAMP stakeholders have advocated spreading over multiple years (when the flows are large) to minimize negative impact on sediment or to maximize power generation. However, interviewees felt strongly that those flows need to be completed in a single year, in order to comply with the law and to ensure the right amount is delivered to the Lower Basin states (Arizona, California, Nevada). In addition, there is concern about the level of Lake Mead, which interviewees said is in constant deficit because 1.2 million acre-feet more is taken out each (normal) year than is delivered through "The Law of the River." As one interviewee said, "The Interim Shortage Guidelines were not set up for multiple-year equalization."

State interviewees also mentioned the importance of ensuring power generation and revenues are not diminished; for some this included both Glen Canyon and Hoover dams. They said that many in their states depend on hydropower for electricity. They also said that programs important to the states, such as the Upper Basin (Colorado, New Mexico, Wyoming, Utah) recovery programs, and the GCDAMP (as well as salinity control and repayment of projects) all are paid for by hydropower revenues. For that reason, interviewees said, it is critical that the activities in these programs are efficient and prioritized.

State interviewees also said that the health and well being of the river and its stakeholders is an important interest. They said that, for example, ESA compliance must be maintained in order for water delivery to continue. They prefer to address it through the GCDAMP rather than through

litigation or other methods that would be less effective and could dramatically upset the management of the Colorado River and the balance of interests. As one interviewee said, “I want to make sure that nothing the Secretary does jeopardizes the existence of humpback chub populations.” State interviewees also mentioned protecting the health of the Grand Canyon for tourism.

In addition to these issues, state interviewees noted that they need to pay attention to any venue in which the Colorado River is discussed and decisions could be made, because of the importance of the river to their states. They said their goal is to see that GCD is operated according to the Law of the River and all that entails. While there are other venues where they have direct input (such as Annual Operating Plan meetings), the GCDAMP is a major venue for oversight of dam operations.

State interviewees also said that the GCDAMP is a valuable setting for getting to know other stakeholders interested in the Colorado River and its dams. Here, they can ensure others understand their positions and their interests, and they can understand the positions and interests of others. They said they want to collaborate and be partners with the other stakeholders. GCDAMP gives them a venue to assure they know what is happening, they understand the science, their interests are considered, and they can offer options for action. Interviewees specifically mentioned getting to know tribal representatives as one of the benefits of the program.

Assessment of What is Going Well and What Needs Improvement

Adaptive Management Approach

At least some state interviewees said that they could live with some actions as experiments rather than management actions, even though they know this is frustrating for other stakeholders. This is because of serious underlying legal positions between the states and the federal government and between the Upper Basin and Lower Basin states. If management actions are adopted, states will need to evaluate whether they have to challenge them to protect their legal positions.

All Interests Are Heard

At least some state interviewees said that the interests of all members are taken into account, and they believed people feel they are heard.

Clear Goals and Objectives

Some state interviewees said that the program is operating under goals and objectives that participants largely accept. Others said it could be helpful to quantify the goals as presently articulated in the DFCs.

DOI Non-Voting Status

Some state interviewees said that the non-voting status of DOI agencies has worked out well: the AMWG and TWG have access to their expertise and involvement, and DOI representatives do not as strongly influence AMWG recommendations as they used to. As one interviewee said, “They still have the opportunity to influence the Secretary directly through their chain of command.”

Others said they were not sure they were hearing all the DOI agencies’ perspectives. They believed the bureaus had become quieter and offered less feedback since becoming non-voting. They wondered if the stakeholders were missing important information as a result.

DOI Responsiveness

At least some state interviewees said, in their opinion, “responsiveness” does not mean that DOI always does what is asked, but rather that they acknowledge and consider the recommendation.

State interviewees were mixed in their assessment of whether the Department of the Interior was responsive to recommendations from the AMWG. Some said DOI was very responsive, others said their responsiveness was adequate, and still others said the record was mixed. An example of non-responsiveness was when some objected to the Structured Decision-Making exercise in the context of the LTEMP EIS process, but it went forward anyway. Examples of responsiveness included accepting suggested changes to the charter, and revising an HFE plan due to concerns about the cost to hydropower.

DOI Speaking With One Voice

Some state interviewees said that the collegiality of the AMWG was enhanced when the Secretary’s Designee began to align the DOI bureaus on policy before AMWG meetings. Other interviewees said that when the DOI agencies spoke with one voice, it gave the stakeholders in the GCDAMP less of a role in the recommendation-making process.

Facilitation

At least some state interviewees said that having facilitation was helpful, and having a facilitator with extensive knowledge of the program was even more helpful.

GCMRC and Science

At least some state interviewees said they were pleased that the program is driven by science instead of policy agendas. They said the annual reporting meetings were useful and valuable.

At least some interviewees said that while research is important, there will never be perfect knowledge of any natural system, and thus there will never be perfect management.

At least some state interviewees also would prefer faster turnaround on the results of monitoring and experimentation. As one interviewee said, “If we are going to continue to implement an HFE protocol, we need more timely feedback on the results of previous HFEs so they can inform us as we plan for future HFEs.”

Meeting Frequency and Modality

Some state interviewees thought the current AMWG meeting schedule worked well; others said there were too many meetings. Several suggestions were made:

- Make sure two face-to-face meetings per year are needed before scheduling them.
- Do not schedule too many webinars. As one interviewee said, “Too many webinars, and we will never get to know each other.”
- Have more webinars and conference calls as appropriate (they are getting better) in addition to one or two face-to-face AMWG meetings. Be mindful of budgets.
- More TWG meetings could be done via webinar.
- Maybe alternate webinars and face-to-face meetings, presenting information during the webinar and having the policy discussion and decision during a face-to-face meeting.

Meeting Management and Location

At least some state interviewees praised and appreciated certain aspects of ongoing meeting management:

- Opportunities for stakeholder groups to make presentations so others can understand their points of view.
- Keeping the AMWG and TWG on schedule while giving everyone the opportunity to have their say, making sure different points of view are expressed.
- The development and distribution of agendas and documents.
- Putting motions on screen for editing in real time.

State interviewees also offered suggestions for improvement:

- Keep to the agenda; it is important to have materials in advance to allow everyone to prepare. Unexpected agenda items may disadvantage those stakeholders most who are not focused on the Colorado River all the time.
- Avoid last-minute motions that come up at the meeting; participants need time to review those ideas in advance.
- Clearly mark on the agenda when decisions are to be made.
- Separate the functions of reporting and policy-making at AMWG meetings, and make sure the information they need to act on policy recommendations comes to them before they act on it. Give them time to reflect on the information before they have to make a decision.

With regard to the location of meetings, some state interviewees said they would prefer to never meet in Phoenix in August, while others said that they prefer Phoenix, even in the summer. They also said, if the meeting is held in Salt Lake City, make sure it is not at the federal building because of the distractions for those who work there.

Open Discussion and Making Recommendations

At least some state interviewees said that they had not been able to speak freely in prior years because of lawsuits. While pleased that there was no more open conflict, interviewees said that they saw some tendency to avoid a full discussion for the sake of harmony, and warned that this would be detrimental to the process.

At least some state interviewees also expressed concern that AMWG had no real input into important recommendations and no real debate about issues, and that when recommendations were made, it seemed to be a “rubber-stamp formality” with major decisions made in advance or elsewhere.

Overall Functionality

At least some state interviewees said that the open conflict and dysfunctionality of prior years had largely dissipated, and differences are now worked through collaboratively. As one interviewee said, “The disagreements are still there but we have learned to accept each other and understand each other’s positions. We should cultivate that culture of respect, understanding, and working together since we [as individuals] will not be here forever.”

At least some state interviewees said that the move from voting to consensus was a benefit for the program, and that the AMWG and TWG have improved in their consensus-building skills.

At least some state interviewees also said that the budget development process had greatly improved, with a three-year budget cycle and less attention paid to small budget items. They also indicated there was some uncertainty about how the program would operate after implementation of the LTEMP.

Relationship Building

Some state interviewees said that the GCDAMP stakeholders have a better understanding of stakeholder interests and concerns due to opportunities given to stakeholders to present their goals in the “Stakeholder’s Perspective” agenda item. They said this understanding is important in a collaborative process.

Others noted that some stakeholders were cooperating agencies for the LTEMP EIS while others were not, and the former had much more information about the LTEMP than the latter. They were concerned that non-cooperating agencies might feel left out, and suggested that attention be paid to bringing everyone together after the ROD is signed.

Science Advisors

While some state interviewees said they were not clear about the role of the Science Advisors, others said the role of independent science review gives good value and has been helpful to the program. Still others said they would reserve judgment on the Science Advisors until they could assess the new Executive Coordinator.

Secretary’s Designee Position

Some state interviewees said that the Secretary’s Designee should remain at the Assistant Secretary level, for several reasons:

- The need to have someone close to the Secretary, as the AMWG is making recommendations to the Secretary.
- Authority, connection to the Secretary, and influence over all the DOI agencies.
- Engagement at the Secretarial level greatly changed the program for the better.
- The program is more influential and effective.
- The diversity of the stakeholders.
- Stakeholders take the program more seriously.

Others suggested that future Assistant Secretaries might not have a high level of knowledge, engagement, and skill. In those cases, a high-level Secretary’s Designee with the knowledge and time, even if at a lower level than Assistant Secretary, would be preferable.

Stakeholder Mix

At least some state interviewees said that the right stakeholders were at the table, and if more were added, they could lose effectiveness and productivity.

Stakeholders Getting What They Need

At least some state interviewees said they were getting what they needed from the program, even if, as one interviewee said, “Sometimes it seems painful; dealing with the Colorado River is an exercise in patience.”

Structure

At least some state interviewees said changing AHGs to smaller standing committees should be considered. For example, the Budget AHG is an ongoing committee, so it should not be called an ad hoc group. As works well in other programs, these standing committees could do a lot of the work on issues before bringing them to TWG and AMWG. Interviewees also recommended assigning members to committees instead of inviting everyone to be members. Another suggestion was to consider how GCMRC is organized and have technical subcommittees that mirror that: sediment, biology, etc.

OTHERS' PERSPECTIVES

Concerns and Interests

Given the disparate roles of the people in this category, it is not surprising that their interests are disparate, as well. Interviewees in the “other” category were interested in:

- Opportunities for stakeholders to give input on dam operations and other management actions.
- Ensuring stakeholders understand operational constraints and logistics as well as flexibility.
- Understanding stakeholders’ concerns.
- Good relationships among stakeholders as well as between stakeholders and those staffing the program.
- Unified vision and goals, and agreed-upon priorities for spending funds.
- Clarity about the important decisions to be made by stakeholders.
- Good processes for discussion and making recommendations, including open and transparent decision-making.
- Good science to support recommendations for management of Grand Canyon resources.
- Ensuring science and other information is shared, clear, and understandable.
- Good review of science and planning documents.
- Compliance with GCPA and other laws and regulations.

Assessment of What is Going Well and What Needs Improvement

Adaptive Management Approach

Some interviewees in the “other” category said that the GCDAMP may satisfy legal requirements, but it is not truly adaptive management that would improve downstream resources as described in the GCPA. Others said the most important part of adaptive management is having good stakeholder involvement, input, and communication, and the GCDAMP had succeeded at that.

All Interests Are Heard

At least some interviewees in the “other” category said they felt heard. They also noted that others feel under-represented, and that it was important to listen to those stakeholders and their ideas of how to make their voice heard. They speculated that tribes and the recreational community might not feel they have strong voices at the table.

At least some interviewees said that how members approach the collaborative process would have an impact on how satisfied they are. One interviewee said, “Members who are driven toward only one outcome may not feel they are heard. People who seem to make the most progress for their interests are those who are the most willing to listen and compromise. If they compromise, they feel more vested. So all interests are taken into account, but compromise has to happen.”

Clear Goals and Objectives

At least some interviewees in the “other” category said the program has no agreed-upon common direction. They said that after spending much time developing DFCs, they have not been brought up since, and were not even part of the LTEMP EIS. As one stakeholder said, “That is shameful. It is sad to see the DFCs go away after all that effort.” They said that there are many older planning documents that need to be consolidated or replaced, based on what is known today. They said there needs to be a guiding document that will help define where the program is going, including a long-term science guiding document.

At least some interviewees said that AMWG needs to complete Phase 2 of the DFCs effort, and establish consensus quantifiable DFCs. While that will be difficult, it is necessary in order to have a credible adaptive management program. Others said the product of Phase 1 of the DFCs was not very useful because it provided no sense of trade-offs. As one interviewee said, “The DFCs say, ‘Restore populations of extirpated fish,’ and ‘Produce as much hydropower as you can.’ You just cannot have it all.”

DOI Responsiveness

At least some interviewees in the “other” category said that DOI has been involved, engaged, and responsive to the GCDAMP stakeholders, and that it has provided outstanding leadership for the program in recent years. While some said that sometimes they wished DOI were not so involved, they added that it was better than no involvement because more can be accomplished. Interviewees said that even when DOI disagrees with stakeholders, they are respectful and offer explanations. Other interviewees said that an example of non-responsiveness was the fact that the AMWG-approved DFCs were not included in the LTEMP EIS.

Facilitation

At least some interviewees in the “other” category said that facilitation improved the productivity of both AMWG and TWG. They mentioned the importance of the skill level and the knowledge of the program of the current facilitator. They also said the Chair needs the support of a facilitator, and that both TWG and AMWG should be facilitated by the same person.

GCMRC and Science

At least some interviewees in the “other” category said GCMRC produces good science by highly skilled personnel. They called it one of the best science organizations in the country. They said that a well-funded, dedicated science center is the key to success of the GCDAMP.

The current and former Chiefs of the GCMRC (Scott VanderKooi and Jack Schmidt) were praised for being responsive to stakeholders, able to help stakeholders of varying scientific backgrounds understand the science, and good with science provision.

At least some interviewees said it is important to make the science simple enough for the stakeholders to understand and not be overwhelmed. They also said that it would be important to keep looking at the biological side of questions and do a better job of explaining cause and effect (not just correlations). A good monitoring program and assessment of monitoring information is important, in addition to good hypotheses and experiments.

At least some interviewees in the “other” category also said that GCMRC needs to help the AMWG and TWG understand which science questions are important for the program and which are not.

While the stakeholders make the recommendations to the Secretary, GCMRC can help them distinguish between trivial questions and vital ones. GCMRC should also make sure the stakeholders address questions of values and public policy, while the scientists address questions of natural and social science.

At least some interviewees said that stakeholders understood the fundamental management dilemma was how to address issues of rehabilitation of the sand resource in managing the fish resources. Others said it is known what is happening with sediment and what would happen under different regimes; they have good predictive models in this area. Still others said that AMWG should not have detached Lake Powell from the program because the way that reservoir moves and changes is critical to water quality downstream, and it is the connecting link between Upper Basin and Lower Basin systems.

At least some interviewees also said that communication during GCDAMP meetings should be conducted at a more rigorous level of scientific and technical understanding, so that innovative solutions could be developed. Stakeholders need to understand the science because if they are overwhelmed by it, they will have a tendency to revert to their traditional points of view.

Meeting Frequency and Modality

At least some interviewees in the “other” category said that the number of meetings, and the number of face-to-face meetings vs. webinars, was about right for TWG, AMWG, and the AHGs. They said that face-to-face meetings are important because they foster collaboration.

They mentioned that the TWG meetings via webinar during the sequester were not satisfying for most stakeholders. However, one webinar per year for AMWG was seen as positive in reducing travel. Interviewees also said that webinars were getting more effective.

At least some interviewees said that TWG might meet more often than it needs to. They also expressed concern that the more access stakeholders are given, the more they seem to want.

Open Discussion and Making Recommendations

At least some interviewees in the “other” category said that the recommendations the AMWG sends to the Secretary are not addressing the important issues facing the Colorado River or the Grand Canyon. They said there does not seem to be a lot of real negotiation at the GCDAMP table, and that most decisions were already made before the AMWG makes a recommendation.

At least some interviewees also said that the important decisions are made outside the GCDAMP, such as the interim shortage criteria, administrative decisions on equalization, the Basin Study, and the LTEMP EIS. They characterized these issues as a struggle between the states and the federal government over who controls the river, and were concerned that environmental concerns were not strongly considered in that struggle. They were worried that the ability to make recommendations afforded the AMWG would be even more restricted after the LTEMP ROD is signed. Interviewees also said the equalization flows mandated by the interim shortage criteria could reverse all the sandbars built by HFEs.

While some interviewees said there was open and good communication among all the parties, others said there was little candid exchange of critical information. They said the formality of the meetings, and the pre-meetings held by various stakeholder groups, preclude open creative communication

during meetings. As one interviewee said, “When stakeholders say something openly, it is because they want to go on record. It is difficult then to reverse or change that position.” However, they said, brainstorming often happens on the breaks.

At least some interviewees in the “other” category said that a challenge to multi-stakeholder programs is that people can begin to believe it is more important for everyone to get along than to make tough courageous decisions, and this can have an impact on honest discussion.

Orientation

At least some interviewees in the “other” category said the program needs an orientation for new members.

Overall Functionality

At least some interviewees in the “other” category said the GCDAMP participants were engaged and involved and were willing to do the hard work of collaboration. They said there was good communication in the program and people meet frequently to discuss important issues, noting that there are other basins in which even those small things never happen. They also noted that there is much trust and stakeholders are respectful of each other.

Public Outreach

At least some interviewees in the “other” category said that many people who could benefit from the program know nothing about it. They suggested that someone outside the Secretary’s office publish a policy paper about the importance of the program.

Relationship Building

At least some interviewees in the “other” category said it is important to give stakeholders opportunities for building relationships, such as social activities during their meetings, and they suggested the program offer more such opportunities. When you can talk to others in social settings, as one interviewee said, “You can realize the other person as a human being, not just see them as a position they hold.”

They also noted that some stakeholders know far more about what is going on than others, and were concerned about the possible negative impact on cohesiveness and effectiveness.

Science Advisors

Some interviewees in the “other” category did not know what Science Advisors do. Others said the past Science Advisors seemed not to be very involved. Still others saw significant successes with the previous program.

At least some interviewees said the role of the Science Advisors as originally envisioned was an important one and attention should be paid to it. There was interest and uncertainty about how the new contractor would fill the role. Interviewees expressed hope that Science Advisors would be useful and that there would be more structure to the program. Interviewees said that the scientists could benefit from interaction with the reviewers. They also said that review of a plan every three years is not sufficient.

Secretary's Designee Position

Some interviewees in the “other” category had no opinion on the issue of the position of the Secretary's Designee. Others thought it was important for the Secretary's Designee to remain at the Assistant Secretary level, for these reasons:

- The importance of the Colorado River and dam operations warrants it.
- With a Secretary's Designee at that level, the program will have the attention of the Secretary.
- The key to good adaptive management is good, clear leadership and understanding who the decision-makers are.
- DOI agencies do not always agree, and a DOI agency Secretary's Designee could be seen as biased.

Still others said the Secretary's Designee does not need to be at the Assistant Secretary level, and that Reclamation and others can manage the various elements of the program. However, someone from the Assistant Secretary's office should oversee its direction. Another point of view was that it should be up to the Assistant Secretary to decide.

Others said that if the Secretary's Designee were disengaged, certain stakeholders would be likely to control the program. For that reason, whether it is the Assistant Secretary or not, the Secretary's Designee should be a fully-engaged representative of the Secretary who has the full support of the Assistant Secretary.

Stakeholder Mix

At least some interviewees in the “other” category said the mix of stakeholders around the table was appropriate. One possible missing interest was recreation enterprises in Lake Powell. They supported the idea of having speakers at AMWG meetings representing differing points of view.

At least some interviewees also mentioned that, given the importance of the work and the Grand Canyon, the environmental community might be better served with two national organizations at the table, instead of one national and one local entity.

Stakeholders Getting What They Need

Some interviewees in the “other” category said they were achieving their goals within the program, and others said they were not.

Substantive Accomplishments

At least some interviewees in the “other” category said the program is not making much of a difference, and it might be time to assess the assumptions under which the program was initiated.

Tribal Relationships and Participation

At least some interviewees in the “other” category said that they were concerned that the tribes were not engaged in the process, resulting in less understanding of their points of view around the table.

At least some interviewees also expressed concern that the points of view shared at the table by tribal representatives did not fully represent the points of view of the tribes as a whole.

EXPAND SCOPE

There was a diversity of opinion among interviewees, and within every stakeholder group, about whether GCMRC should expand its scope to cover the rest of the Colorado River basin.

The primary reasons for opposing the idea are:

- Insufficient funding. (Some said that with additional funding, they might support expansion if the GCDAMP were not negatively impacted.)
- Funding is dedicated to the GCDAMP and cannot and should not be spent elsewhere; other programs are not a function of GCD.
- It would exceed the statutory mandate of the program.
- GCDAMP is already a cumbersome program and would become more complex if it were expanded.
- Nothing in the GCDAMP stops GCMRC from doing work elsewhere or from collaborating with other programs.
- The program needs to focus on its current scope, goals, and critical science needs.
- The scientists from the different programs already coordinate and collaborate sufficiently, or could increase their coordination and collaboration to be sufficient.

The primary reasons for supporting the idea are:

- There are many connections between the different stretches of the river; what happens in the Upper Basin affects the Lower Basin and vice versa; it is all one basin and the science needs to address the basin holistically.
- Issues are similar throughout the basin, especially with listed populations. A true recovery program has to include both Upper Basin and Lower Basin.
- The science being done in the Upper Basin and below Hoover Dam could enhance the science provided by GCMRC, and vice versa.
- It is difficult to justify spending \$10 million per year on a small stretch of river covered by the GCDAMP.
- There is a better return for the investment elsewhere, and it is in the national interest to do so.
- Sometimes the scientists need to work outside Grand Canyon to figure out what was going on inside Grand Canyon.
- Other parts of the basin would benefit from the GCMRC's expertise if they became a portable shop.
- GCMRC is already doing work outside the Grand Canyon reach.
- Because of the LTEMP evaluation of what has happened and where the problems are, it would make sense for decisions to be made in context of the entire basin.
- GCMRC could add value to the overall basin effort, and it is not duplicated elsewhere.

Some interviewees noted that new legal authority and/or new funding would be needed to make such a change. Some also said the stakeholder groups that oversee the various programs are not interchangeable and thought would need to be given to whether they should be combined or remain separate.

Some of those opposed said that work outside the Grand Canyon would be acceptable if it would directly help understand the Colorado River ecosystem in Grand Canyon, such as using other areas as controls.

There were interviewees on both sides of this question who said that enough communication already occurs among the programs, and who said that more needed to occur. At least some interviewees also suggested that the goals of the various programs should be more consistent, if possible.

RETREAT

When interviewees were asked whether AMWG and/or TWG should meet periodically in retreat, responses ranged from yes, to qualified yes, to only if necessary (and it is not clear it is necessary), to no opinion.

Suggested purposes and outcomes included:

- Figure out what LTEMP means for the GCDAMP, where the program is going, what is the role of the AMWG and TWG.
- Improve relationships and mutual understanding.
- Stakeholder presentations from each stakeholder organization.
- Clarify goals and objectives; review all guidance documents, put some to rest, update others; review the vision and mission statement.
- Before working on goals, clarify DOI's intention to implement them. Will goals set by AMWG change the program? Or will the program change only based on changes to the Secretary or the Secretary's goals?
- Kick off DFCs phase 2 (quantification).
- Update the Strategic Plan.
- Agree on what participants want the organization to look like in five years and develop a map to get there.
- Big-picture creative thinking.
- Take off our stakeholder hats and reflect on what to do for the river and how this program can help get true science and implement true things.
- Discuss core issues and core challenges; have an honest discussion about the challenges and possible solutions. Make it discussion-based and challenge-based, not information-based.
- Evaluate progress.
- Only for a really specific purpose, e.g., to fix some problem with the program.
- If conflict arises.
- Look at purpose and need of the TWG and the time it invests in reviewing the GCMRC workplan and budget.

Timing suggested included:

- After the LTEMP ROD is signed.
- Every once in a while, and probably soon because of all the new people.
- Every few years at the most, and needed soon, after LTEMP is finished.
- Every 1, 2, or 3 years.
- Every 3-5 years.
- Every 5-10 years.
- Not regularly scheduled and no need today.

Other comments made included:

- Do not do it just to do it; have very specific goals and outcomes.
- It should be in a place other than a conference room.

- It should be on the river; maybe on a short trip such as Diamond down.
- It should be informal. River trips are great for relationship building.
- Having AMWG and TWG together would be the most effective retreat.
- Include TWG members if implementation is discussed.
- TWG should have a separate retreat because they are focused on science.
- Only TWG should meet in retreat.
- The process is working well; no need to discuss process. However, this could change rapidly under new leadership.
- A third party, not AMWG, should evaluate the goals and accomplishments of the AMWG.

Conclusion

This report contains detailed results from interviews of 33 current and former participants in the GCDAMP. The majority of the interviewees' comments relate to questions about what the interviewees think is going well in the program and what they think might be improved.

Without being prompted, many interviewees noted that the program is going much better than before, in terms of improved collegiality, better communication among stakeholders, more understanding among stakeholders of each other's views and interests, and an improved process of making recommendations to the Secretary.

In the "Recommendations and Partial Synthesis" section, the author recommends that GCDAMP participants discuss a number of issues because of their importance to the process and the level of disagreement and dissatisfaction among participants. She believes that discussion can enable mutual understanding, ease frustration, and perhaps point the way to resolving disagreements.

In addition, a number of other actions are recommended to enable the GCDAMP and its participants to be more productive and satisfied with the program: some clarifications from the Secretary's Designee about the role of the FACA committee and expectations for DOI representatives, a determination after the LTEMP EIS ROD is signed about the future of the program and the role of the AMWG and TWG, and how to handle other ideas that were suggested by interviewees.

TMOC is hopeful that this report is helpful and informative, and that it provides a way forward for those who want to address these issues.

Attachment A: Interview Questions

Please see below for the interview protocol that was sent to all interviewees in advance, and then used to conduct the interviews.

You will see that the questions asking about what was going well and what needed improvement—answers to which form the bulk of this report—were preceded by a list of optional prompts that some interviewees used to form their answers. In addition, three follow-up questions were asked of everyone who had not already addressed them:

1. Do you think DOI has been responsive to recommendations from the AMWG?
2. Do you think the Secretary's Designee should continue to be the person in the Assistant Secretary position?
3. Considering the reasons you are at the AMWG table, are you getting what you need from the program?

Glen Canyon Dam Adaptive Management Work Group 2015 Situation Assessment—Interview Protocol

The following questions will be used as a guide; additional questions may be asked during the interview depending on the conversation. Questions will be sent to interviewees in advance.

1. Overview of the Situation Assessment
 - Purpose and desired outcomes
 - Allows all interviewees to understand others' concerns and interests, which can help the group collaborate on substantive issues.
 - Invites concerns about structure and process to be expressed so they can be addressed.
 - An assessment report will be shared with all interviewees and the public.
 - The report will not quote any interviewees by name.
 - To be more manageable and useful, the report will group comments by stakeholder group:
 - States, Western Area Power Administration, Colorado River Energy Distributors Association, and Utah Associated Municipal Power Systems
 - Environmental groups, recreational groups, and AGFD
 - Tribes
 - DOI agencies
 - Interviewees can designate any part of their interview confidential, in which case it will neither be shared with anyone outside the interviewers nor included in the report.
2. Mary will share her background, role, and any potential conflicts of interest.
3. The interviewee will be invited to introduce him/herself, including how long they have participated in the GCDAMP.
4. What are your agency/organization's interests and goals in participating in the GCDAMP?

NOTE: When answering the following two questions, 5 and 6, you may want to consider the following areas:

- *Clear goals and objectives for the program*
- *The "right" stakeholders invited to participate*

- *Adequate level of engagement and responsiveness by DOI*
 - *(FYI: An Assistant Secretary of the Interior chairs the AMWG, and DOI agencies are non-voting members of the AMWG.)*
 - *The interests of all members are taken into account when reaching consensus*
 - *How often AMWG, TWG, and the Ad Hoc Groups meet*
 - *The normal mix of two face-to-face meetings and one webinar each year for AMWG*
 - *Whether the use of a professional facilitator increases AMWG productivity*
 - *Science Advisors' contributions to the program*
 - *GCMRC's contributions as science provider*
5. What do you think is going well in the program?
 6. What can be improved? How should it be improved?
 7. Do you think the Program should expand its geographic scope to assist other programs in the basin, such as the Upper Colorado River Endangered Fish Recovery Program and the MSCP?
 8. Should AMWG and/or TWG members periodically assemble to discuss the goals of the program through an invitation-only retreat?
 9. Should we interview anyone else besides AMWG members, the current and former GCMRC Chief, the current and former Secretary's Designee, the TWG chair, and Glen Knowles (Reclamation staff)?
 10. Is there anything else you would like to say?

Attachment B: Interviewees

The interviewees, organized in their groups, are listed below. Note that the New Mexico AMWG seat was vacant; however, the New Mexico alternate (Don Ostler) was interviewed. The Navajo Nation AMWG and TWG seats and their alternates were vacant.

DEPARTMENT OF THE INTERIOR

- Bureau of Indian Affairs: Chip Lewis (AMWG member)
- Bureau of Reclamation: Daniel Picard (AMWG member) and Beverley Heffernan (AMWG alternate)
- National Park Service: Dave Uberuaga (AMWG member)
- U.S. Fish and Wildlife Service: Steve Spangle (AMWG member), Jess Newton (involved in LTEMP), Kirk Young (TWG member and AMWG Alternate) Lesley Kirkpatrick (TWG alternate)
- Jennifer Gimbel, Principal Deputy Assistant Secretary, Water and Science and Secretary's Designee
- Anne Castle, immediate past Secretary's Designee
- Lori Caramanian, immediate past Deputy Assistant Secretary, Water and Science
- Jane Lyder, National Park Service contractor and former Deputy Assistant Secretary of the Interior for Fish and Wildlife and Parks

ENVIRONMENTAL AND RECREATIONAL

- Arizona Game and Fish Department: Jim deVos (AMWG member)
- Grand Canyon River Guides: Sam Jansen (AMWG member and TWG alternate)
- Grand Canyon Wildlands Council: Larry Stevens (AMWG and TWG member)
- International Association of Flyfishers/Trout Unlimited: John Jordan (AMWG member)
- National Parks Conservation Association: David Nimkin (AMWG member and TWG alternate) and Kevin Dahl (TWG member and AMWG alternate)

HYDROPOWER

- Colorado River Energy Distributors Association: Leslie James (AMWG member and TWG alternate)
- Utah Associated Municipal Power Systems: Ted Rampton (AMWG member)
- Western Area Power Administration, Department of Energy: Lynn Jeka (AMWG member)

NATIVE AMERICAN TRIBES

- Hopi Tribe: Mike Yeatts (AMWG alternate and TWG member)
- Hualapai Tribe: Kerry Christensen (AMWG alternate and TWG member)
- Pueblo of Zuni: Kurt Dongoske (TWG member)
- Southern Paiute Consortium: Charley Bulletts (AMWG member)

STATES

- Arizona: Tom Buschatzke (AMWG member)
- California: Tanya Trujillo (AMWG member), Chris Harris (AMWG alternate and TWG member), Jessica Neuwerth (TWG alternate)
- Colorado: John McCLOW (AMWG member) and Ted Kowalski (AMWG alternate and TWG member)

- Nevada: Jayne Harkins (AMWG member)
- New Mexico: Don Ostler (AMWG alternate and TWG alternate, interviewed with Steve Wolff)
- Utah: Eric Millis (AMWG member) and Robert King (AMWG alternate and TWG member)
- Wyoming: Steve Wolff (AMWG member) and Don Ostler (AMWG alternate)

OTHERS

- Roger Clark, Grand Canyon Program Director, Grand Canyon Trust
- Dave Garrett, immediate past Executive Coordinator of the Science Advisors
- Katrina Grantz, Hydraulic Engineer, Operator of Glen Canyon Dam, Bureau of Reclamation
- Vineetha Kartha, TWG Chair and Shane Capron, TWG Co-Chair
- Glen Knowles, immediate past Chief of the Adaptive Management Group, Reclamation (staff to the program)
- Jack Schmidt, immediate past Chief of GCMRC
- Scott VanderKooi, Chief of GCMRC

Attachment C: Abbreviations and Acronyms

AGFD	Arizona Game and Fish Department
AHG	Ad Hoc Group
AMWG	Adaptive Management Work Group
Assistant Secretary	Assistant Secretary of the Interior, Water and Science
DFCs	Desired Future Conditions
DOI	Department of the Interior
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FACA	Federal Advisory Committee Act
FWS	Fish and Wildlife Service
GCD	Glen Canyon Dam
GCDAMP	Glen Canyon Dam Adaptive Management Program
GCMRC	Grand Canyon Monitoring and Research Center
GCPA	Grand Canyon Protection Act
HFE	High Flow Experiment
LTEMP	Long-Term Experimental Management Plan
MLFF	Modified Low Fluctuating Flows
MSCP	Lower Colorado River Multi-Species Conservation Program
NHPA	National Historic Preservation Act
NPS	National Park Service
Reclamation	Bureau of Reclamation
ROD	Record of Decision
Secretary	Secretary of the Interior
TCP	Tribal Consultation Plan
TEK	Traditional Ecological Knowledge
TMOC	The Mary Orton Company, LLC
TWG	Technical Work Group

Science Advisors

Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
February 24-25, 2016

Agenda Item

Science Advisors' Executive Coordinator FY2016 Workplan Update

Action Requested

Feedback requested from AMWG members.

Presenter

David Braun, Senior Associate, Sound Science LLC; and GCDAMP Executive Coordinator for Science Advisors

Previous Action Taken

The Bureau of Reclamation issued a request for proposals in April 2015 for the Executive Coordinator for Science Advisors for the Glen Canyon Dam Adaptive Management Program (GCDAMP). In August 2015, Reclamation awarded the contract to Sound Science LLC, with Dr. David Braun to serve as the Executive Coordinator. Dr. Braun's first responsibility was to work with Reclamation to establish a workplan for the Science Advisor program for the remainder of FY2016.

Relevant Science

N/A

Summary of Presentation and Background Information

This presentation will consist of a progress report on the Science Advisor program workplan for the remainder of Fiscal Year (FY) 2016. This plan takes into account the fact that, ordinarily, the Executive Coordinator would have developed the plan for a fiscal year during the previous fiscal year in consultation with Reclamation, GCMRC, TWG, and AMWG—an approach not feasible in this instance. The workplan for the Science Advisors program for FY2016 therefore has three goals:

- (1) Establish an updated charter for the Science Advisors' program and its Executive Coordinator office;
- (2) Establish the FY2017 workplan;
- (3) Work with the GCMRC to ensure the successful design and completion of the Fisheries Protocol Evaluation Panel (PEP).

Achieving the first two goals will involve:

- Reviewing the results of the AMP assessment survey;
- Consulting with TWG members, both individually and in groups;
- Consulting with GCMRC and with Reclamation;
- Consulting with the previous Executive Coordinator and Science Advisors from FY2010-14;

Science Advisor Executive Coordinator FY2016 Workplan Update, continued

- Reviewing Independent Science Panel programs in other large multi-institutional adaptive management programs for large western rivers (e.g., Sacramento-San Joaquin, Columbia, Missouri), and
- Working closely with the TWG and submitting recommendations to the AMWG.

Recommendations regarding items (1) and (2) will be developed with an eye toward their being concluded at the August 2016 AMWG meeting. The Fisheries PEP tentatively is being planned for mid-summer, with a final report to be completed by the panel by the end of FY2016.

Miscellaneous

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(Updated: February 8, 2016)

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Glen Canyon Dam
Adaptive Management Work Group

GROUND RULES

1. Arrive on time.
2. Commit to full participation.
3. Do homework before class begins.
4. Take private meetings outside.
5. Wait to be recognized before speaking.
6. Show respect for others
7. Be concise.
8. Stick to the topic.
9. Save new business for the appointed time.
10. Help keep the meeting on schedule.



United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, DC 20240

DECISION MEMORANDUM FOR THE SECRETARY

To: Secretary

From: Jennifer Gimbel *Jennifer Gimbel* NOV 12 2015
Secretary's Designee, Glen Canyon Dam Adaptive Management Work Group
Principal Deputy Assistant Secretary – Water and Science

Subject: Report and Recommendations from the Glen Canyon Dam Adaptive Management Work Group (AMWG) Federal Advisory Committee Meetings held on February 25-26, 2015, May 28, 2015, and August 26-27, 2015

Introduction

The Glen Canyon Dam AMWG is a Federal advisory committee chaired by a designee of the Secretary of the Interior. I am the current designee. The AMWG provides advice and recommendations to the Secretary relative to the operation of Glen Canyon Dam and the actions of the Glen Canyon Dam Adaptive Management Program (GCDAMP) and reports to the Secretary through the Secretary's designee.

Members of the AMWG are appointed by the Secretary with representation from the Colorado River Basin states, tribal nations, environmental and recreational groups and power interests. The Department of the Interior (Department) is represented by the U.S. Fish and Wildlife Service (FWS), the National Park Service (NPS), the Bureau of Indian Affairs, the Bureau of Reclamation (Reclamation) and the U.S. Geological Survey (USGS). Western Area Power Administration is also represented.

Background

The AMWG held three meetings in 2015. The first was a 2-day in-person meeting on February 25-26, 2015, in Salt Lake City, Utah. The second was a 3-hour webinar on May 28, 2015. The third was a 2-day in-person meeting on August 26-27, 2015, in Phoenix, Arizona. The meetings were constructive and well attended. This memorandum contains a summary of issues discussed, actions taken, and recommendations for your consideration.

February 25-26, 2015, Meeting:

The AMWG held a 2-day in-person meeting on February 25-26, 2015 in Salt Lake City, Utah. The following were discussed:

Renewal of the AMWG Charter. The AMWG Charter is due for renewal in August 2015. The Charter Ad Hoc Group was asked to review and revise it according to concerns raised by the members.

DOI-DOE Hydrograph Development for Water Year 2016. In cooperation with the other Federal agencies, Reclamation developed the Department's recommendation for the 2016 Hydrograph. The 2016 recommendation is based on the 2015 Hydrograph incorporating new information that may influence its development. Reclamation will review the hydrograph information and an analysis will be conducted that includes the Technical Working Group (TWG) and the Department. A recommendation for the AMWG's consideration will be provided later this year.

Updates from the 2015 Annual Reporting (AR) Meeting. The AR meeting was held in January 2015 and included updates on sand mass balance, correlation between channel geomorphology and sandbar building, updates on native and nonnative fish populations, an introduction to a model for re-vegetation, reports on humpback chub translocations, Bright Angel trout removal, invasive species updates, aquatic foodbase assessments, and tribal monitoring. Results were further discussed at the TWG's April meeting.

Long-Term Experimental and Management Plan (LTEMP) EIS Update. The LTEMP Team has finalized modeling, analysis, and edits in anticipation of a draft EIS by March 2015. Analyses of the seven alternatives, including the newly developed hybrid alternative, were presented.

Panel on Current Projects and Issues in Utah. Presentations were made on the following:

- Central Utah Project (CUP). The CUP began construction in May 1959; the Bonneville Unit was completed in 1964. The CUP captures flows from the Uinta Mountains and through a transbasin diversion delivers water to the Wasatch Front. The CUP Completion Act (CUPCA) of 1992 provides policy guidance and direction for completing the CUP and transfers construction responsibilities from Reclamation to the Central Utah Water Conservancy District, while retaining Federal oversight.
- Utah Reclamation Mitigation & Conservation Commission. This presidential commission was established in July 1994 under the CUPCA of 1992. Common issues facing the Glen Canyon Dam Adaptive Management Program and CUPCA include water supply and delivery, ecosystem needs, hydropower generation, endangered species, and funding.
- State of Utah. The Utah Division of Water Resources is the State's water planning and development agency and assists local water suppliers and users with planning and anticipated future needs. Population growth is driving conservation efforts and Utah has established a goal of reducing water use 25% by 2015.

In addition, Reclamation hosted a High Flow Experiment Workshop following the AMWG Meetings to review the effects of these flows on downstream resources and answer questions of the stakeholders.

May 28, 2015, Webinar:

This webinar/conference call focused on the following issues:

Renewal of AMWG Charter. The revised Charter was presented to the AMWG for further discussion and approval. An unresolved issue is the inclusion of an individual from an academic institution on the AMWG. The AMWG continued to discuss and may amend the charter at a later date when the details have been worked out.

DOI-DOE Hydrograph Development for Water Year 2016. Modified Low Fluctuating Flows will be optimized by targeting lower August and September monthly releases in order to retain sand inputs high in the system in anticipation of a High Flow Experiment. In cooperation with the FWS, Reclamation has been exploring the idea of reducing June volumes. The TWG provided a recommendation for the AMWG's consideration at their August meeting.

Fiscal Year (FY) 2016 Budget and Work Plan. Adjustments were made to both Reclamation's and the Grand Canyon Monitoring and Research Center's (GCMRC) budgets to reflect Consumer Price Index (CPI) changes. The FY16 overhead rate was estimated at 21.3%, but is now projected to be about 13%. It is too late in the year to adjust the USGS overhead rates so some of the burden that GCMRC paid to USGS will be returned to GCMRC, which is equal to the CPI adjustment. The AMWG will review and make a formal recommendation at its August meeting.

August 26-27, 2015, Meeting:

This meeting was held in Tempe, Arizona. The following were discussed:

Renewal of AMWG Charter. The Charter was revised in accordance with Federal Advisory Committee Act guidelines and signed by Secretary Sally Jewell on August 24, 2015.

Fiscal Year 2016 Budget and Work Plan. Reclamation and the GCMRC proposed changes to their budgets based on the CPI rate. The members discussed and passed the following motion by consensus:

The AMWG recommends to the Secretary of the Interior for her approval the Final FY 2015-2017 Triennial Budget and Work Plan from the Bureau of Reclamation and the Grand Canyon Monitoring and Research Center as recommended by the AMWG August 28, 2014, for implementation in FY 2016, with a FY 2015 corrected CPI of 1.7% and corrections to the GCMRC overhead rates.

DOI-DOE Hydrograph for Water Year 2016. The AMWG discussed the proposed DOI-DOE hydrograph and passed the following motion by consensus:

The AMWG recommends to the Secretary of the Interior for her approval the WY2016 Hydrograph for Glen Canyon Dam.

- *Annual Release Volumes will be determined by the 2007 Interim Guidelines and shall be reviewed and adopted through the normal annual operating plan process (in consultation with the Basin States as appropriate).*
- *Monthly Release Volumes are anticipated to shift depending upon: (1) the projected Annual Release Volume, (2) power plant capacity, and (3) the magnitude of a potential High Flow Experiment.*
- *Monthly Release Volumes may vary within the targets identified below. Any remaining monthly operational flexibility will be used for existing power production operations under the Modified Low Fluctuating Flow (MLFF) alternative selected by the 1996 ROD and contained in the 1995 FEIS and in compliance with all applicable NEPA compliance documents (HFE EA, NNFC EA, 2007 Interim Guidelines). Monthly release volumes proposed in this hydrograph will not affect operating tier determinations for Lakes Powell and Mead under the 2007 Interim Guidelines.*
- *Release objective for June is:
600 to 650 kaf for annual releases below 9.0 maf
800 kaf for annual releases of 9.0 maf to less than 9.5 maf
900 kaf for annual releases of 9.5 maf to less than 10 maf
Greater than 900 kaf for annual releases 10 maf and greater*
- *Release objective for August is:
800 kaf for annual release below 9.0 maf
900 kaf for annual releases of 9.0 maf to less than 10 maf
Greater than 900 kaf for annual releases 10 maf and greater*
- *Release objective for September is:
600 kaf for annual releases below 9.0 maf
700 kaf for annual releases of 9.0 maf to less than 10.0 maf
800 kaf or greater for annual releases of 10.0 maf or greater; up to power plant capacity for high equalization releases*
- *Monthly Release Volumes will generally strive to maintain 600 kaf levels in the shoulder months (spring and fall) and 800 kaf in the December/January and July/August timeframe.*

Additionally, Reclamation will continue to apply best professional judgment in conducting actual operations and in response to changing conditions throughout the water year. Such efforts will continue to be undertaken in coordination with the DOI-DOE agencies and in consultation with the Basin States as appropriate, to consider changing conditions and adjust projected operations in a manner consistent with the objectives of these parameters as stated above and pursuant to the Law of the River.

Fish Management Recommendation. The AMWG recreational fish representation and the angling community, with the cooperative participation of Arizona Game and Fish Department, recognized that the provisions of the National Park Service Comprehensive Fishery Management Plan (CFMP) for both the recreational trout fishery and the fishery as a whole would benefit from an expansion of the CFMP to include more detailed proposed actions. A draft Lees Ferry Recreational Trout Fishery Management Recommendations document was developed and provided to interested agencies for review and comment. The AMWG passed the following motion by consensus:

The AMWG requests the Secretary's Designee direct GCMRC to conduct a technical review of the Lees Ferry Recreational Trout Fishery Management Recommendations and report its findings to the TWG; and directs the TWG to evaluate the GCMRC review at their October 2015 meeting, and report its findings to AMWG at its February 2016 meeting.

Glen Canyon Dam Long-Term Environmental and Management Plan Environmental Impact Study (LTEMP EIS) Update. A cooperating agencies draft EIS was distributed on June 29 for a 30-day comment period. At the request of the cooperators, the comment period was extended to 90 days and comments were submitted on September 30, 2015. A public draft is planned to be distributed by mid-December 2015 with a 60-day public comment period.

Recognition of Service. The AMWG acknowledged the work and contributions made by Dr. L. David Garrett, former Executive Director of the Science Advisors. The following motion was approved unanimously:

The Adaptive Management Work Group formally recognizes the longstanding and significant contributions of Dr. L. David Garrett to the Glen Canyon Dam Adaptive Management Program (GCDAMP) in many different capacities, including first chief of the Grand Canyon Monitoring and Research Center (1996-1999) and the Executive Coordinator of the Science Advisors (2001-2013). Dr. Garrett has significantly helped the GCDAMP to address the many complex science and operational issues associated with Glen Canyon Dam and the Grand Canyon National Park and environs. The AMWG wishes to express its sincere thanks to Dr. Garrett and our warmest wishes for his happy and successful future. Approved unanimously.

Introduction of new Science Adviser – Reclamation has contracted with Sound Science LLC for science adviser services, the executive coordinator is Dr. David Braun.

Special Tribute to Mr. Jason Thiriot. The AMWG paid special tribute to Mr. Jason Thiriot who had served as an AMWG alternate for the State of Nevada since August 2013. Jason was involved in many aspects of the GCDAMP and instrumental in leading public outreach efforts. The AMWG teamed with the Arizona Diamondbacks major league baseball team to raise funds for the Thiriot Children Memorial Fund, they also made personal cash donations.

Conclusion

The AMWG endeavors to provide informed recommendations concerning the operations of Glen Canyon Dam for your endorsement. Decisions are made by a group of diverse and committed stakeholders that span the resources and values of the Grand Canyon. Their decisions are informed by leading edge science conducted by GCMRC and they are advised by the participating Department agencies.

Recommendation

The AMWG brings a diverse group of stakeholders to the table that provide scientifically informed and broadly supported resource management recommendations to protect downstream resources in the Grand Canyon. The Department of the Interior (Department) agencies, my staff and I work closely with the AMWG to ensure good dialogue and informed and practical recommendations. Two recommendations from the August 2015 meeting were adopted by consensus and I recommend you approve both.

The attached approval document is provided for your consideration.

cc: Principal Deputy Assistant Secretary, Fish, Wildlife and Parks
Assistant Secretary, Indian Affairs
Acting Director, U.S. Geological Survey
Commissioner, Bureau of Reclamation
Director, U.S. Fish and Wildlife Service
Director, National Park Service
Director, Bureau of Indian Affairs

Assistant Director, Wildlife Management, Arizona Game and Fish Department,
5000 W. Carefree Highway, Phoenix, Arizona 85086-5000
Attention: Mr. James deVos

Bureau of Indian Affairs, 2600 N. Central Avenue, 4th Floor, Phoenix, Arizona 85004
Attention: Mr. Chip Lewis

Department of Energy-WAPA, Western Area Power Administration,
150 E. Social Hall Avenue, Suite 300, Salt Lake City, Utah 84111
Attention: Ms. Lynn Jeka

The Hualapai Tribe, PO Box 310, Peach Springs, Arizona 86434
Attention: Ms. Loretta Jackson-Kelly

Director, Cultural Preservation Office, The Hopi Tribe, PO Box 123,
Kykotsmovi, Arizona 86039
Attention: Mr. Leigh Kuwanwisiwma

National Park Service, Grand Canyon National Park, PO Box 129,
Grand Canyon, Arizona 86023
Attention: Mr. David Uberuaga

Executive Director, Department of National Resources, Navajo Nation, PO Box 9000,
Window Rock, Arizona 86515
Attention: Ms. Ora Marek-Martinez

Pueblo of Zuni, PO Box 339, Zuni, New Mexico 87327
Attention: Mr. Kurt Dongoske

San Juan Southern Paiute Tribe, PO Box 2656, Tuba City, Arizona 86045

Southern Paiute Indian Consortium, Kaibab Paiute Indian Reservation,
Tribal Affairs Bldg., HC 65 Box 2, Fredonia, Arizona 86022
Attention: Mr. Charley Bullets

Field Supervisor, U.S. Fish and Wildlife Service, Arizona Ecological Services
Office, 2321 W. Royal Palm Road, Suite 103, Phoenix, Arizona 85021-4951
Attention: Mr. Steve Spangle

Arizona Department of Water Resources, 3550 N. Central Avenue,
Phoenix, Arizona AZ 85012
Attention: Mr. Tom Buschatzke

Executive Director, Colorado River Board of California, 770 Fairmont Avenue,
Suite 100, Glendale, California 91203-1035
Attention: Ms. Tanya Trujillo

Upper Gunnison River Water Conservancy District, 210 West Spencer, Suite B,
Gunnison, Colorado 81230
Attention: Mr. John McClow

Colorado River Commission of Nevada, 555 E. Washington Avenue, Suite 3100,
Las Vegas, Nevada 89101-1048
Attention: Ms. Jayne Harkins

New Mexico Interstate Stream Commission, PO Box 25102,
Santa Fe, New Mexico 87504
Attention: Ms. Deborah Dixon

Interstate Streams Engineer, State Engineer's Office, 122 W. 25th Street,
Cheyenne, Wyoming 82002
Attention: Mr. Steve Wolff

Director, Division of Water Resources, 1594 W. North Temple
Salt Lake City, Utah 84114
Attention: Mr. Eric Millis

Grand Canyon Wildlands Council, PO Box 1315, Flagstaff, Arizona 86002
Attention: Mr. Larry Stevens

Grand Canyon River Guides, 453 W. Mulberry Drive, Phoenix, Arizona 85013-4349
Attention: Mr. Sam Jansen

National Parks Conservation Association, 307 West 200 South, Suite 5000,
Salt Lake City UT 84101
Attention: Mr. David Nimkin

Colorado River Energy Distributors Association, 10429 S. 51st Street, Suite 230,
Phoenix, Arizona 85044
Attention: Ms. Leslie James

Utah Associated Municipal Power Systems, 155 N. 400 W., Suite 480,
Salt Lake City, Utah 84103
Attention: Mr. Ted Rampton

Federation of Fly Fishers, 4510 E. Joshua Tree Lane, Paradise Valley, Arizona 85253
Attention: Mr. John Jordan

Deputy Regional Director, Upper Colorado Region, U.S. Bureau of Reclamation,
125 S. State Street, Room 8100, Salt Lake City, Utah 84138
Attention: Mr. Daniel Picard

Regional Director, Upper Colorado Region, U.S. Bureau of Reclamation,
125 S. State Street, Room 8100, Salt Lake City, Utah 84138
Attention: Mr. Brent Rhees

Adaptive Management Work Group Alternates
Technical Work Group Members and Alternates
(via e-mail)

DECISION MEMORANDUM FOR THE SECRETARY

From: Jennifer Gimbel *Jennifer Gimbel*
Secretary's Designee, Glen Canyon Dam Adaptive Management Work Group
Principal Deputy Assistant Secretary – Water and Science

Subject: Report and Recommendations from the Glen Canyon Dam Adaptive Management Work Group Federal Advisory Committee Meetings held on February 25-26, 2015, May 28, 2015, and August 26-27, 2015

I. RECOMMENDATION

The AMWG brings a diverse group of stakeholders to the table that provide scientifically informed and broadly supported resource management recommendations to protect downstream resources in the Grand Canyon. The Department of the Interior (Department) agencies, my staff and I work closely with the AMWG to ensure good dialogue and informed and practical recommendations. Two recommendations from the August 2015 meeting were adopted by consensus and I recommend you approve both. The recommendations are to:

1. Approve the final Fiscal Year (FY) 2015-17 Triennial Budget and Work Plan for implementation in FY 2016.
2. Approve the Water Year 2016 Hydrograph for Glen Canyon Dam.

II. SECRETARY'S DECISION

APPROVE
 DISAPPROVE

November 19, 2015
Date

Sally Jewell
Secretary