Long-Term Experimental and Management Plan (LTEMP) Biological Opinion Conservation Measures update:

Technical Work Group Meeting
January 15, 2020

Scott VanderKooi
Southwest Biological Science Center
Grand Canyon Monitoring and Research Center

Lee Traynham
Bureau of Reclamation
Upper Colorado Basin – Interior Region 7

U.S. Department of the Interior
U.S. Geological Survey

Incidental Take Parameters and Action Triggers: TIER 1 – Early Intervention

	TRIGGER	2017	2018	2019	
1A. Combined adult Humpback Chub (HBC; ≥200 mm) in the mainstem Little Colorado River (LCR) aggregation and LCR	≤ 9000	> 9,000	> 9,000	> 9,000	
OR					
1B. Recruitment of sub-adult HBC (150-199 mm) does not equal or exceed estimated adult mortality					3-yr ave.
1) Sub-adult in spring estimates	3 year rolling ave. ≤ 1,250	3146	1791	2592	2509
OR					
2) Sub-adult in mainstem in Juvenile Chub Monitoring (JCM) Reach	3 year rolling ave. ≤ 810	1521	945	482	982

USGS

USGS Preliminary Data, 2020. Do Not Cite.

BUREAU OF RECLAMATION

Incidental Take Parameters and Action Triggers: TIER 2 – Mechanical Removal

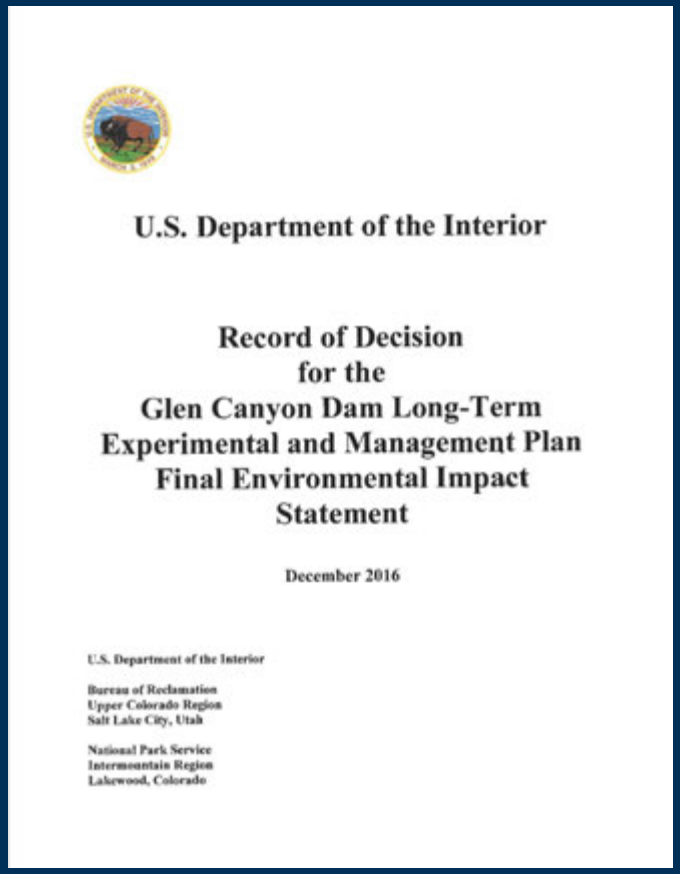
	TRIGGER	2017	2018	2019
Mechanical Removal implemented				
If adult HBC (≥200 mm):	declines to <7,000	N/A	N/A	N/A
Terminate Mechanical Removal				
If predator index is:	<60 rainbow trout (RBT)/km	-	-	-
and immigration rate is:	low*	-	-	-
OR				
HBC population estimates:	exceed 7,500	-	-	-
and survival rates of sub-adult chub:	exceeds adult mortality for at least 2 years	-	-	-

USGS

(*long term feasibility of using immigration rates as a metric still needs to be assessed)

BUREAU OF RECLAMATION

Conservation Measures



U.S. Department of the Interior

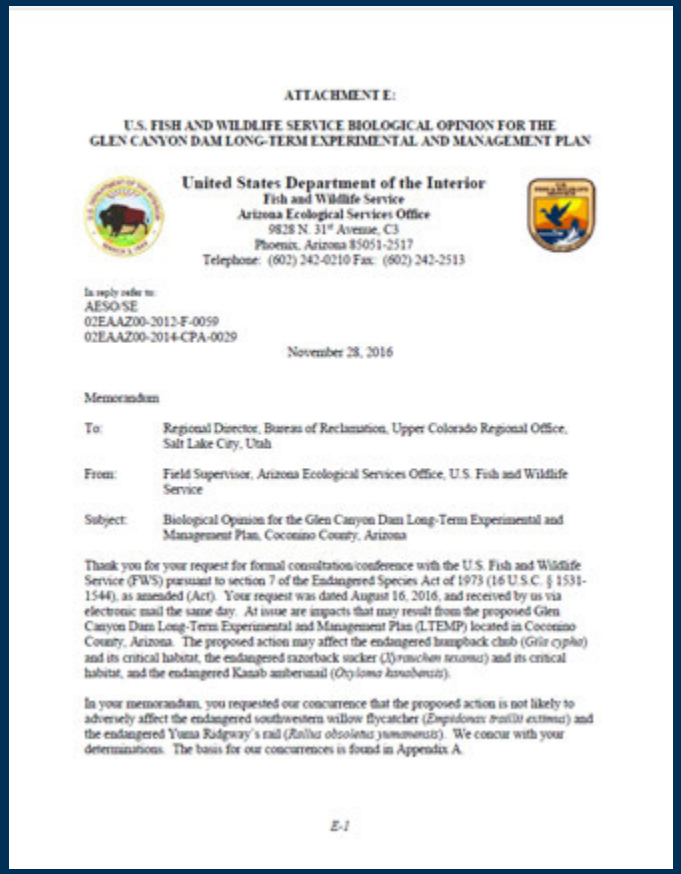
Record of Decision
for the
Glen Canyon Dam Long-Term
Experimental and Management Plan
Final Environmental Impact
Statement

December 2016

U.S. Department of the Interior

Bureau of Reclamation
Upper Colorado Region
Salt Lake City, Utah

National Park Service
Intermountain Region
Lakewood, Colorado



ATTACHMENT E:

U.S. FISH AND WILDLIFE SERVICE BIOLOGICAL OPINION FOR THE
GLEN CANYON DAM LONG-TERM EXPERIMENTAL AND MANAGEMENT PLAN

United States Department of the Interior
Fish and Wildlife Service
Arizona Ecological Services Office
9828 N. 31st Avenue, C3
Phoenix, Arizona 85051-2517
Telephone: (602) 242-0210 Fax: (602) 242-2513

In reply refer to:
AESO/SE
02EAAZ00-2012-F-0059
02EAAZ00-2014-CPA-0029

November 28, 2016

Memorandum

To: Regional Director, Bureau of Reclamation, Upper Colorado Regional Office, Salt Lake City, Utah

From: Field Supervisor, Arizona Ecological Services Office, U.S. Fish and Wildlife Service

Subject: Biological Opinion for the Glen Canyon Dam Long-Term Experimental and Management Plan, Coconino County, Arizona

Thank you for your request for formal consultation/conference with the U.S. Fish and Wildlife Service (FWS) pursuant to section 7 of the Endangered Species Act of 1973 (16 U.S.C. § 1531-1544), as amended (Act). Your request was dated August 16, 2016, and received by us via electronic mail the same day. At issue are impacts that may result from the proposed Glen Canyon Dam Long-Term Experimental and Management Plan (LTEMP) located in Coconino County, Arizona. The proposed action may affect the endangered humpback chub (*Gila cypha*) and its critical habitat, the endangered razorback sucker (*Xyrauchen texanus*) and its critical habitat, and the endangered Kanab ambersnail (*Oxyloma kanabensis*).

In your memorandum, you requested our concurrence that the proposed action is not likely to adversely affect the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and the endangered Yuma Ridgway's rail (*Rallus obsoletus yumanensis*). We concur with your determinations. The basis for our concurrences is found in Appendix A.

E-1

USGS

BUREAU OF RECLAMATION

Conservation Measures Summary

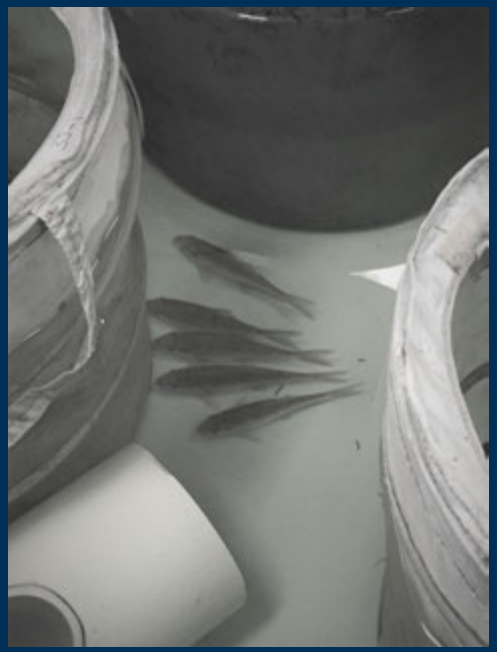
- **Humpback chub**
  - Translocations, monitoring, nonnative removal, refuge support
- **Razorback sucker**
  - Monitoring
- **Benefits to Native Aquatic Species**
  - Evaluate nonnative fish management, temp control, fish passage
- **Southwest Willow Flycatcher**
  - Monitor every 2 years
- **Yuma Ridgeway's Rail**
  - Monitor every 3 years

USGS

BUREAU OF RECLAMATION

Humpback Chub				
	Translocations	Mainstem tributaries (Shinumo, Havasu Upper Havasu)	**NPS**-Humpback Chub Tributary Translocations and Associated Monitoring and Nonnative Fish Control; **GCMRC**- Project C	NPS/GCMRC
		Chute falls	**GCMRC** - Project G	GCMRC/FWS
		Explore other tribs	**GCMRC-** Project G; **NPS** - Humpback Chub Tributary Translocations and Associated Monitoring and Nonnative Fish Control; **FWS** - coordination with Havasupai Tribe on translocations	GCMRC/NPS/FWS
		Nonnative removal in tribs	**NPS**-Humpback Chub Tributary Translocations and Associated Monitoring and Nonnative Fish Control	NPS/GCMRC
	Mainstem	LCR	**GCMRC** Project G	GCMRC/FWS
		Mainstem augmentation	**GCMRC** Project G	GCMRC/FWS
	LCR Monitoring	Spring and Fall Population estimates	**GCMRC** Project G	GCMRC/FWS
		LCR mainstem aggregation monitoring	**GCMRC** Project G	GCMRC/FWS
		Multistate model	**GCMRC** Project G	GCMRC
	Mainstem monitoring	Aggregations	**GCMRC** Project G	GCMRC/NPS/FWS
		New populations & outside agregations	**GCMRC** Project G; **NPS/BioWest/FWS**	GCMRC/NPS/BioWest/ FWS
		Parasite monitoring	**GCMRC** Project I	GCMRC
	Refuge	Fund FWS Humpback Chub refuge (SNARRC)	**Reclamation**	FWS / Reclamation

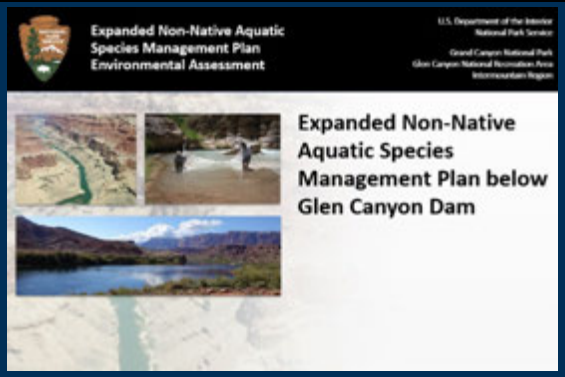
Razorback Sucker				
		Habitat use	**GCMRC**-Project F; **NPS/BioWest**-Razorback Sucker Monitoring and Adaptive Management, Larval and Small-bodied Fish Sampling	GCMRC/NPS/BioWest
		Determine effects of dam operations-TMFs	**GCMRC-** Project H; **NPS**-Razorback Sucker Monitoring and Adaptive Management, Larval and Small-bodied Fish Sampling	NPS/GCMRC
		Determine extent of hybridization	Reclamation funded masters degree project	Reclamation



USGS

BUREAU OF RECLAMATION

Benefit Native Aquatic Species				
		Remove brown trout from Bright Angel, inflow & and other areas	**GCMRC-** Project F ; **NPS**-Humpback Chub Tributary Translocations and Associated Monitoring and Nonnative Fish Control	GCMRC/NPS
		Evaluate use of piscicide or other tools to renovate Bright Angel and Shinumo		NPS
		Evaluate TMFs for brown trout	**GCMRC**-Project H	GCMRC
		Rapid Response	**GCMRC**- Project I; **NPS**-Invasive Species Monitoring & Management	NPS/GCMRC
		Evaluate temperature control methods	**Reclamation** Project C.9	Reclamation
		Evaluate means to prevent fish passage through the dam	**Reclamation** Project C.8	Reclamation
		Backwater slough	**NPS**- Invasive Species Monitoring and Management	NPS/Reclamation



USGS

BUREAU OF RECLAMATION

Southwest Willow Flycatcher			
	monitor every 2 years	**Reclamation** Project C.10	NPS
Yuma Ridgway's Rail			
	monitor every 3 years	**Reclamation** Project C.10	NPS

USGS

BUREAU OF RECLAMATION

USGS

BUREAU OF RECLAMATION