Annual Reporting Meeting (ARM)

Preparation

Purpose and Goals

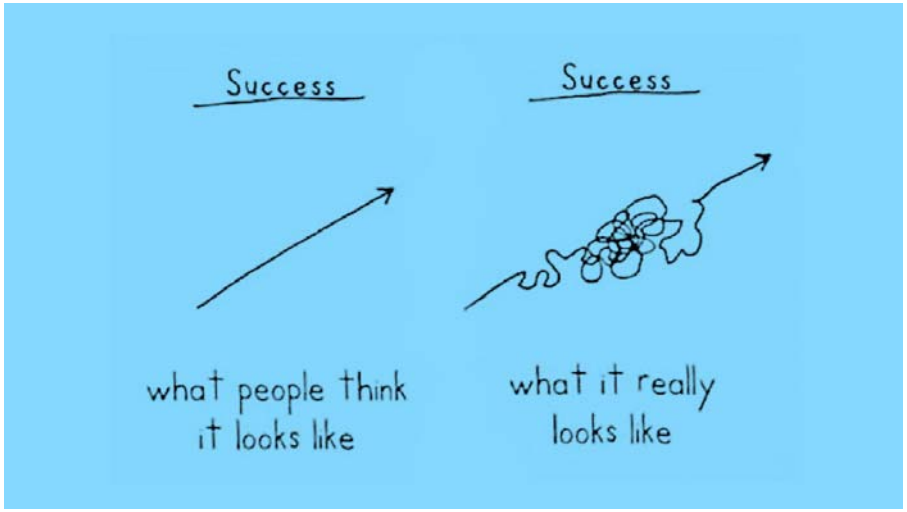
- To summarize work plan accomplishments from the previous year
- To "check the box" for deliverables to Reclamation

- To inform stakeholders of the status of resources and other important technical information, to solicit feedback, and to respond to questions and comments

Proposal to Meet an Additional Purpose

- As a forum for assessing:
  - the state of knowledge
  - the state of achieving goals and objectives

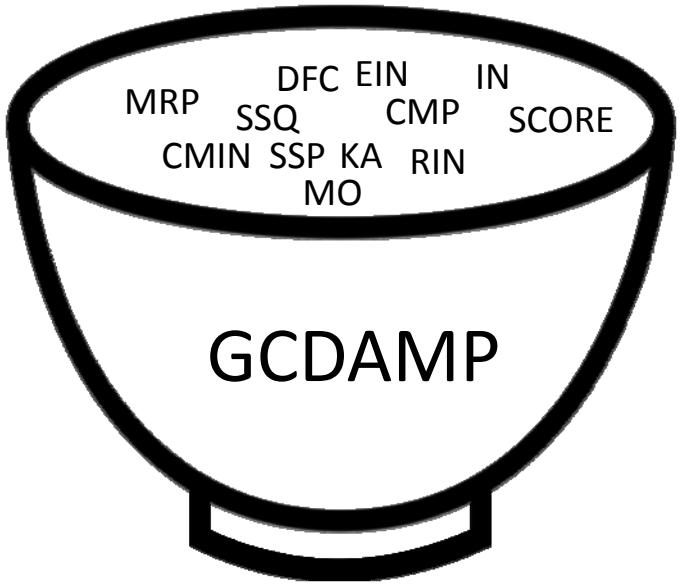
Premature considering future ROD



What the heck is a knowledge assessment?

How to Organize the ARM

- By Strategic Plan resource goal
- By management objective
- By information need
- By strategic science question
- By desired future condition
- By work plan project
- By LTEMP resource goal
- By other



Proposal to Organize the ARM by Resource[1]

Led by GCMRC and Cooperators

1. Aquatic food base[2]
2. Humpback chub
3. ~~Natural processes~~[3]
4. Nonnative invasive species
5. Other native fish
6. Rainbow trout fishery
7. Recreational experience
8. Riparian vegetation
9. Sediment

Led by other stakeholder(s)

9. Archaeological and cultural resources
10. Hydropower and energy
11. Tribal resources
12. Water quality[4]

Stakeholders willing to do?
Presentations at the TWG on day 3?

[1] Resource goals are listed alphabetically and are from p. ES-4 and ES-5 of the FEIS except as noted otherwise.
[2] Not included as an LTEMP resource goal because it was considered a means to an end.
[3] Removed because it was highly controversial during the development of the goals and because it could be adequately summarized as a component of the other goals.
[4] Not included as an LTEMP resource goal but an important topic to track.

Presentation Elements

For knowledge assessment to help identify monitoring and research needs for work plan

Typical ARM

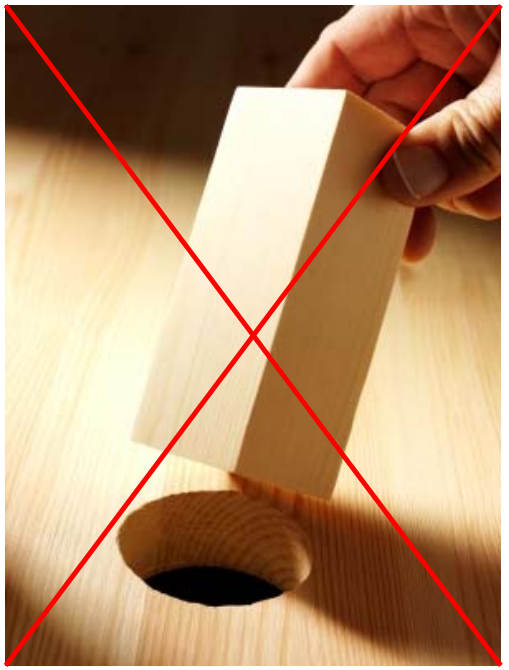
- Status and trend(s) of the resource
- Important findings from Work Plan activities
- Recommendations for future monitoring and research

Proposed ARM (added elements)

- Assessment of state of knowledge concerning:
  - how key drivers affect resource outcomes
  - how management and experimental actions affect resource outcomes
  - confidence of assessment

Proposed Presentation Sequence

Element	Content
1	Describe and assess your conceptual understanding of how key drivers affect resource outcomes
2	Describe and assess how management and experimental actions affect resource outcomes
3	Describe status and trend(s) of the resource
4	Describe important findings from Work Plan activities
5	Make recommendations for future monitoring and research



One size does not fit all

Which Actions to Assess

LTEMP Preferred Alternative

- Spring HFE up to 45,000 cfs in Mar. or Apr.
- Proactive spring HFE up to 45,000 cfs (Apr., May, or Jun.)
- Fall HFE up to 45,000 cfs in Oct. or Nov.
- Fall HFEs longer than 96-hr duration
- Trout management flows
- Mechanical removal of rainbow trout in Little Colorado River reach
- Low summer flows (minimum daily mean 5,000 to 8,000 cfs) to target ≥ 14°C at Little Colorado River confluence
- Sustained low flows for benthic invertebrate production (2 days per week on weekends)
- Non-flow vegetation restoration

Others

- ???

Essential Information

Element 1 and 2

- Strength of relationships (i.e., linkages)
- Direction of response
- Confidence in assessment

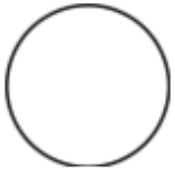
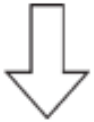
Element 3

- Condition status
- Trend in condition
- Confidence in assessment

How can the knowledge assessment be organized and presented in a simple form?

Table 3.3. Knowledge assessment matrix for food base and fish sub models. '+', '-', and '0' indicate positive, negative, and no effect (if color is green or yellow) or unknown (if color is red) responses. Dark green, light green, yellow, and red denote increasing uncertainty in the predicted response direction (see Table 2.1 for definitions). A positive response of a performance measure corresponds with the direction of AMP goals with the exception of performance measures for invasive fish species, disease, and rainbow trout abundance in Marble Canyon.

Performance Measure	Location and/or Species	Increase in GCD Release Water Temp.	Overall Effect of Increased Fluctuations Relative to MLFF	Reduce Variation in Monthly Volume	BHBF with adequate sand supply	BHBF without adequate sand supply	HMF with adequate sand supply	HMF without adequate sand supply	Sustained Low Steady Flow (summer-fall)	High Sustained Flow (ponding-spring)	Mechanical Removal of Coldwater Exotics (Mainstem and Trib)	Mechanical Removal of Warmwater Exotics
Food base	Glen	+		+					-	+		
	Grand	+	-						-	+	+	
Mainstem spawning & incubation	HUMPBACK CHUB	+							+		+	+
	FMS	+	-						+		+	+
	RBT-Glen	**0**	-	+					+	+		
	RBT-Marble	**0**	-	+					+			
YOY/Juvenile nearshore rearing	HUMPBACK CHUB	+	-	+		-		-	+		+	+
	FMS	+	-	+		-		-	+		+	+
	RBT-Glen	+	-	+	-	-	-	-	+	+		
	RBT-Marble		-	+	-	-	-	-	+	+		

Condition Status		Trend in Condition		Confidence in Assessment	
	Warrants Significant Concern		Condition is Improving		High
	Warrants Moderate Concern		Condition is Unchanging		Medium
	Resource is in Good Condition		Condition is Deteriorating		Low
	An open (uncolored) circle indicates that current condition is unknown or indeterminate; this condition status is typically associated with unknown trend and low confidence *(explanation is required if a trend symbol or a medium/high confidence band is shown)*				

Knowledge assessment summary sheet

			Expected Effect of								
Resource	Status and Trend(s)	Key Drivers, Constraints, and Causal Relationships Affecting Resource/Threat Status	Spring HFE up to 45,000 cfs in Mar. or Apr.	Proactive spring HFE up to 45,000 cfs (Apr., May, or Jun.)	Fall HFE up to 45,000 cfs in Oct. or Nov.	Fall HFEs longer than 96-hr duration	Trout management flows	Mechanical removal of rainbow trou in Little Colorado River reach	Low summer flows (minimum daily mean 5,000 to 8,000 cfs) to target ≥ 14°C at Little Colorado River confluence	Sustained low flows for benthic invertebrate production (2 days per week on weekends)	Non-flow vegetation restoration
Aquatic food base											
Humpback chub											
Nonnative invasive species											
Other native fish											
Rainbow trout fishery											
Recreational experience											
Riparian vegetation											
Sediment											
Archaeological and cultural resources											
Hydropower and energy											
Natural processes											
Tribal resources											
Water quality											

This is an example of an information sheet supporting the summary sheet.

Resource

Titles are for Element 3. Titles would be different for Element 1 and 2.

Overall resource symbol

Humpback Chub			
Indicators of Condition	**Specific Measures**	**Condition Status/Trend**	**Rationale**
Minimum number of adult HBC	# adults		Lorem ipsum dolor sit amet, consectetuer adipiscing elit. Maecenas porttitor congue massa. Fusce posuere, magna sed pulvinar ultricies, purus lectus malesuada libero, sit amet commodo magna eros quis urna. Nunc viverra imperdiet enim. Fusce est. Vivamus a tellus.
HBC temperature suitability	Index (0-1)		Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Proin pharetra nonummy pede. Mauris et orci. Aenean nec lorem. In porttitor. Donec laoreet nonummy augue. Suspendisse dui purus, scelerisque at, vulputate vitae, pretium mattis, nunc. Mauris eget neque at sem venenatis eleifend. Ut nonummy.

Should include rationale for symbol including key citations that support knowledge assessment.

Specific measurement symbol

Moving Forward

- Request ARM presenters and others (e.g., task AHG's) to:
  - Prepare presentations as proposed
  - Symbolize assessment sheets
- Request Reclamation to authorize Science Advisors to:
  - Support effort by helping preparers
- Determine the format of the knowledge assessment
  - Standalone document?
  - Incorporated into GCMRC annual report?
  - Incorporated into Work Plan and Budget?

Moving Forward cont.

- Encourage use of posters at ARM because of time limitations
- Submit additional items of interest for the ARM to Linda, Scott and Seth by November 1