

Glen Canyon Dam Adaptive Management Work Group
Agenda Item Information
May 8th, 2013

Agenda Item

Long-Term Experimental and Management Plan (LTEMP) EIS

Action Requested

✓ Information item only.

Presenter

Glen Knowles, Chief, Adaptive Management Group, Environmental Resources Division, Upper Colorado Region, Bureau of Reclamation (Reclamation)

Rob Billerbeck, Environmental Protection Specialist and LTEMP Project Manager, National Park Service (NPS)

Previous Action Taken

✓ Other

December 2009: Secretary of the Interior Ken Salazar announced that the development of a Long-Term Experimental and Management Plan (LTEMP) for Glen Canyon Dam was needed. The Secretary emphasized the inclusion of stakeholders, particularly those in the Glen Canyon Dam Adaptive Management Program (GDAMP), in the development of the LTEMP.

November 2011: Public scoping meetings were held in Phoenix, Flagstaff, Page, Salt Lake City, Las Vegas, and Denver. A webcast was also held to capture participation from those that could not attend in person.

April 4-5, 2012: A public workshop was held in Flagstaff, AZ to receive feedback on the preliminary alternative concepts.

April 30, 2012: The Secretary of the Interior responded to a recommendation from the AMWG by stating, "With respect to the report of the Socioeconomic Ad Hoc Group, I appreciate the comprehensive nature of the program and plan proposed, and the support of the AMWG for the implementation of these socioeconomic impact assessment studies. I am directing the interagency team for the Department of the Interior to communicate to the AMWG the specific studies and activities that should be prioritized for utilization as part of the ongoing National Environmental Policy Act process to develop a Long Term Experimental and Management Plan (LTEMP) for Glen Canyon Dam. The Technical Work Group can then identify information needs and research priorities not addressed through the LTEMP process so that the [Grand] Canyon Monitoring and Research Center can refine and develop a work plan."

August 30, 2012: Motion (moved by Larry Stevens and seconded by Ted Rampton): AMWG requests that the February 2013 AMWG meeting agenda include a detailed description of the LTEMP alternatives; time for discussion and identification of issues, questions, and concerns; and possible development of a recommendation from non-DOI AMWG members.

Relevant Science

Science and research completed since the GCDMP was established will be used in the development of the EIS and assessment of impacts.

Background Information

The Department of the Interior (Department), through Reclamation and NPS, is preparing a draft EIS for adoption of the LTEMP for the operation of Glen Canyon Dam. The purpose of the proposed LTEMP is to utilize current, and develop additional, scientific information to better inform Departmental decisions and to operate the dam in such a manner as to improve and protect important downstream resources while maintaining compliance with the GCPA, the Law of the River, and the Endangered Species Act, among others, and to fully evaluate dam operations and identify management actions and experimental options that will provide a framework for adaptively managing Glen Canyon Dam over the next 15 to 20 years, consistent with the GCPA and other provisions of applicable Federal law.

The LTEMP EIS Team have partnered with Dr. Mike Runge of USGS to assist us in evaluating alternatives with decision analysis. Dr. Runge led an introduction to decision analysis, a review of the current set of alternatives, and a review of the current set of resource goals and performance metrics, and provided a description of the assessment process, and future work and next steps at the February 21 AMWG meeting.

Reclamation and NPS will provide an update on recent activities, progress to date, upcoming planned meetings, and the current schedule for completion of the EIS, including information on a cooperating agency trade-off analysis workshop planned for August 5-7, 2013 in Flagstaff, Arizona.

Glen Canyon Dam LTEMP EIS

Glen Canyon Dam Adaptive Management Program Adaptive Management Work Group

May 8, 2013

Glen Knowles, Bureau of Reclamation
Rob Billerbeck, National Park Service
Mike Runge, US Geological Survey



LTEMP Purpose and Scope

- To identify dam operations, management actions, and experimental options that will provide a framework for adaptively managing Glen Canyon Dam over the next 15 to 20 years consistent with the Grand Canyon Protection Act (GCPA) and other provisions of applicable Federal law.
- The proposed action is to develop a plan that will determine specific options for dam operations, non-flow actions, and appropriate experimental and management actions that will meet the GCPA's requirements and minimize impacts to resources, including those of importance to Indian Tribes.
- LTEMP is not considering infrastructure additions or modifications as part of the proposed action

Alternatives Under Consideration

1. No-action (MLFF with HFE and NNFC protocols expiring in 2020)
2. Modified low fluctuating flows (MLFF) with extension of high flow experiment (HFE) and non-native fish control (NNFC) protocols for entire LTEMP period
3. Seasonal fluctuations with low summer fluctuations
4. Seasonally adjusted steady flows (modification of 1995 EIS SASF)
5. Year-round steady flows
6. Condition-dependent adaptive strategy
7. Resource-targeted condition-dependent alternative (Submitted by the Basin States)
8. Balanced resource alternative (Submitted by the Colorado River Energy Distributors Association)

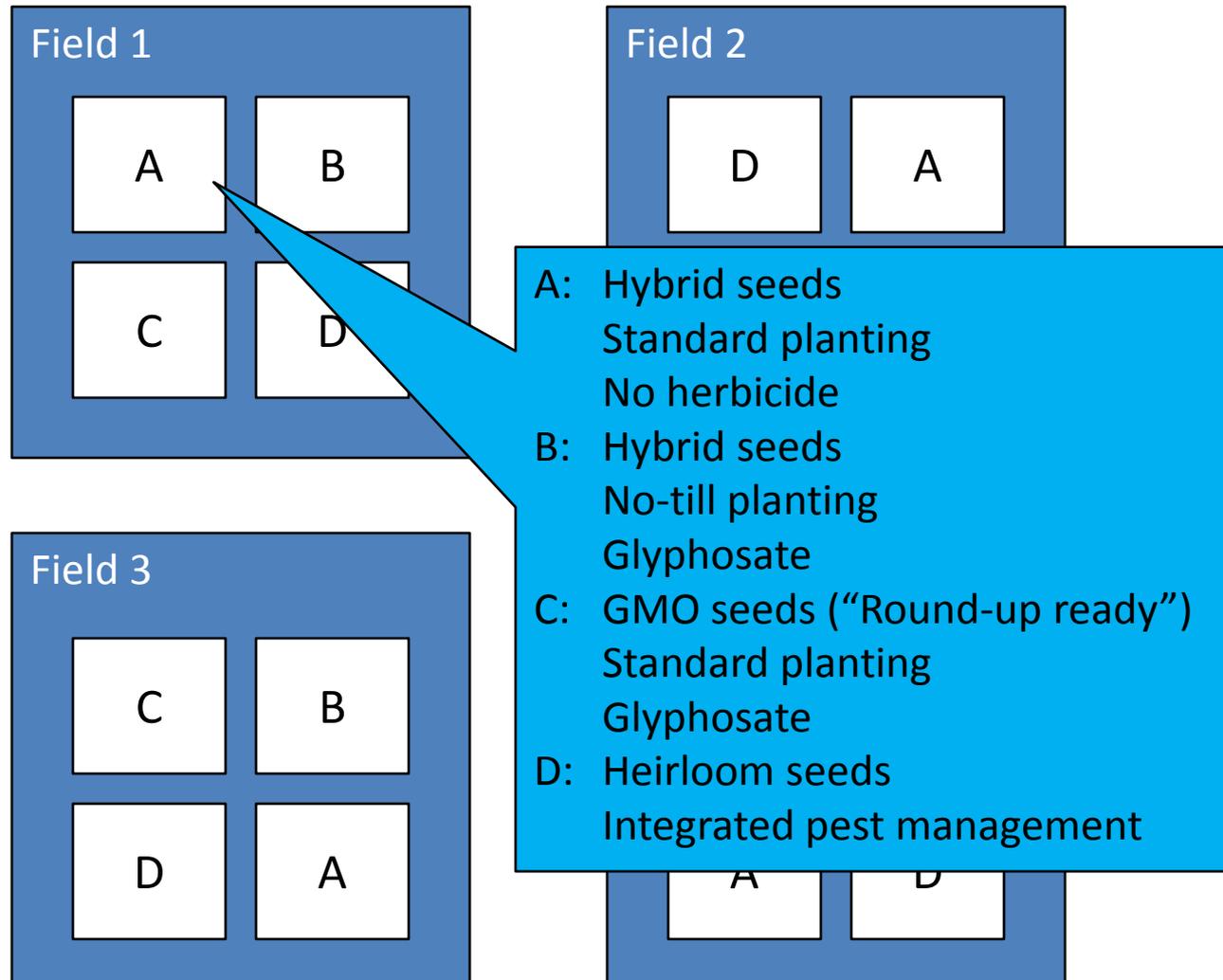
Current EIS Schedule

- Preliminary Assessment – Phase I (Apr-Jun)
- Alternative refinement and experimental design (Jun-July)
- Stakeholders Tradeoff Analysis Workshop (Aug 5-7)
- Additional assessment – Phase II (Aug-Sep)
- Public meeting to present science and alternatives (Jan 2014)
- Public Draft EIS (Expected between Jan 2013-Apr 2014)

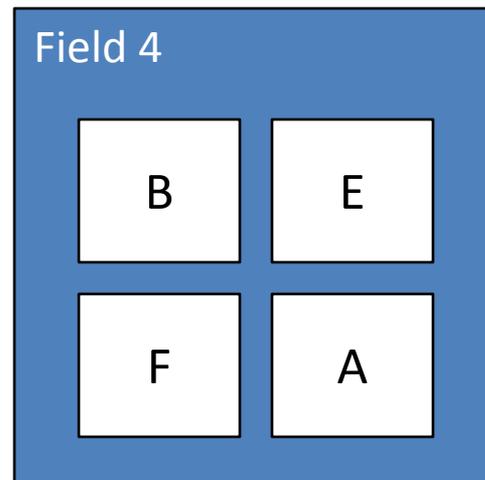
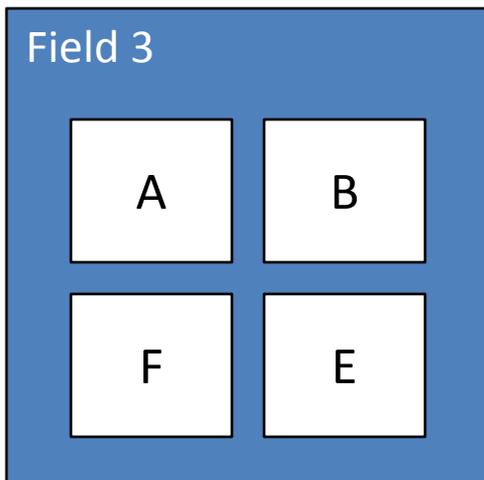
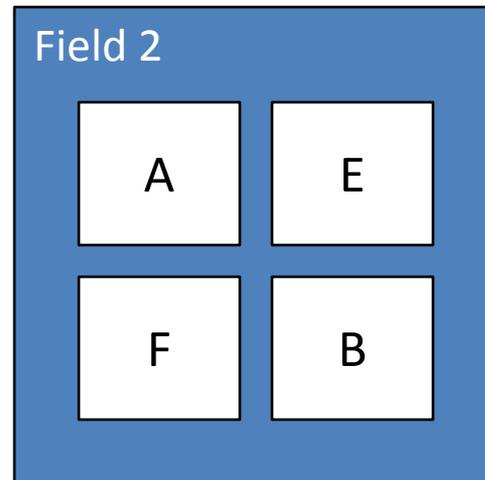
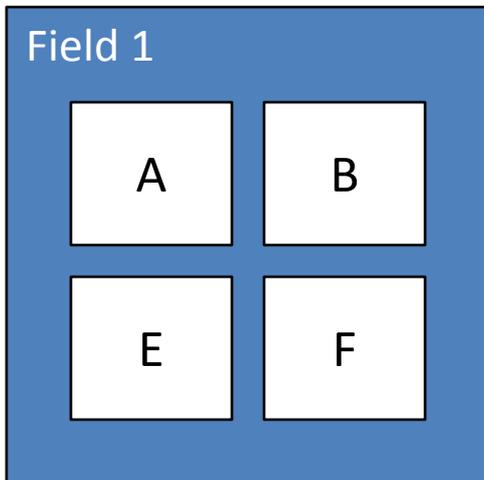
Update on the LTEMP EIS Process

- Alternatives development is continuing
- Structured Decision Analysis process led by USGS
- Currently focused on finalization of performance criteria to use for preliminary modeling/analysis phase
- Review of stakeholder comments on draft performance metrics distributed at the Feb AMWG meeting
- Meeting with LTEMP EIS Tribes to incorporate their input
- A Stakeholders Tradeoff Analysis Workshop will be conducted with Cooperating Agencies and AMWG members August 5-7 2013 in Flagstaff (the August AMWG Meeting will follow August 8-9 2013)

Experimental Design: Agriculture example



Experimental Design: Alternative design



Experimental Design

- Inference of interest to the decision-maker
 - The long-term treatments (A, B, etc.)
- Experimental design
 - Critical uncertainty: {A, B, C, D}, {A, B, E, F}, etc.
 - Sample size
 - Confounding

Preparatory Phase

1. Develop resource goals
2. Develop a range of alternatives for consideration
 - De-construct complex alternatives into the component long-term strategies
3. Develop performance metrics (in progress)
4. Develop analytical methods for evaluating the alternatives against the resource goals (in progress)
5. Articulate competing hypotheses to capture critical uncertainty (in progress)

Phase 1 Analysis

6. Consequence evaluation (Apr-Jun)
 - Of component long-term management strategies
 - Against performance metrics & competing hypotheses
7. Preliminary tradeoff analysis (MCDA)
 - Including individual stakeholder input (Aug 5-7 workshop)
8. Analyze value of information (Jul-Aug)
 - To determine which sources of uncertainty are most important to build into experimental design

Phase 2 Analysis

9. Use results of Phase 1 to
 - Refine resource goals, alternatives, performance metrics, & models
10. Use results of value-of-information to develop the experimental or adaptive designs in the complex alternatives
11. Consequence evaluation
 - Of the full (adaptive) alternatives against the performance metrics
12. Identify a preferred alternative
 - Co-lead agencies may use formal MCDA at this stage

