

COLORADO RIVER BOARD OF CALIFORNIA

770 FAIRMONT AVENUE, SUITE 100
GLENDALE, CA 91203-1068
(818) 500-1625
(818) 543-4685 FAX



June 1, 2009

**NOTICE OF REGULAR MEETING OF THE
COLORADO RIVER BOARD**

NOTICE IS HEREBY GIVEN pursuant to the call of the Chairperson, D. Bart Fisher, Jr., by the undersigned, the Executive Director of the Colorado River Board of California, that a regular meeting of the Board Members is to be held as follows:

Date: June 10, 2009, Wednesday
Time: 10:00 a.m.
Place: Vineyard Room
Holiday Inn Ontario Airport
2155 East Convention Center Way
Ontario, CA 91764-4452
TEL: (909) 212-8000, FAX: (909) 418-6703

The Colorado River Board of California welcomes any comments from members of the public pertaining to items included on this agenda and related topics. Oral comments can be provided at the beginning of each Board meeting; while written comments may be sent to Mr. D. Bart Fisher, Jr., Chairperson, Colorado River Board of California, 770 Fairmont Avenue, Suite 100, Glendale, California, 91203-1068.

An Executive Session may be held in accordance with provisions of Article 9 (commencing with Section 11120) of Chapter 1 of Part 1 of Division 3 of Title 2 of the Government Code and in accordance with Sections 12516 and 12519 of the Water Code to discuss matters concerning interstate claims to the use of Colorado River System waters in judicial proceedings, administrative proceedings, and/or negotiations with representatives from other states or the federal government.

Requests for additional information may be directed to: Gerald R. Zimmerman, Executive Director, Colorado River Board of California, 770 Fairmont Avenue, Suite 100, Glendale, CA 91203-1068, or 818-500-1625. A copy of this Notice and Agenda may be found on the Colorado River Board's web page at www.crb.ca.gov.

A copy of the meeting agenda, showing the matters to be considered and transacted, is attached.

Handwritten initials "GZ" in black ink.

Handwritten signature of Gerald R. Zimmerman in black ink.

Gerald R. Zimmerman
Executive Director

attachment: Agenda

Regular Meeting
COLORADO RIVER BOARD OF CALIFORNIA
June 10, 2009, Wednesday
10:00 a.m.

Vineyard Room
Holiday Inn Ontario Airport
2155 East Convention Center Way
Ontario, CA 91764-4452

A G E N D A

At the discretion of the Board, all items appearing on this agenda, whether or not expressly listed for action, may be deliberated upon and may be subject to action by the Board. Items may not necessarily be taken up in the order shown.

1. Call to Order
2. Opportunity for the Public to Address the Board (Limited to 5 minutes)
As required by Government Code, Section 54954.3(a)
3. Administration
 - a. Minutes of the Meeting Held April 15, 2009, Consideration and Approval (**Action**) ... TAB 1
 - b. Fiscal Year 2009-2010 Colorado River Board Budget (**Action**) TAB 2
4. Agency Managers Meetings
Report from the Executive Director
5. Protection of Existing Rights
 - a. Colorado River Water Report(s) TAB 3
Report from Board Staff on current reservoir storage, reservoir releases, projected water use, forecasted river flows, scheduled deliveries to Mexico, and salinity
 - b. State and Local Water Reports TAB 4
Reports from Board members on current water supply and use conditions
 - c. Colorado River Operations TAB 5
Report(s) from the Executive Director
 - Reclamation News Release Seeking Public Comment on Draft Environmental Assessment for Yuma Desalting Plant Pilot Run
 - Basin Study Program 2009 – Seven Colorado River Basin States’ Joint Colorado River Basin Water Supply Study
 - d. Basin States Discussions TAB 6
Report(s) from the Executive Director
 - Arizona Water Banking Authority’s Final Verified Accounting of the Southern Nevada Water Authority Interstate Account for Calendar Year 2008

Agenda (continued)

- e. Colorado River Environmental Issues TAB 7
Report(s) from the Board Staff
 - Status of the Grand Canyon Trust vs. United States Lawsuit

- 6. Water Quality
 - a. Colorado River Basin Salinity Control Forum, Work Group and Advisory Council Meetings

- 7. Executive Session

An Executive Session may be held by the Board pursuant to provisions of Article 9 (commencing with Section 11120) of Chapter 1 of Part 1 of Division 3 of Title 2 of the Government Code and Sections 12516 and 12519 of the Water Code to discuss matters concerning interstate claims to the use of Colorado River system waters in judicial proceedings, administrative proceedings, and/or negotiations with representatives from other states or the federal government.

- 8. Other Business
 - a. Next Board Meeting: Regular Meeting
July 15, 2009, Wednesday, starting 10:00 a.m.
Ontario Airport DoubleTree Hotel
222 North Vineyard Avenue
Ontario, CA 91764-4428
TEL: (909) 937-0900, FAX: (909) 937-1999

3.a. - Approval April 15, 2009, Board Meeting Minutes

Minutes of Regular Meeting
COLORADO RIVER BOARD OF CALIFORNIA
Wednesday, April 15, 2009

A Meeting of the Colorado River Board of California (Board) was held in the Vineyard Room, of the Holiday Inn Ontario Airport, 2155 East Convention center Way, Ontario, California, Wednesday, April 15, 2009.

Board Members and Alternate Present

Dana Bart Fisher, Jr., Chairman
Thomas M. Erb
John V. Foley
Terese Maria Ghio
W.D. 'Bill' Knutson
Henry Merle Kuiper
John W. McFadden
John Pierre Menvielle

David Elms, Designee
Department of Fish and Game

Jeanine Jones, Designee
Department of Water Resources

Board Member Absent

James B. McDaniel

Others Present

Steven B. Abbott
Brian J. Brady
Celia A. Brewer
John Penn Carter
Bob Doss
David Fogerson
William J. Hasencamp
Michael L. King
Russell Kitahara
Bob Lucas
Dan Parks
Ed W. Smith
Mark Stuart

William H. Swan
Peter E. von Haam
Bill D. Wright

Abbas Amirteymoori
J.C. Jay Chen
Lindia Liu
Gary E. Tavetian
Mark Van Vlack
Gerald R. Zimmerman

CALL TO ORDER

Chairman Fisher announced the presence of a quorum and called the meeting to order at 10:06 a.m.

OPPORTUNITY FOR THE PUBLIC TO ADDRESS THE BOARD

Chairman Fisher asked if there was anyone in the audience who wished to address the Board on items on the agenda or matters related to the Board. Hearing none, Chairman Fisher moved to the next agenda item.

ADMINISTRATION

Approval of Minutes

Chairman Fisher requested the approval of the March 11th meeting minutes. Mr. Knutson moved the March 11th minutes be approved. Mr. Menvielle seconded the motion. Unanimously carried, the Board approved the March 11th meeting minutes.

New California Department of Fish and Game representative

Chairman Fisher introduced Mr. David Elms who is replacing Mr. Christopher Hayes as the designee of the California Department of Fish and Game to the Board. The Board welcomed Mr. David Elms.

New Colorado River Board Engineer

Mr. Zimmerman introduced Ms. Lindia Liu, a new engineer hired by the Colorado River Board. The Board welcomed Ms. Liu.

Cancellation of May Board Meeting

Chairman Fisher reported that there were conflicts regarding the scheduled May 20th Board meeting. Chairman Fisher asked the Board if there was any objection to cancelling the May 20th Board meeting. Hearing none, Chairman Fisher cancelled the May 20th Board meeting.

Partners in Conservation Award

Mr. Zimmerman reported that each year the Department of the Interior (DOI) recognizes conservation achievements that are made possible through partnering with a diverse range of entities. This year, DOI has selected the successful development of the Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead to receive the award. The Colorado River Board has been selected as one of the entities to receive the award. Interior Secretary Salazar will make the presentation of the award in Washington D. C. on May 7th. Mr. Zimmerman reported that the Board's Chairman has volunteered to accept the award for the Board.

Improving Climate Prediction in Colorado River Basin

Mr. Zimmerman, reported that NOAA is funding a two-year study, that has just completed the first year, to improve runoff prediction in the Colorado River Basin. The work

is being led by Western Water Assessment at University of Colorado, and other universities and federal agencies are also participating. Ms. Jeanine Jones of the Department of Water Resources (DWR) added that Brad Udall of NOAA, gave a very good presentation at the Binational Border Drought Conference, February 27-28, in San Diego. Mr. Udall also held a Climate Change Conference in Las Vegas in January 2009. Where he, and others, reported on the progress of the current work being done by the participating scientists. The current studies indicate declines of minus six to minus 45 percent, a wide range, with general trends showing less runoff in the future. NOAA is funding a group of scientists, to be led by Mr. Udall, charged with bringing some understanding of the scope of the work being done and to recommend directions for future research to improve prediction of runoff predictions of the Colorado River Basin. Ms. Jones mentioned that Mr. Udall would be willing to make a presentation to the Board on the current work in progress, possibly at the June Board meeting.

AGENCY MANAGERS' MEETING

Mr. Zimmerman reported that the Agency managers met on March 11th, to discuss the Proposed Yuma Desalting Plant Pilot Project operations and the Basin States' Discussion Document regarding the International Boundary and Water Commission's (IBWC) binational process and the status of that process. Also discussed were legal and policy issues associated with both the Yuma Desalting Plant Pilot Project operations and the Basin States' Discussion Document. Mr. Zimmerman mentioned that the Agency Managers are scheduled to meet April 15th after the Board meeting to discuss the Inadvertent Overrun and Payback Procedures being developed by Reclamation.

PROTECTION OF EXISTING RIGHTS

Colorado River Water Report

Mr. Abbas Amirteymoori reported that, as of April 5th, the storage in Lake Powell was 12.752 million acre-feet (maf), or 52 percent of capacity. The water surface elevation was 3,610.2 feet. The storage in Lake Mead was 12.086 maf, or 47 percent of capacity, and water surface elevation of 1,106.6 feet. Total System storage was about 32.101 maf, or 54 percent of capacity. Last year at this time, there was 30.899 maf in storage, or 52 percent of capacity.

Mr. Amirteymoori reported that precipitation from October 1st through April 3rd was 102 percent of normal, and the snowpack was about 104 percent of normal. The projected April through July runoff, as of April 3rd, is 7.2 maf, or 91 percent of normal. The anticipated 2009 water year runoff is 10.483 maf, or about 87 percent of normal.

Mr. Amirteymoori added that Reclamation's projected consumptive use (CU) for the State of Nevada is slightly over its entitlement of 300,000 acre-feet (304,000 acre-feet); and for Arizona, the CU is projected to be slightly below its basic entitlement of 2.8 maf (2.783 maf); and for California the CU is projected to be 4.436 maf. The total projected CU in the Lower Basin is projected to be 7.523 maf.

State and Local Water Reports

Mr. Mark Stuart, of the California Department of Water Resources (DWR), reported on the climate conditions of California. In the Los Angeles basin precipitation is about 87 percent of normal, though further south in the South Coastal Basin, in San Diego, the precipitation was 115 percent of normal. The Central Coast area varies from 55 to 70 percent of normal. The Colorado sub-basin was about 80 percent of normal. The Northern Sierra eight-station precipitation index, as of April 9th, was 89 percent of average. The snowpack is below average, about 90 percent of normal, and last year was a critical dry year. State Water Project (SWP) reservoir storage north of the Delta was about 57 percent of capacity. South of the Delta SWP reservoir storage was 66 percent of capacity. Total SWP storage was about 60 percent of capacity. SWP deliveries are projected to be 20 percent of Table A Entitlements. North of the Delta the Central Valley Project (CVP) current deliveries are 5 percent of agricultural entitlements and 50 percent of municipal and industrial (M&I) entitlements. South of the Delta the CVP deliveries are 0 percent of agricultural entitlements and 55 percent of M&I entitlements. The Central Valley farmers are struggling under the reduced water delivers.

Mr. Foley, of The Metropolitan Water District of Southern California (MWD), reported that overall storage in Lake Skinner, Lake Mathews and Diamond Valley Lake, as of April 1, was 564,300 acre-feet, or 54 percent of capacity. Diamond Valley Lake was about 404,900 acre-feet, or 50 percent of capacity. Lake Mathews was about 122,600 acre-feet, or 67 percent of capacity. Lake Skinner was about 36,900 acre-feet, or 84 percent of capacity. Overall storage in the MWD system is short about 500,000 acre-feet.

Mr. Thomas Erb, of the City of Los Angeles Department of Water and Power (LADWP), reported the results from the April 1st snow survey. The snow survey indicates the runoff from the Eastern Sierra will be about 72 percent of normal. The LADWP is continuing its efforts to implement water conservation measures. Last week, the City Council considered a measure to implement 15 percent rationing. The measure was deferred, to be reconsidered Friday, April 17th.

Colorado River Operations

Commissioner of Reclamation Nomination

Mr. Zimmerman reported that on March 18th that the Department of the Interior announced President Obama's intention to nominate Mr. Michael L. Conner as the next Commissioner of Reclamation. Mr. Zimmerman reported that Mr. Conner most recently served as Counsel to the U.S. Senate Natural Resources Committee. Prior to his service with the Senate, Mr. Connor was with the DOI's Office of the Solicitor.

Assistant Administrator of Environmental Protection Agency Nomination

Mr. Zimmerman reported that on April 3rd, President Obama announced his intention to nominate Mr. Peter S. Silva as the Assistant Administrator for Water Programs in the U.S. Environmental Protection Agency. Mr. Silva has been a senior policy advisor for the MWD, and that his advice will be missed by the Board and MWD. His prior service includes the

State Water Resources Control Board, and as a member of the Board of the Border Environmental Cooperation Commission during the Clinton Administration.

Flaming Gorge Pipeline Project

Mr. Zimmerman reported that on March 20th, the U.S. Army Corps of Engineers published a *Federal Register* notice, announcing its intention to prepare an Environmental Impact Statement associated with the Flaming Gorge Pipeline Project (Regional Watershed Supply Project). The Regional Watershed Supply Project will take water out of the Flaming Gorge Reservoir and move it into the Front Range in Denver, as well as deliver some water in Wyoming. Board staff prepared a letter requesting to be placed on the “interested parties” mailing list and to receive all future notices and project documentation. Copies of the Board’s letter and the related *Federal Register* notice were included in the Board folder.

Lower Colorado Water Supply Project Monitoring Study

Mr. Zimmerman reported that previous discussions and concerns regarding groundwater quality in the vicinity of the wells of the Lower Colorado Water Supply Project (LCWSP) prompted the need to insure the long term supply of the LCWSP. The U.S. Geological Survey was selected to conduct the study. Before the study could be undertaken, approval to spend money in the LCWSP’s Trust Fund was required from Reclamation and MWD. This approval was received by Reclamation. Reclamation’s letter of approval arrived March 5th and was included in the March Board folder. MWD’s letter was received March 24th and was included in the April Board folder. The study is a three year study beginning in 2009, with an estimated cost of \$1.1 million dollars.

Dedication of the All-American Canal Lining Project

Mr. Zimmerman reported that on April 30th the All-American Canal Lining Project will be officially dedicated. The event is to be held at the project site alongside the All-American Canal. A copy of the dedication event flyer was included in the Board folder.

Basin States Discussions

Binational Activities

Mr. Zimmerman reported that both sections of the International Boundary and Water Commission (IBWC) executed the Terms of Reference regarding Cooperative Actions of Colorado River Users on March 11, 2008. The Terms of Reference created a Core Group and four Work Groups; it identified how meetings would be conducted, the objectives for the process and the organization and management effort; and it established a process for addressing binational projects and programs.

Mr. Zimmerman reported that, early in the process, Mexico identified a number of projects that it was interested in pursuing, it requested the Basin states similarly identify projects and programs. The Basin states responded with the Basin States’ Discussion Document concerning Binational Water Management. The Discussion Document was transmitted to IBWC’s American Commissioner Mr. Bill Ruth on December 17, 2008.

Commissioner Ruth shared the Discussion Document with Mexican counterparts in January 2009. Mexico then requested a consultation meeting with federal representatives. A consultation meeting was held on February 13th. Mexico welcomed the Discussion Document, though it felt it lacked sufficient detail, and that they also wanted further discussions to be held in the established binational process.

Mr. Zimmerman reported that the Basin states have prepared a PowerPoint presentation that more fully describes the Basin states role regarding water management within the United States and more fully explains the concepts contained in the Basin States' Discussion Document. The Basin States' presentation also identifies how implementation of the programs contained in the Discussion Document could work and benefit both nations.

Mr. Zimmerman reported that the Basin states are scheduled to meet with IBWC and Reclamation on April 16th to brief the federal representative on the proposed Basin states presentation to Mexico and to receive the federal representatives input. The Basin states then plan to meet with Mexico, in late May or early June, to present the PowerPoint presentation and address questions regarding the presentations and to request written questions from Mexico. After the initial meeting with Mexico, the states are proposing that a workshop be held to address Mexico's written questions and further the dialogue on projects and programs that have a binational interest. The workshop will identify the framework for moving binational projects and programs toward implementation. At the workshop, both countries can prepare a joint recommendation to be presented to the IBWC Commissions.

Mr. Zimmerman reported that representatives of the Basin states are meeting to flesh out the policy and legal issues that must be addressed and attempt to reach a unified position regarding the legal and policy issues. During this process it is anticipated that Mexico will also identify a number of legal and policy issues that will need to be addressed.

Colorado River Environmental Activities

Status of the Glen Canyon Dam Lawsuit

Mr. Gary Tavetian, of the California Attorney General's Office, reported that the federal court heard cross-motions for Summary Judgment. The court has indicated that there could be a decision in the near future.

Multi-Species Conservation Program Water Use and Acquisition Agreement

Mr. Zimmerman reported that with the passage of Omnibus Public Land Management Act of 2009 by the Congress, and signed by the President, the Secretary is authorized to manage and implement the Lower Colorado River Multi-Species Conservation Program (LCR MSCP). The Secretary can now enter into agreement with the states providing for the use of water for the LCR MSCP. Reclamation is proposing to move forward with the execution of a water use and acquisition agreement among the states and Reclamation. Included in the Board folder is a copy of a proposed agreement that was prepared in February 2007 by representatives of the non-federal and federal Program participants. The primary purposes of the water use and acquisition agreement are to insure that Reclamation can acquire and lawfully utilize mainstream Colorado River water in conjunction with the

approved LCR MSCP habitat restoration and maintenance activities, and provide for the accounting of water used for MSCP purposes.

Mr. Zimmerman asked for a motion to approve the Chairman to sign the agreement for Reclamation to execute the MSCP Water Use and Acquisition Agreement. Upon the motion of Mr. Kuiper, seconded by Ms. Jones, and unanimously carried, the Board authorized the Chairman to sign the agreement for Reclamation to execute the MSCP Water Use and Acquisition Agreement.

Mr. William Swan added that this agreement is a great victory, taking about 10 years to negotiate, authorizing appropriations of about \$310 million, and including a waiver of sovereign immunity. Mr. Swan mentioned that the MSCP, when fully implemented, encompasses about eight thousand acres along the Colorado River created by planting trees and creating habitats for wildlife. Part of the habitat creation includes backwater restoration. The backwaters contain native fish and the problem is that if you have sport fish in those areas then they reduce the population of the native fish. Rotenone (a piscicide) has been used to control the non-native fish, however sport fisherman have complained, expressing concern about the health effects to humans who ingest fish exposed to Rotenone as well as drink the water downstream of where Rotenone is used. Complaints have also been voiced at IID Board meetings. The IID Board is considering requesting the LCR MSCP manager consider other alternatives to the use of Rotenone.

WATER QUALITY

Colorado River Basin Salinity Control Program Status

Mr. Amirteymoori reported that at this time of year members of the Colorado River Basin Salinity Control Forum (Forum) typically send testimony letters to the Congress in support of the funding for the salinity control projects by the federal agencies: Reclamation, U.S. Department of Agriculture, and the U.S. Bureau of Land Management. This year, as in previous years, the Board will be sending letters of support for the Forum's recommended funding levels to each committee. All agencies are encouraged to send their own letters of support for the program and the funding levels.

Mr. Amirteymoori also reported that at a recent meeting of the Forum work group there was a presentation on the Salinity Economic Damage Model using 2005 salinity levels. There was an assumption in the Model that with no salinity control projects in place what the salinity levels in 2005 would have been. The study indicated the salinity would be 165 mg/l more than they were in 2005, at a cost of about \$1.8 million per milligram per liter, that adds up to about \$297 million per year. Without the salinity control projects, current annual salinity damages would amount to about \$360 million per year.

Moab Mine Tailings Status

Mr. Amireteymoori reported that the Moab uranium tailings project received \$180 million in funding from the stimulus package, enabling the removal of the uranium mine tailings away from the Colorado River to begin later this month. The original schedule had

the completion as late as 2030. With the stimulus funds the Moab uranium tailings project could be completed by 2019.

PG&E's Topock Compressor Station Hexavalent Chromium Cleanup Update

Mr. Bob Doss, principal engineer of Pacific Gas and Electric Company of San Francisco (PG&E), made a presentation to the Board regarding the current status of the Topock Chromium VI remediation. PG&E have conducted extensive studies for remediation of the hexavalent chromium contamination at PG&E's Topock Compressor Station. Water samples from wells in the vicinity of the site, both upstream and downstream, including the river itself, has indicated that no hexavalent chromium has entered the river from the groundwater plume. The interim remediation activities, since 2004, have kept the groundwater gradient toward the groundwater plume. After 12 years of study, the effort is changing from investigation to development of a final remedy for the site. Mr. Doss reviewed the characterization of the study area and gave a brief history of the investigation and the intermediate remedy. Mr. Doss characterized the alluvial soils underlying the Topock Compressor Station as cobbly, granular, semi-gravelly soils that were worn off of adjacent mountains. Groundwater moves through rapidly without much attenuation or chemical interaction. In contrast, the soils underlying the Colorado River are organic rich, and low in oxygen. Some of the core samples underlying the Colorado River showed a high reduction, and absorption capacity of Hexavalent Chromium. This reduction, and absorption capacity was not included in the recommended remediation alternatives. Mr. Doss reported that the completion of the groundwater site characterization report was given to the agencies and stakeholders in January 2009. A new phase of the groundwater investigation is being embarked upon in the bedrock east of the Topock Compressor Station. It is hoped that the results of the bedrock investigation will be quicker than the underlying soils of the plant and the river and that the results can be incorporated in the current remedy process.

Mr. Doss reported that a draft of the "Corrective Measure Study, Feasibility Study" was released January 27th. The Draft describes the remedial actions goals and the technologies that can be brought to bear on meeting those goals. The technologies described in the "Corrective Measure Study, Feasibility Study" are arranged in a series of remedial action alternatives. The alternatives are evaluated against state criteria and federal criteria. A recommendation of PG&E is made to the lead agencies including the Department of Toxic Substances Control (DTSC) and the Department of the Interior. Mr. Doss expects a long process of consultation among the area's stakeholders, including tribal nations providing input on the environmental evaluation of the remedies. It is hoped that the consultation process will conclude with what DTSC refers to as a "Notice of Determination", by the first quarter of 2010. While the consultation process is continuing, an Environmental Impact Report (EIR) under the California Environmental Quality Act, is being prepared. The EIR will evaluate, on a programmatic basis, all of the different remedies. The EIR is to be inclusive enough to cover all of the alternatives in consultative process. The implementation of the corrective measure is expected to include a period of monitoring and reporting.

Mr. Doss reiterated that their objectives are: 1) reduce human health and ecologic risks; 2) achieve groundwater standards; 3) reduce the mass of hexavalent chromium in the groundwater plume, and 4) achieve the clean up goals to reduce the concentration of hexavalent chromium in the area to 32 parts per billion within a reasonable time frame.

Mr. Doss reported that reasonable time frame is estimated based on the cleanup alternatives. The most aggressive alternative could achieve cleanup goals in as little as 20 to 25 years. With no further action hexavalent chromium, above background levels, could be in suspension in the groundwater plume for more than a thousand years. Mr. Doss added that to compare the alternatives they normalized the cleanup window at around 20-30 years. This is a very aggressive time-frame for cleanup of a plume this size. The plume is about a mile long and contains about a billion gallons.

Mr. Doss described the results of the *in-situ* treatment pilot studies. By adding certain carbon sources, food sources, food grade materials, that stimulate the growth of bacteria that reduce the hexavalent chromium (which is soluble and a cancer causing agent) to trivalent chromium (which precipitates out of solution and is actually a nutrient). The pilot studies in the upland area and the floodplain have been successful and scientists are convinced that when implemented as part of the final remedy can reduce the cleanup time from hundreds of years to just a few decades.

Mr. Doss reported that the "Corrective Measure Study, Feasibility Study" contains nine alternatives, the obligatory no action alternative, monitored natural attenuation, and various implementations of pump and treat technologies. The pump and treat alternatives range from extracting the contaminated groundwater, chemically treating the water to approved standards with perhaps some enhancements to various injection and extraction well configurations using a carbon-based nutrient to enhance bacteria that promotes an environment where the contaminant is attenuated. The proposed PG&E recommendation is an alternative where a limited array of injection and extraction wells are placed to effectively clean up the groundwater plume using *in-situ* treatment and fresh-water flushing while still respecting wildlife habitat and the Fort Mojave Indian Tribe that holds that any action in the area is a desecration (the ancient Topock Maze is located in the vicinity of the site). Mr. Doss agreed to stay after the Board meeting to describe in detail each of the alternatives included in the "Corrective Measure Study, Feasibility Study"

OTHER BUSINESS

Next Board Meeting

Chairman Fisher announced that the next meeting of the Colorado River Board will be held on June 10, 2009, 10:00 a.m., Holiday Inn Ontario Airport, 2155 E. Convention Center Way, Ontario, California.

There being no further items to be brought before the Board, Chairman Fisher asked for a motion to adjourn the meeting. Upon the motion of Mr. Menvielle, seconded by Mr. Foley, and unanimously carried, the meeting was adjourned 11:56 a.m. on April 15, 2009.

Gerald R. Zimmerman
Executive Director

3.b. - Fiscal Year 2009-2010 Colorado River Board Budget

STATE OF CALIFORNIA
STANDARD AGREEMENT
 STD 213 (Rev 06/03)

AGREEMENT NUMBER 42
REGISTRATION NUMBER

1. This Agreement is entered into between the State Agency and the Contractor named below:

STATE AGENCY'S NAME

Colorado River Board of California

CONTRACTOR'S NAME

Six Agency Committee

2. The term of this Agreement is: July 1, 2009 through June 30, 2010

3. The maximum amount of this Agreement is: \$ 1,627,000.00

4. The parties agree to comply with the terms and conditions of the following exhibits which are by this reference made a part of the Agreement.

Exhibit A – Scope of Work 1 page(s)

Exhibit B – Budget Detail and Payment Provisions 1 page(s)

Exhibit C* – General Terms and Conditions

Check mark one item below as Exhibit D:

Exhibit - D Special Terms and Conditions (Attached hereto as part of this agreement) NA page(s)

Exhibit - D* Special Terms and Conditions

Exhibit E – Additional Provisions NA page(s)

NA

Items shown with an Asterisk (*), are hereby incorporated by reference and made part of this agreement as if attached hereto. These documents can be viewed at www.ols.dgs.ca.gov/Standard+Language

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

CONTRACTOR		California Department of General Services Use Only
CONTRACTOR'S NAME (if other than an individual, state whether a corporation, partnership, etc.) Six Agency Committee		
BY (Authorized Signature) 	DATE SIGNED (Do not type)	
PRINTED NAME AND TITLE OF PERSON SIGNING Dana B. Fisher, Jr., Chairman		
ADDRESS c/o 770 Fairmont Ave., Suite 100, Glendale, CA 91203-1068		
STATE OF CALIFORNIA		
AGENCY NAME Colorado River Board of California		
BY (Authorized Signature) 	DATE SIGNED (Do not type)	
PRINTED NAME AND TITLE OF PERSON SIGNING Gerald R. Zimmerman, Executive Director		
ADDRESS 770 Fairmont Ave., Suite 100, Glendale, CA 91203-1068		

Exempt per:

EXHIBIT A

WHEREAS, pursuant to Part 5 of Division 6 of the California Water Code, the Colorado River Board of California has the duty and responsibility to protect the rights and interests of the State of California, its agencies and citizens in the water and power resources of the Colorado River System; and

WHEREAS, the 2009-10 State Budget sets forth an expenditure program for the Colorado River Board of California in the amount of \$1,627,000.00; and

WHEREAS, the 2009-10 State Budget provides for neither General Fund nor California Environmental License Plate Fund support to the Board; and

WHEREAS, the State and Contractor consider that it is in the best interest of the people of the State of California to maintain the program set forth in the 2009-10 State Budget, and to carry out this objective, State and Contractor agree that the Contractor shall fund and the State shall accept the cost of said budget in the amount of \$1,627,000.00, as modified by subsequent adjustments pursuant to the Budget Act of 2009 and Executive Orders of the Governor and in accordance with Exhibit B;

NOW, THEREFORE, State and Contractor hereby agree to the terms and conditions set forth in Exhibit B.

EXHIBIT B

The State shall provide the program set forth in the 2009-10 State Budget within the total expenditure of \$1,627,000.00 as modified by subsequent adjustments pursuant to the Budget Act of 2009 and Executive Orders of the Governor;

The Contractor shall pay the sum of \$1,627,000.00 toward said 2009-10 State Budget, such payment to be made no later than August 30, 2009. Said funds will be used to pay 100 percent of California's share of the funding of the seven-state Colorado River Basin Salinity Control Forum, the payee being the "Salinity Control Forum," and related activities; plus the remaining balance will be used to support activities of the Colorado River Board.

In the event at the end of the 2009-10 FY there remains an unexpended balance of the sum set forth in the 2009-10 State Budget for the Colorado River Board plus any additional funds advanced to the Board for Personal Services or other purposes, State shall pay to Contractor a sum equal to the said unexpended balance.

**COLORADO RIVER BOARD OF CALIFORNIA
FY 2009-10 BUDGET**

(Budget Approved June xx, 2009; Assessments Approved June xx, 2009)

	Current Year			Anticipated Expenditures FY 2008-09	Budget FY 2009-10	
	Authorized FY 2008-09	Funded FY 2008-09				
1. Colorado River Board Direct Support	\$ 1,573,800	\$ 1,573,800		\$ 1,450,000	\$ 1,586,800	
State Share(General Fund)	\$ -	\$ -	0.0%	\$ -	\$ -	0.0%
Six Agency Share	\$ 1,573,800	\$ 1,573,800	100.0%	\$ 1,450,000	\$ 1,586,800	100.0%
2. Colorado River Basin Salinity Control Forum Support	\$ 40,200	\$ 40,200		\$ 40,160	\$ 40,200	
State Share(CELPF)	\$ -	\$ -	0.0%	\$ -	\$ -	0.0%
Six Agency Share	\$ 40,200	\$ 40,200	100.0%	\$ 40,160	\$ 40,200	100.0%
3. Administrative Fee/Pro Rata	\$ -	\$ -		\$ -	\$ -	
State Share (CELPF)	\$ -	\$ -		\$ -	\$ -	NA
Six Agency Share	\$ -	\$ -		\$ -	\$ -	NA
4. Total Budget Estimate						
Colorado River Board	\$ 1,614,000	\$ 1,614,000		\$ 1,490,160	\$ 1,627,000	
State Share	\$ -	\$ -	0.0%	\$ -	\$ -	0.0%
Six Agency Share	\$ 1,614,000	\$ 1,614,000	100.0%	\$ 1,490,160	\$ 1,627,000	100.0%

5.a. - Colorado River Water Reports

**SUMMARY WATER REPORT
COLORADO RIVER BASIN
June 1, 2009**

RESERVOIR STORAGE (as of May 31)	MAF	ELEV. IN FEET	% of Capacity	May 4, 2009		
				MAF	ELEV. IN FEET	% of Capacity
Lake Powell	14.751	3,629.1	61	12.943	3,612.1	53
Flaming Gorge	2.991	6,020.3	80	3.027	6,021.3	81
Navajo	1.515	6,072.5	89	1.347	6,060.0	79
Lake Mead	11.217	1,096.9	43	11.557	1,100.7	45
Lake Mohave	1.736	644.4	96	1.709	643.4	94
Lake Havasu	0.594	448.7	96	0.594	448.7	96
Total System Storage	33.941		57	32.051		54
System Storage Last Year	32.503		54	30.989		53

	May 4, 2009	
WY 2009 Precipitation (Basin Weighted Avg) 10/01/08 through 6/01/09	100 percent (25.1")	103 percent (23.5")
WY 2009 Snowpack Water Equivalent (Basin Weighted Avg) on day of 6/01/09 (Above two values based on average of data from 116 sites.)	NA (NA)	83 percent (12.7")
		Observed
		<u>May 4, 2009</u>
May 14, 2009 Final Forecasted Unregulated Lake Powell Inflow	MAF % of Normal	MAF % of Avg.
2009 April through July unregulated inflow forecast	7.103 90 %	7.300 92%
2009 Water Year forecast	10.302 86 %	10.464 87%

USBR Forecasted Year-End 2009 and 2008 Consum. Use, June 1, 2009 a./		MAF		
		2009		2008
		Diversion	- Return =	Net
Nevada (Estimated Total)		0.520	0.215	0.305
Arizona (Total)		3.695	0.903	2.792
CAP Total				1.534
Az. Water Banking Authority				0.134
OTHERS				1.258
California (Total) b./ c./		5.050	0.676	4.374
MWD c./				0.881
3.85 Agriculture	<u>Total</u> <u>Conserved</u>			<u>Forecasted</u> <u>Estimated</u>
IID d./	2.991 -0.263			2.728 2.825
CVWD e./	0.350 -0.030			0.320 0.299
PVID	0.347 0			0.347 0.376
YPRD	0.042 0			0.042 0.045
Island f./	0.007 0			0.007 0.007
Total Ag.	3.737 -0.293			3.444 3.552
Others				0.049 0.044
PVID-MWD following to storage				0 0
Arizona, California, and Nevada Total g./		9.264	1.793	7.471
				7.549

- a./ Incorporates Apr USGS monthly data and 75 daily reporting stations which may be revised after provisional data reports are distributed by USGS. Use to date estimated for users reporting monthly and annually.
- b./ California 2009 basic use apportionment of 4.4 MAF has been adjusted for approved paybacks for 01-02 obligations (3,987 AF), payback of Inadvertent Overrun and Payback Policy overruns (1,852 AF), and Lower Colorado River Water Supply Project underpumping (78 AF).
- c./ MWD recovery of Interstate inderground storage from Arizona (30,000 AF). Plus Delivery of System Efficiency ICS (34,000 AF, pending).
- d./ 0.105 MAF conserved by IID-MWD Agreement as amended in 2007: 90,000 AF for SDCWA under the IID-SDCWA Transfer Agreement as amended, 60,000 AF of which is being diverted by MWD; 8,000 AF for CVWD under the IID-CVWD Acquisition Agreement, 59,670 AF from the All-American Canal Lining Project, and 503 AF of payback of 2006 and 2007 inadvertant overruns.
- e./ 26,000 acre-feet conserved by the Coachella Canal Lining Project and 3,987 AF of payback.
- f./ Includes estimated amount of 6,136 acre-feet of disputed uses by Yuma Island pumpers and 987 acre-feet by Yuma Project Ranch 5 being charged by USBR to Priority 2.
- g./ Includes unmeasured returns based on estimated consumptive use/diversion ratios by user from studies provided by Arizona Dept. of Water Resources, Colorado River Board of California, and Reclamation.

Monthly Total Colorado River Basin Storage

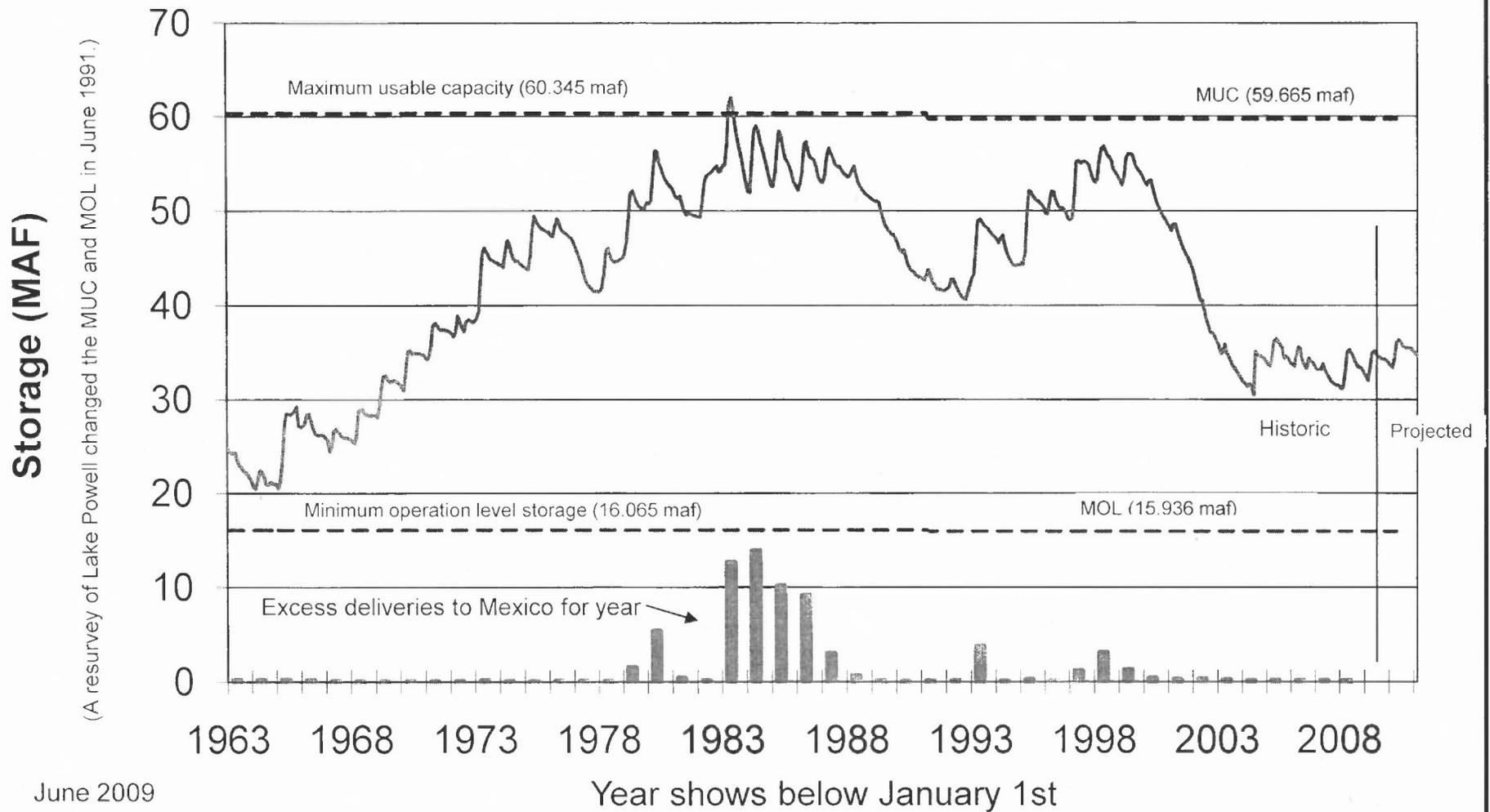
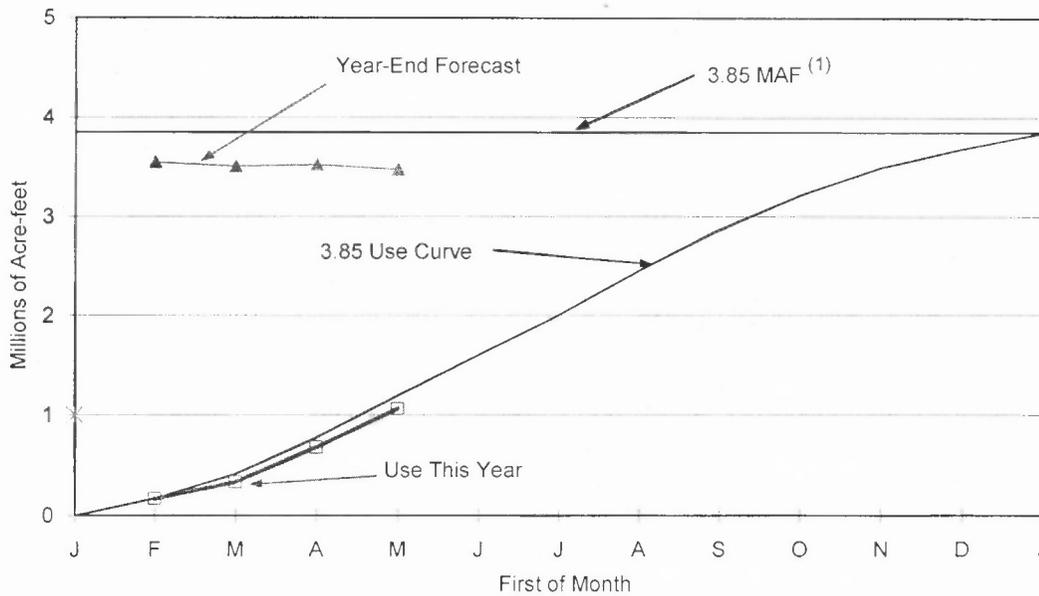


FIGURE 1
JUNE 1, 2009 FORECAST YEAR-END COLORADO RIVER WATER USE
BY THE CALIFORNIA AGRICULTURAL AGENCIES



Forecast of Colorado River Water Use by the California Agricultural Agencies (Millions of Acre-feet)			
Month	Use as of First of Month	Forecast of Year End Use	Forecast of Unused Water (1)
Jan	0.000	-----	-----
Feb	0.168	3.551	0.042
Mar	0.332	3.509	0.084
Apr	0.678	3.526	0.067
May	1.064	3.478	0.115
Jun			
Jul			
Aug			
Sep			
Oct			
Nov			
Dec			
Jan			

(1) The forecast of unused water is based on the availability of 3.600 MAF under the first three priorities of the water delivery contracts. This accounts for the 85,000 af of conserved water available to MWD under the 1988 IID-MWD Conservation agreement and the 1989 IID-MWD-CVWD-PVID Agreement as amended; 60,000 af of conserved water available to SDCWA under the IID-SDCWA Transfer agreement as amended; 26,000 af of conserved water available to SDCWA and MWD as a result of the Coachella Canal Lining Project; 59,670 af of water projected to be available to SDCWA and MWD as a result of the All-American Canal Lining Project; 14,500 af of water IID and MWD are forbearing to permit the Secretary of the Interior to satisfy a portion of Indian and miscellaneous present perfected rights use, and 4,490 af of water IID and CVWD are forbearing to payback Colorado River Water Delivery Agreement Exhibit C and 2007 overruns. As USBR is charging disputed uses by Yuma island pumpers to Priority 2, the amount of unused water has been reduced by those uses - 6,136 af. The CRB does not concur with USBR's viewpoint on this matter.



**SUMMARY WATER REPORT
COLORADO RIVER BASIN
May 4, 2009**

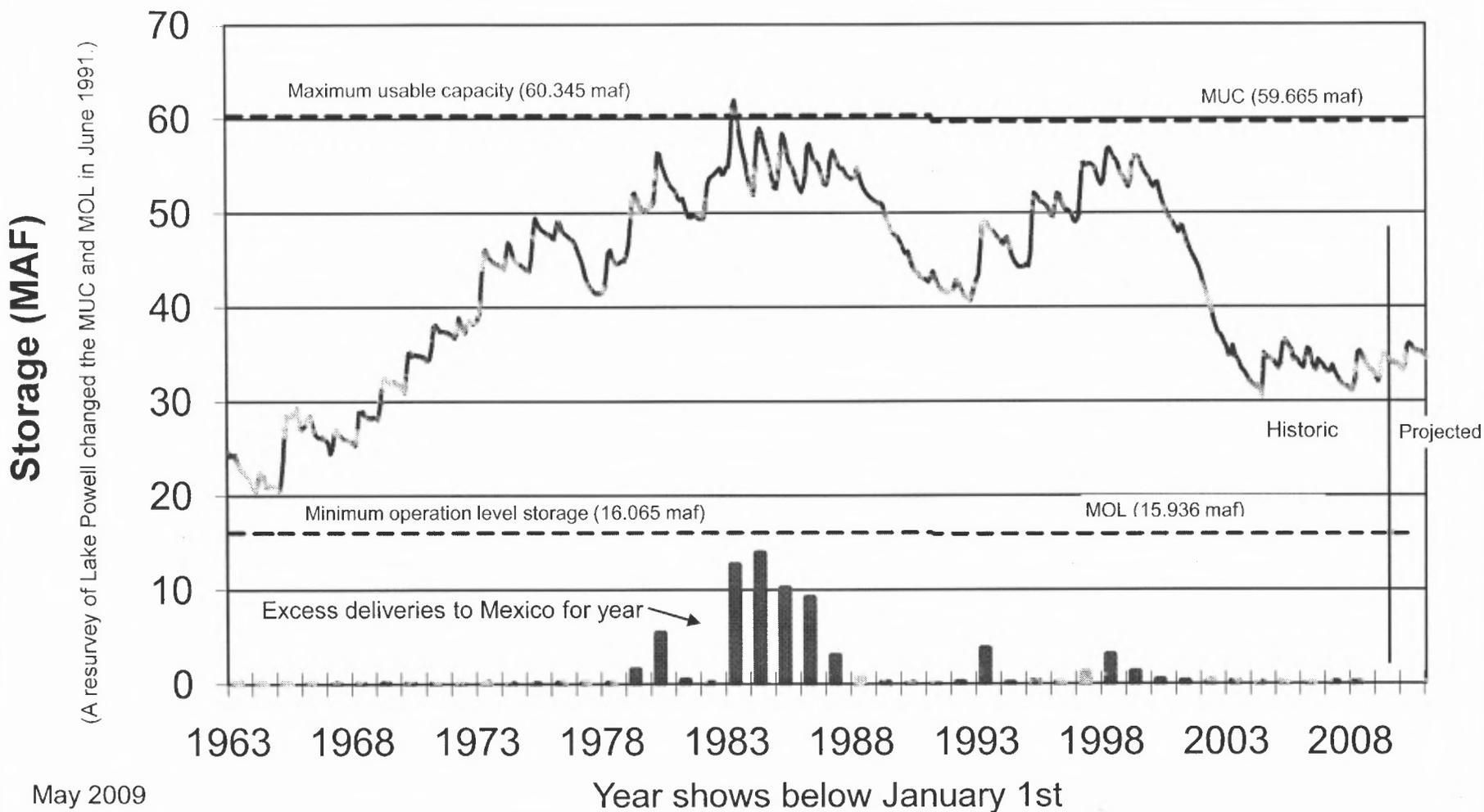
RESERVOIR STORAGE (as of May 3)	April 5, 2009					
	MAF	ELEV. IN FEET	% of Capacity	MAF	ELEV. IN FEET	% of Capacity
Lake Powell	12.943	3,612.1	53	12.752	3,610.2	52
Flaming Gorge	3.027	6,021.3	81	2.991	6,020.3	80
Navajo	1.347	6,060.0	79	1.290	6,055.4	76
Lake Mead	11.557	1,100.7	45	12.086	1,106.6	47
Lake Mohave	1.709	643.4	94	1.647	641.1	91
Lake Havasu	0.594	448.7	96	0.562	447.1	91
Total System Storage	32.051		54	32.101		54
System Storage Last Year	30.989		53	30.899		52

	April 5, 2009			
WY 2009 Precipitation (Basin Weighted Avg) 10/01/08 through 5/04/09			103 percent (23.5")	102 percent (20.0")
WY 2009 Snowpack Water Equivalent (Basin Weighted Avg) on day of 5/04/09 (Above two values based on average of data from 116 sites.)			83 percent (12.7")	104 percent (18.4")
			Observed	
			April 5, 2009	
May 1, 2009 Final Forecasted Unregulated Lake Powell Inflow	MAF	% of Normal	MAF	% of Avg.
2009 April through July unregulated inflow forecast	7.300	92 %	7.200	91%
2009 Water Year forecast	10.464	87 %	10.483	87%

USBR Forecasted Year-End 2009 and 2008 Consum. Use, May 5, 2009 a./					MAF	
			2009		2008	
	Diversion	- Return =	Net			
Nevada (Estimated Total)	0.518	0.214	0.304			0.269
Arizona (Total)	3.702	0.908	2.794			2.777
CAP Total			1.539			1.562
Az. Water Banking Authority			0.134			0.214
OTHERS			1.255			1.216
California (Total) b./ c./	5.080	0.686	4.395			4.502
MWD c./			0.869			0.906
3.85 Agriculture						
IID d./	3.021	-0.263	2.758			2.825
CVWD e./	0.353	-0.030	0.323			0.299
PVID	0.345	0	0.345			0.376
YPRD	0.044	0	0.044			0.045
Island f./	0.007	0	0.007			0.007
Total Ag.	3.770	-0.293	3.477			3.552
Others			0.049			0.044
PVID-MWD following to storage			0			0
Arizona, California, and Nevada Total g./	9.300	1.808	7.492			7.549

- a./ Incorporates Mar USGS monthly data and 75 daily reporting stations which may be revised after provisional data reports are distributed by USGS. Use to date estimated for users reporting monthly and annually.
- b./ California 2009 basic use apportionment of 4.4 MAF has been adjusted for approved paybacks for 01-02 obligations (3,987 AF), payback of Inadvertent Overrun and Payback Policy overruns (1,852 AF), and Lower Colorado River Water Supply Project underpumping (78 AF).
- c./ MWD recovery of Interstate interground storage from Arizona (30,000 AF). Plus Delivery of System Efficiency ICS (34,000 AF, pending).
- d./ 0.105 MAF conserved by IID-MWD Agreement as amended in 2007: 90,000 AF for SDCWA under the IID-SDCWA Transfer Agreement as amended, 60,000 AF of which is being diverted by MWD; 8,000 AF for CVWD under the IID-CVWD Acquisition Agreement, 59,670 AF from the All-American Canal Lining Project, and 503 AF of payback of 2006 and 2007 inadvertent overruns.
- e./ 26,000 acre-feet conserved by the Coachella Canal Lining Project and 3,987 AF of payback.
- f./ Includes estimated amount of 6,136 acre-feet of disputed uses by Yuma Island pumpers and 987 acre-feet by Yuma Project Ranch 5 being charged by USBR to Priority 2.
- g./ Includes unmeasured returns based on estimated consumptive use/diversion ratios by user from studies provided by Arizona Dept. of Water Resources, Colorado River Board of California, and Reclamation.

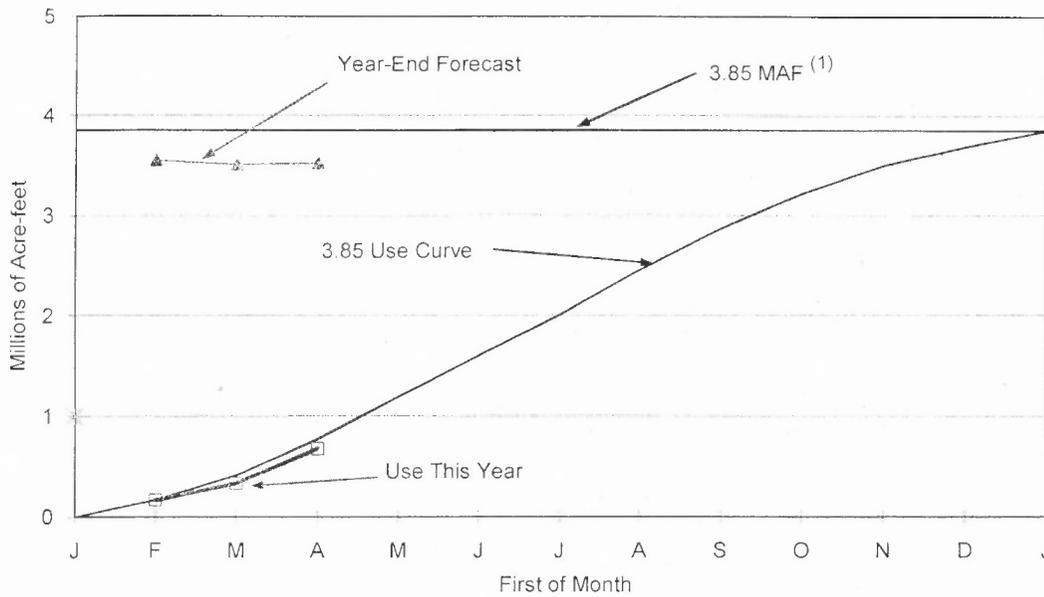
Monthly Total Colorado River Basin Storage



(A resurvey of Lake Powell changed the MUC and MOL in June 1991.)

May 2009

FIGURE 1
2009 FORECAST YEAR-END COLORADO RIVER WATER USE
BY THE CALIFORNIA AGRICULTURAL AGENCIES



Forecast of Colorado River Water Use by the California Agricultural Agencies (Millions of Acre-feet)			
Month	Use as of First of Month	Forecast of Year End Use	Forecast of Unused Water (1)
Jan	0.000	-----	-----
Feb	0.168	3.551	0.042
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Apr	0.678	3.526	0.067
May			
Jun			
Jul			
Aug			
Sep			
Oct			
Nov			
Dec			
Jan			

(1) The forecast of unused water is based on the availability of 3.600 MAF under the first three priorities of the water delivery contracts. This accounts for the 85,000 af of conserved water available to MWD under the 1988 IID-MWD Conservation agreement and the 1989 IID-MWD-CVWD-PVID Agreement as amended; 60,000 af of conserved water available to SDCWA under the IID-SDCWA Transfer agreement as amended; 26,000 af of conserved water available to SDCWA and MWD as a result of the Coachella Canal Lining Project; 59,670 af of water projected to be available to SDCWA and MWD as a result of the All-American Canal Lining Project; 14,500 af of water IID and MWD are forbearing to permit the Secretary of the Interior to satisfy a portion of Indian and miscellaneous present perfected rights use; and 4,490 af of water IID and CVWD are forbearing to payback Colorado River Water Delivery Agreement Exhibit C and 2007 overruns. As USBR is charging disputed uses by Yuma island pumpers to Priority 2, the amount of unused water has been reduced by those uses - 6,136 af. The CRB does not concur with USBR's viewpoint on this matter.

COLORADO RIVER BOARD OF CALIFORNIA

April 28, 2009

COLORADO RIVER WATER REPORT

The following report summarizes data obtained from provisional reports of the U.S. Geological Survey, U.S. Bureau of Reclamation, International Boundary and Water Commission, and Imperial Irrigation District.

I. Active Surface Storage^{1/} in Reservoirs at end of Month (Thousand Acre-feet).

March 2009

<u>Upper Basin</u>	<u>Storage</u>	<u>Elevation in feet</u>	<u>% of Capacity</u>	<u>Change During Month</u>	<u>Change from 2008</u>
Lake Powell	12,774	3,610.4	53%	-164	1,974
Flaming Gorge	2,985	6,020.1	80%	18	-50
Fontenelle	111	6,468.0	32%	-13	11
Navajo	1,287	6,055.1	76%	28	-34
Blue Mesa	543	7,485.0	65%	-9	104
Morrow Point	107	7,147.8	91%	1	-6
Crystal	16	6,751.3	89%	-1	0
Sub-total	17,823		57%	-141	1,999
<u>Lower Basin</u>					
Lake Mead	12,164	1,107.4	47%	-375	-776
Lake Mohave	1,655	641.4	91%	-24	37
Lake Havasu	556	446.8	90%	12	5
Sub-total	14,375		50%	-387	-734
Upper and Lower Basin Total	32,198 ^{2/}		54%	-527	1,265

^{1/} Figures shown do not include reservoir dead storage.

^{2/} Storage above minimum operation level is 32,192 - 15,936 = 16,262 thousand acre-feet. Minimum operation level (15,936 thousand acre-feet) is defined as the sum of active content at minimum power pool plus minimum active content required to make surface diversions at Lake Havasu and Navajo Reservoir.

II. Upper Basin Discharge (Acre-feet).

<u>Station</u>	Meas. Flow March 2009	<u>Cumulative Flow</u> October thru March	<u>Meas. Flow Adjusted for CRSP Surface Storage Changes</u>	
			March 2009	% of Mar. 87- year average (1922-2008 water years)
Green River at Green River, Utah	155,700	862,800	173,600	65%
Colorado River near Cisco, Utah	229,000	1,698,400	220,800	101%
San Juan River near Bluff, Utah	56,600	317,200	84,300	74%
At Lee Ferry (Compact Point)	633,700	4,264,200	506,900	82%

III. Lower Basin Discharge (Acre-feet).

<u>Station</u>	March 2009	<u>Cumulative Flow</u> October thru March
Below Hoover Dam	1,036,900	4,094,500
Below Davis Dam	1,085,200	4,208,000
Below Parker Dam	738,700	2,621,700
Above Imperial Dam	609,500	2,331,900

IV. Consumptive Use of Lower Colorado River Mainstream Water (Acre-feet).
March, 2009

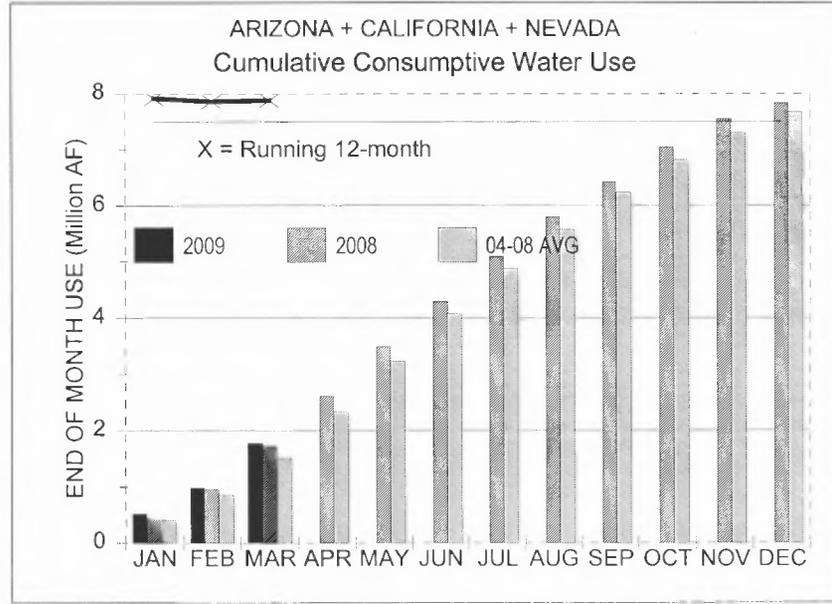
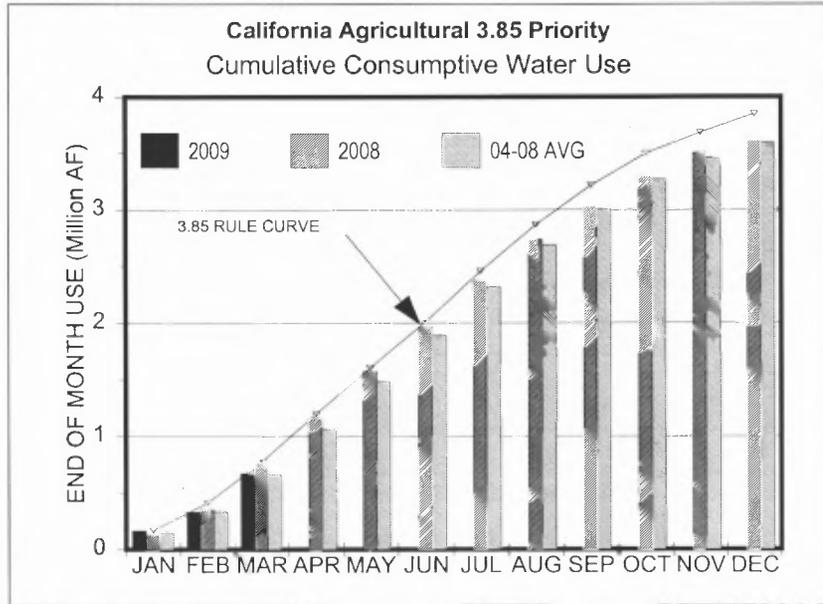
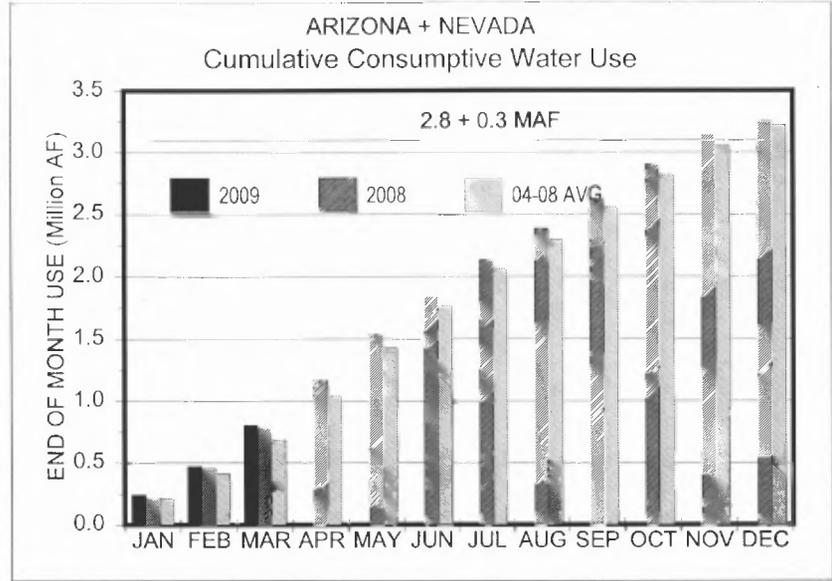
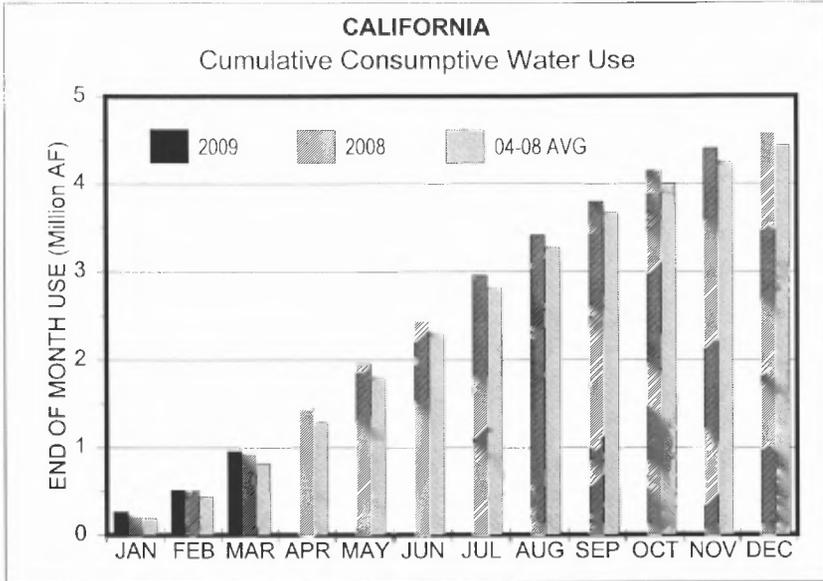
California Users	Diversion	Return	Consumptive Use	Change in Cons. Use From Mar 2008	Cumulative Cons. Use		
					January thru March	Change from prev. Jan. thru Mar.	12 Months thru March
Palo Verde Irrig. Dist.	65,160	32,730	32,430	-7,790	46,940	-21,520	404,510
Yuma Proj. (Res. Div.) ^{b/}	8,170	2,880	5,290	-2,200	8,550	-3,920	42,990
Imperial Irrig. Dist. ^{a/}	282,030		282,030	-17,070	557,370	-35,160	2,785,090
Salton Sea Mitigation	3,440		3,440	730	11,620	7,070	33,120
USBR SaltonSea Operations	0		0	0	0	0	0
IID plus Salton Sea Mitigation	285,470		285,470	-16,340	568,990	-28,090	2,818,210
Coachella Val. Wat. Dist. ^{a/}	23,130		23,130	180	53,390	4,270	302,800
Subtotal	381,930	35,610	346,320	-26,150	677,870	-49,260	3,568,510
Fort Mojave Ind. Res. ^{c/}	1,000		1,000	0	2,720	0	24,760
Cal. Miscellaneous ^{d/}	2,860		2,860	0	4,660	0	34,000
Metropolitan Water Dist.	99,430	430	99,000	52,290	280,540	85,590	993,820
Total	485,220	36,040	449,180	26,140	965,790	36,330	4,621,090
<u>Arizona Users</u>							
Central Arizona Project	180,260		180,260	12,240	513,980	21,950	1,583,580
Colorado River Ind. Res.	63,060	16,880	46,180	460	86,380	10,700	443,200
Gila Gravity Main Canal	66,390	17,300	49,090	-6,260	91,310	-8,100	516,940
Yuma Proj. (Valley Div.)	38,760	12,810	25,950	-6,710	48,100	-6,880	219,060
Fort Mojave Ind. Res. ^{c/}	6,950		6,950	0	13,750	0	85,130
Havasu Nat. Wildlife Ref.	6,710	0	6,710	1,430	9,300	3,240	40,620
Arizona Miscellaneous ^{d/}	5,880		5,880	0	12,300	0	85,000
Total	368,010	46,990	321,020	1,160	775,120	20,910	2,973,530
<u>Nevada Users</u>							
From Lake Mead ^{b/}	34,540	21,760	12,780	-300	30,380	-2,640	293,820
Mohave Steam Plant	40		40	0	110	0	480
Total	34,580	21,760	12,820	-300	30,490	-2,640	294,300
Total Consumptive Use (Ariz., Cal., Nev.)	887,810	104,790	783,020	27,000	1,771,400	54,600	7,888,920

a. Based on measurements below Pilot Knob (assumed to be equal to USBR Article V data after credit is given for unmeasured California return flows between Imperial Dam and Pilot Knob). In addition, Salton Sea mitigation is not part of IID's use but is included in IID total diversion. IID diversions for April are not available

b. Return flow estimates based on averages of past returns as calculated by USBR for Article V data.

c. Assumed equal to August, 1983 use estimated by Fort Mojave Indian Tribe.

d. An estimated residual made by the Colorado River Board of California combining such items as small diversions along the river, unmeasured groundwater return flow, etc., which, when combined with other quantities listed to arrive at the State's total, presents an estimate of the State's Consumptive use of Lower Colorado River water.



May 1, 2009 Final Forecast of Colorado River Flow into
Lake Powell (1) (Million Acre-feet)

	<u>USBR and National Weather Service</u>		<u>Change From Last</u>	
	<u>April-July 2009</u>	<u>Water Year 2009</u>	<u>Month's Projected</u>	<u>Month's Projected</u>
			<u>April-July 2009</u>	<u>Wat Yr 2009</u>
Maximum (2)	8.800	12.764	1.600	2.281
Mean	7.300 *	10.464 **	0.100	-0.019
Minimum (2)	5.900	8.364	-1.300	-2.119

* This month's A-J observed is 92% of the 30-year A-J average shown below.

** This month's W-Y observed is 87% of the 30-year W-Y average shown below.

Comparison with past records
of Colorado River
inflow into Lake Powell
(at Lee Ferry prior to 1962)

	<u>April-July Flow</u>	<u>Water Year Flow</u>
Long-Time Average (1922-2007)	7.887	11.699
30-yr. Average (1961-90)	7.735	11.724
10-yr. Average (1998-2007)	7.027	11.260
Max. of Record	15.404 (1984)	21.873 (1984)
Min. of Record	1.115 (2002)	3.058 (2002)
Year 2000	4.352	7.310
Year 2001	4.301	6.955
Year 2002	1.115	3.058
Year 2003	3.918	6.358
Year 2004	3.640	6.128
Year 2005	8.810	12.614
Year 2006	5.318	8.769
Year 2007	4.052	8.231
Year 2008	8.906	12.356
Total Years 2000 - 2004	17.326	29.809
5-Year Average (2000-2004)	3.465	5.962

(1) Under conditions of no other Upper Basin reservoirs.

(2) USBR and NWS forecasts indicate the probability of 95 percent of the time the actual flow will not exceed the maximum value, and will not be less than the minimum value.

VI. Scheduled Flows to Mexico — Arrivals and excess arrivals of Water for Calendar Year 2009
(Acre-feet)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	<u>Scheduled</u>	<u>Total</u>	<u>Excess</u>	<u>Other</u>	<u>Total</u>	<u>Cumulative</u>	<u>Flow</u>	<u>Flow By-Pass</u>
	<u>Flow</u>	<u>Arrivals</u>	<u>in accord</u>	<u>Excess</u>	<u>Excess</u>	<u>Excess</u>	<u>Through</u>	<u>Southerly</u>
			<u>with</u>	<u>Arrivals</u>	<u>Arrivals</u>	<u>Arrivals</u>	<u>NIB and</u>	<u>International</u>
			<u>Minute 242</u>				<u>Limitrophe</u>	<u>Boundary</u>
Jan.	119,427	131,137	10,033	1,677	11,710	11,710	108,313	10,024
Feb.	152,979	171,990	9,433	9,578	19,011	30,721	151,373	9,433
March	208,455	219,177	10,164	558	10,722	41,443	195,714	10,164
April	199,629							
May	112,754							
June	112,353							
July	119,428							
August	93,370							
Sept.	89,307							
Oct.	73,828							
Nov.	102,966							
Dec.	115,505							
	<u>1,500,001</u>	<u>522,304</u>	<u>29,630</u>	<u>11,813</u>			<u>455,400</u>	<u>29,621</u>

- Column (1). Flow schedule requested by Mexico. In surplus years as determined by the United States, Mexico can schedule up to 1.7 rather than 1.5 million acre-feet.
- (2). Total Colorado River waters reaching Mexico. It is the sum of: 1) Colorado River water measured at the Northerly International Boundary, 2) drainage waters measured at the Southerly International Boundary near San Luis, Arizona, and 3) Wellton-Mohawk drainage waters measured at the Southerly International Boundary. It is the sum of Columns (1) + (5).
- (3). Arizona's Wellton-Mohawk Irrigation and Drainage District drainage water. This water is discharged to the Santa Clara Slough in Mexico via a concrete-lined canal.
- (4). Excess arrivals other than Wellton-Mohawk drainage. It is the sum of: 1) a delivery of about 5,000 a. f. per year to ensure that Mexico receives what is scheduled, 2) releases from Parker Dam which are not used due to unexpected rainfall in the Palo Verde, Coachella, Imperial, and and Yuma areas, 3) controlled flood releases on the Gila and Colorado River, and 4) local runoff.
- (5). Sum of Columns (3) and (4).
- (6). Cumulation of Column (5).
- (7). Including Colorado River flow at the Northerly International Boundary plus flow from Cooper, 11-mile, and 21-mile spillways.
- (8). Including flow at the Southerly International Boundary, from the East and West Main canals, Yuma Valley Main, 242 Lateral plus diversions from Lake Havasu for Tijuana.

WEIGHTED MONTHLY SALINITY AT
 SELECTED COLORADO RIVER STATIONS
 AND RUNNING 12-MONTH NIB-IMPERIAL FLOW-WEIGHTED SALINITY DIFFERENTIAL
 (in parts per million)

Month	Below Hoover Dam			Below Parker Dam ^{3/}			Palo Verde ^{3/} Canal Near Blythe			At Imperial Dam			At Northerly Inter- national Boundary			Running 12-Month Flow-Wtd. Differential ^{2/}	
	5-Year avg. ^{1/}	2008	2009	5-Year avg. ^{1/}	2008	2009	5-Year avg. ^{1/}	2008	2009	5-Year avg. ^{1/}	2008	2009	5-Year avg. ^{1/}	2008	2009	2008	2009
Jan.	690	685	665	709	685		751	713		913	717	768	1,041	821	933	130.7	146.4
Feb.	675	692	655	706	678		732	682		835	675	745	998	822	862	135.9	145.5
March	684	674	649	699	668		727	686		805	717	703	925	803	804	139.4	147.0
April	680	659		700	675		714	697		801	699		892	805		144.9	
May	677	676		698	681		709	696		822	725		962	914		141.4	
June	678	648		695	671		712	686		812	718		956	896		137.1	
July	682	655		688	683		709	701		797	720		909	865		137.3	
August	690	641		686	677		706	692		800	734		907	894		135.7	
Sept.	672	646		686	676		737	693		815	747		952	944		139.3	
Oct.	680	638		689	657		739	689		854	758		1,070	1,010		139.6	
Nov.	682	642		692	674		746	705		897	765		1,010	931		140.2	
Dec.	681	651		702	671		731	723		877	834		999	912		140.5	

General Notes:

^{1/} 5-Year averages are arithmetical.

^{2/} 12-month flow-weighted differential between NIB and Imperial Dam through month shown in left column.

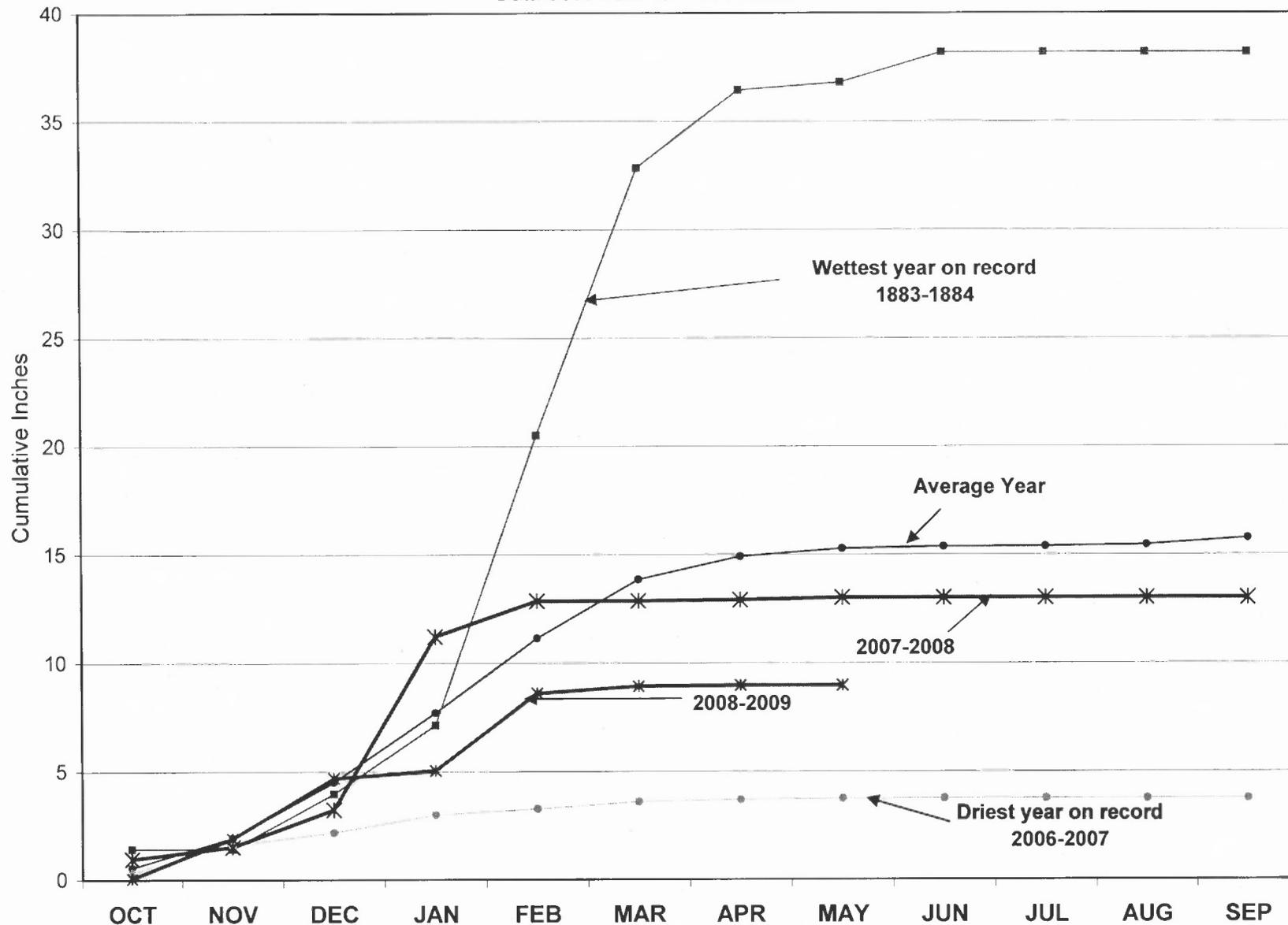
^{3/} Operational values only.

^{4/} Preliminary

5.b. - State and Local Water Reports

Los Angeles Civic Center Precipitation

Data Used from 1877 to Present



PRECIPITATION AT SEVEN MAJOR STATIONS IN SOUTHERN CALIFORNIA

From October 1, 2008 to June 1, 2009

Precipitation in Inches

Station	Precipitation		Normal to Date	Percent of Normal
	May	Oct 1 to Jun 1		
San Luis Obispo	0.15	9.45	22.06	43%
Santa Barbara	0.00	9.78	17.48	56%
Los Angeles	0.00	8.96	14.16	63%
San Diego	0.04	8.11	10.20	80%
Blythe	0.03	1.37	2.60	53%
Imperial	0.00	1.39	2.05	68%

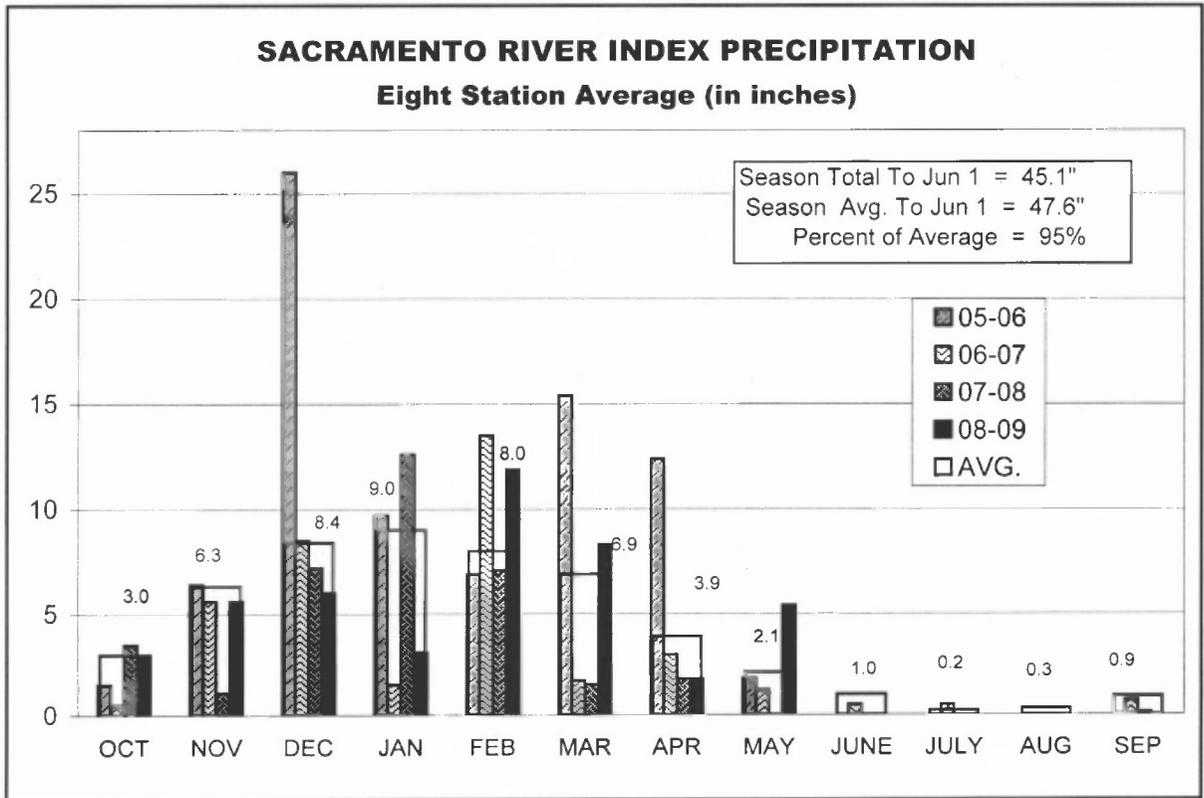
SOUTHERN CALIFORNIA RESERVOIR STORAGE

Reservoir	Capacity (Acre-feet)	Storage	Storage	Percent of Capacity
		(as of 05-01-09)	(as of 06-01-09)	
Whale Rock Reservoir	40,600	24,900	24,332	60%
Salinas Reservoir	23,843	16,301	15,805	66%
Lopez Reservoir	51,800	29,112	28,302	55%
Lake Cachuma	190,409	166,379	162,287	85%
Lake Casitas	254,000	204,956	202,335	80%
Lake Piru	83,244	44,122	44,599	54%
San Vicente Reservoir	90,230	40,755	37,805	42%
El Capitan Reservoir	112,807	65,083	65,580	58%

STATEWIDE SUMMARY OF WATER YEAR DATA

Water Year	Precipitation (233 Stations) % of ave.	Runoff (31 Rivers) % of ave.	Res. Storage (155 Reservoirs) % of ave.	Sacto. Riv. Run-off * (Million Acre-Feet)
1997-98	175	175	135	31.4
1998-99	95	110	118	21.1
99-2000	100	95	110	18.9
2000-01	75	45	90	9.8
2001-02	80	75	85	14.6
2002-03	110	100	105	19.2
2003-04	90	80	85	16.1
2004-05	140	105	120	18.4
2005-06	140	170	120	31.9
2006-07	75	80	120	
2007-08	75	35	80	
Comparison of Water Year Data as of Jun 1				
2007-08	80	60	80	8.8
2008-09	80	65	85	11.1

* The Sacramento River Run-off is the sum of the unimpaired water year flow from the Sacramento River above Bend Bridge near Red Bluff, Feather River inflow to Oroville, Yuba River at Smartville, and American River inflow to Folsom. The average annual run-off is 18.4 MAF.



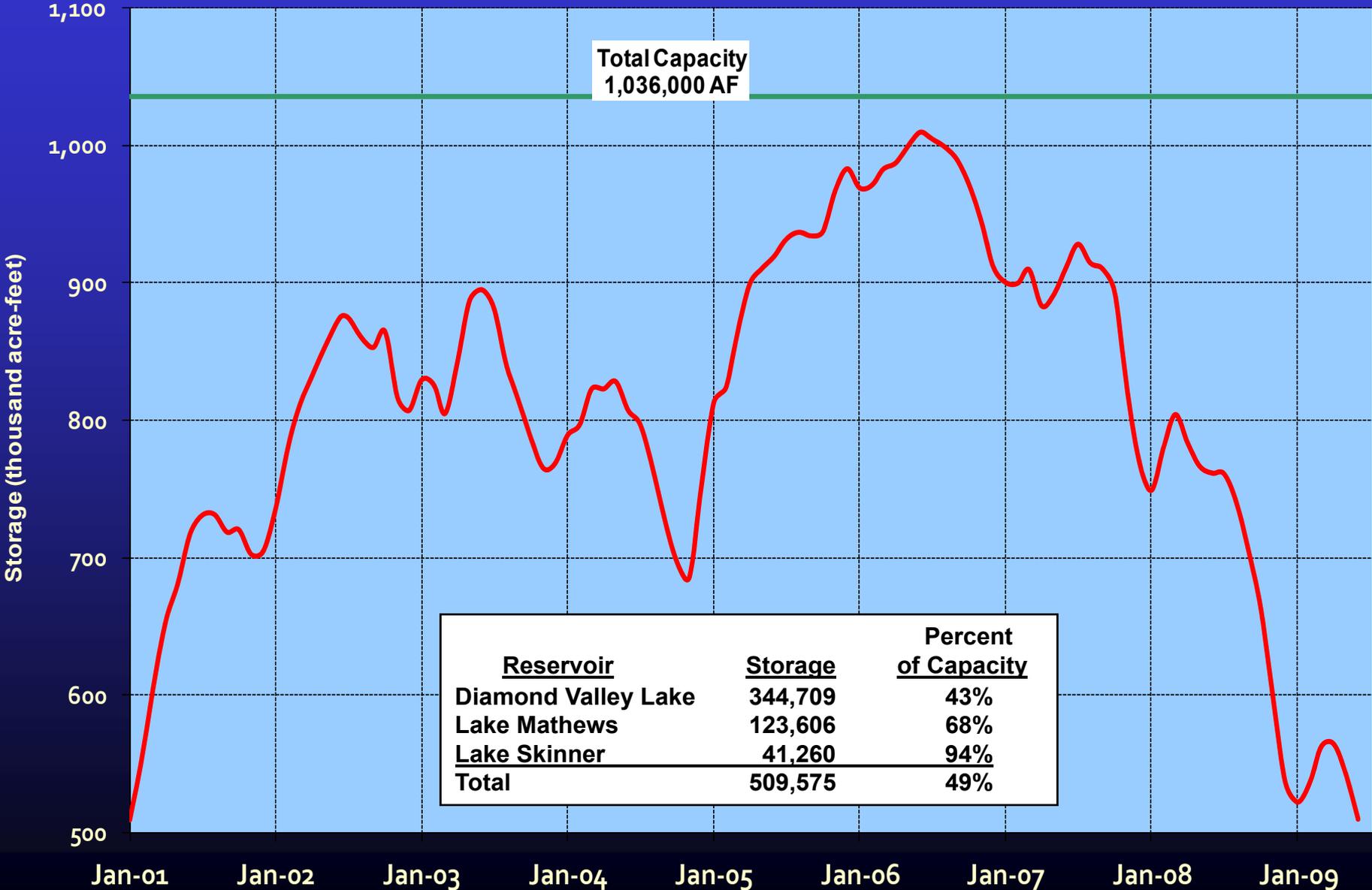
SWP WATER STORAGE

COMPARISON OF STORAGE Jun 1, 2008 vs Jun 1, 2009

		2008 Storage (acre-feet)		2009 Storage (acre-feet)	
Reservoir	Capacity	As of 6/1/2008	% of Cap.	As of 6/1/2009	% of Cap.
Frenchman	55,477	29,837	54%	27,409	49%
Lake Davis	84,371	49,826	59%	50,759	60%
Antelope	22,566	23,248	103%	22,741	101%
Oroville	3,521,797	2,051,218	58%	2,051,218	58%
TOTAL North	3,684,211	2,154,129	58%	2,152,127	58%
Del Valle	77,111	38,973	51%	38,668	50%
San Luis	1,062,180	592,714	56%	494,614	47%
Pyramid	169,901	165,904	98%	167,293	98%
Castaic	319,247	255,830	80%	258,317	81%
Silverwood	73,032	70,884	97%	71,131	97%
Perris	126,841	61,872	49%	62,149	49%
TOTAL South	1,828,312	1,186,177	65%	1,092,172	60%
TOTAL SWP	5,512,523	3,340,306	61%	3,244,299	59%

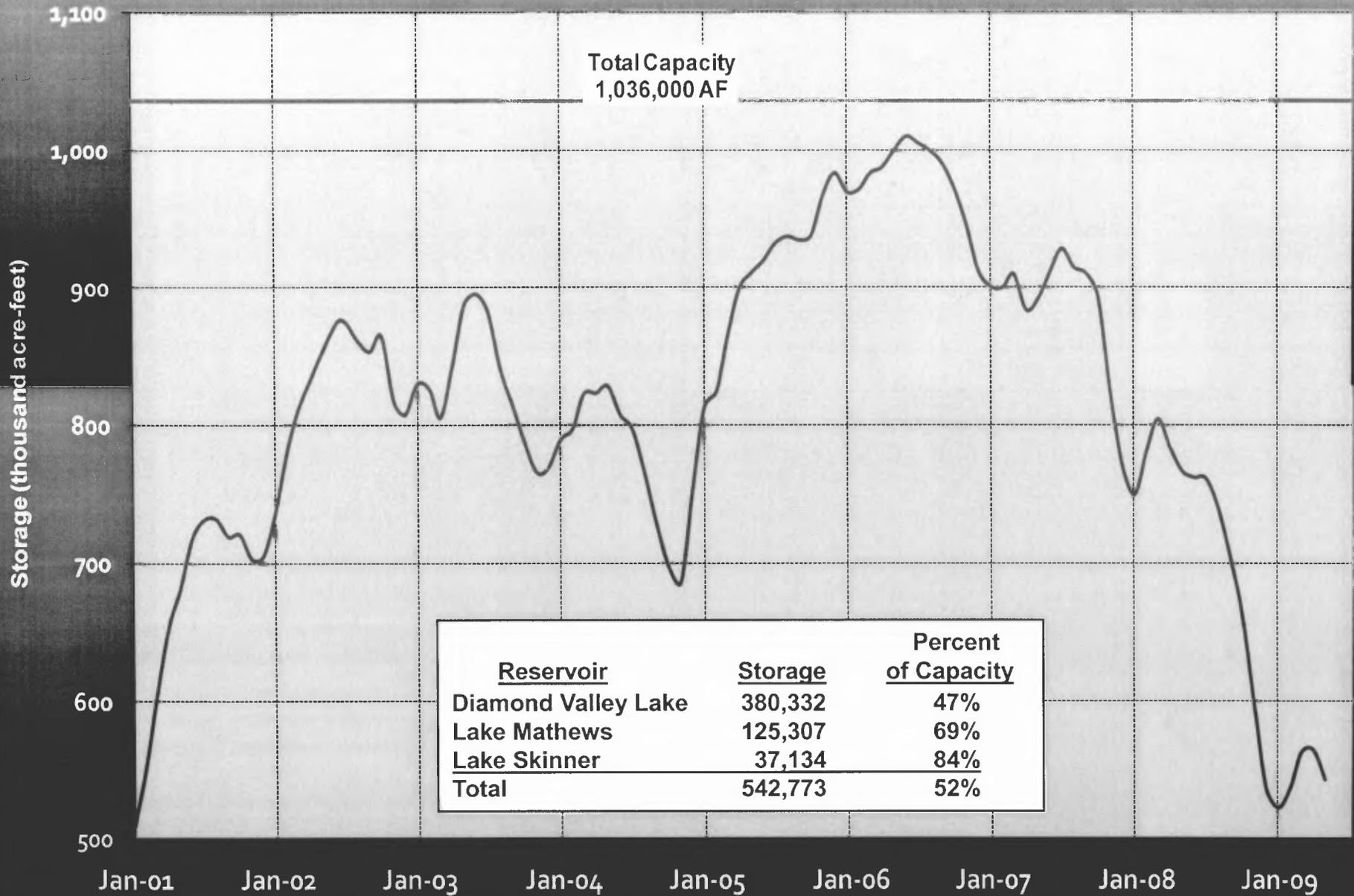
State Water Project Projected Deliveries: 40% of Table A Entitlement

MWD's Combined Reservoir Storage (Lake Skinner, Lake Mathews □ Diamond Valley Lake) as of June 1, 2009



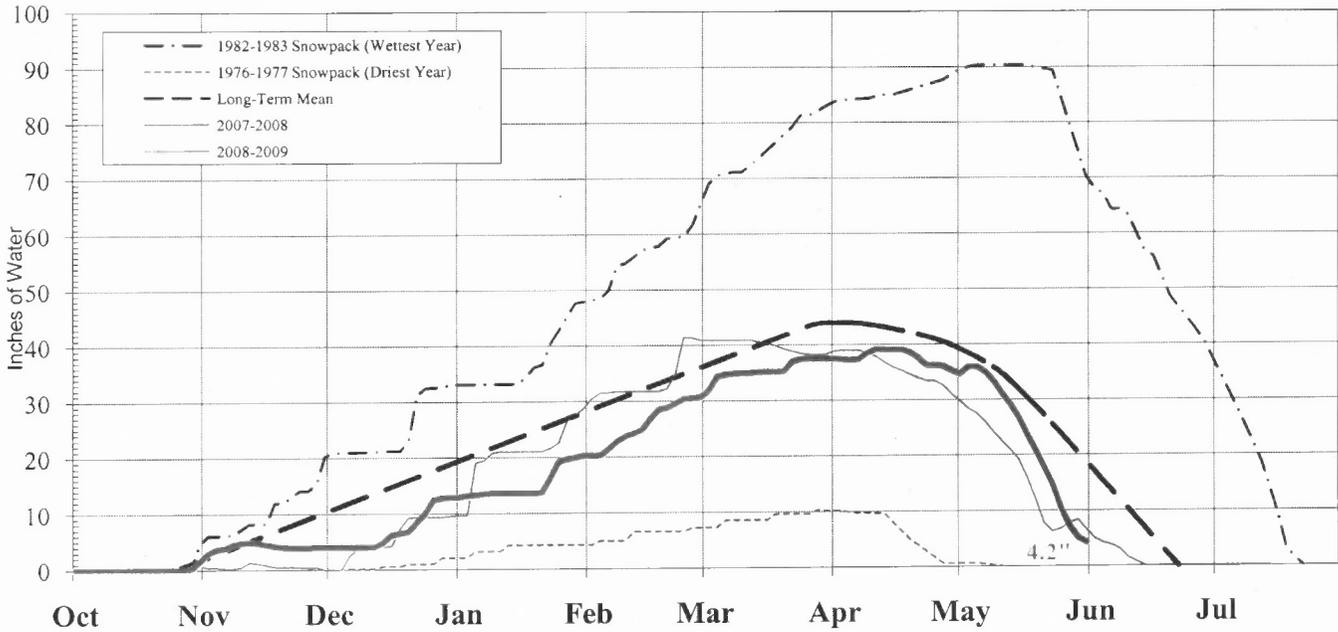
<u>Reservoir</u>	<u>Storage</u>	<u>Percent of Capacity</u>
Diamond Valley Lake	344,709	43%
Lake Mathews	123,606	68%
Lake Skinner	41,260	94%
Total	509,575	49%

MWD's Combined Reservoir Storage (Lake Skinner, Lake Mathews & Diamond Valley Lake) as of May 1, 2009



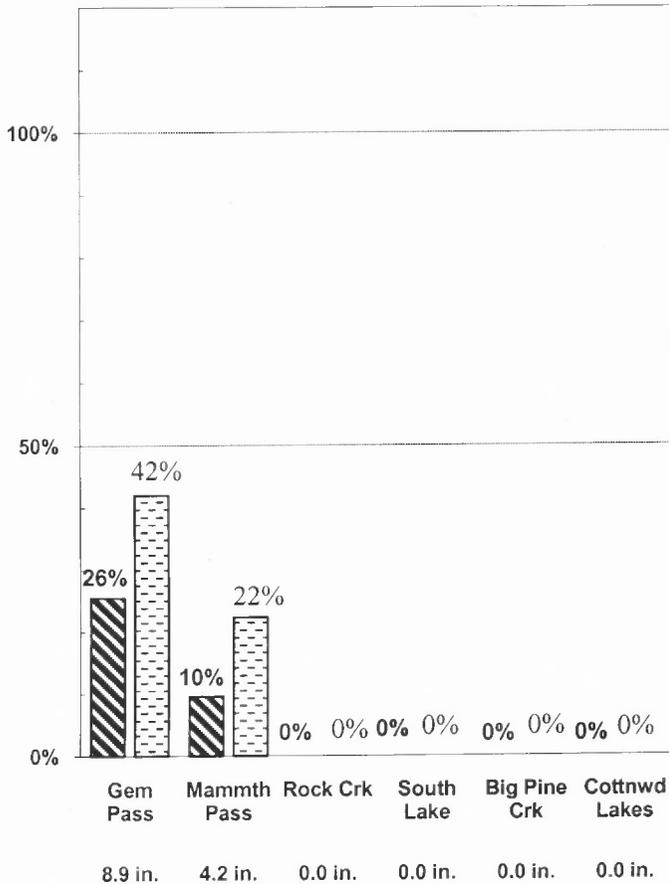
EASTERN SIERRA CURRENT PRECIPITATION CONDITIONS As of June 1, 2009

Mammoth Pass Snowpack



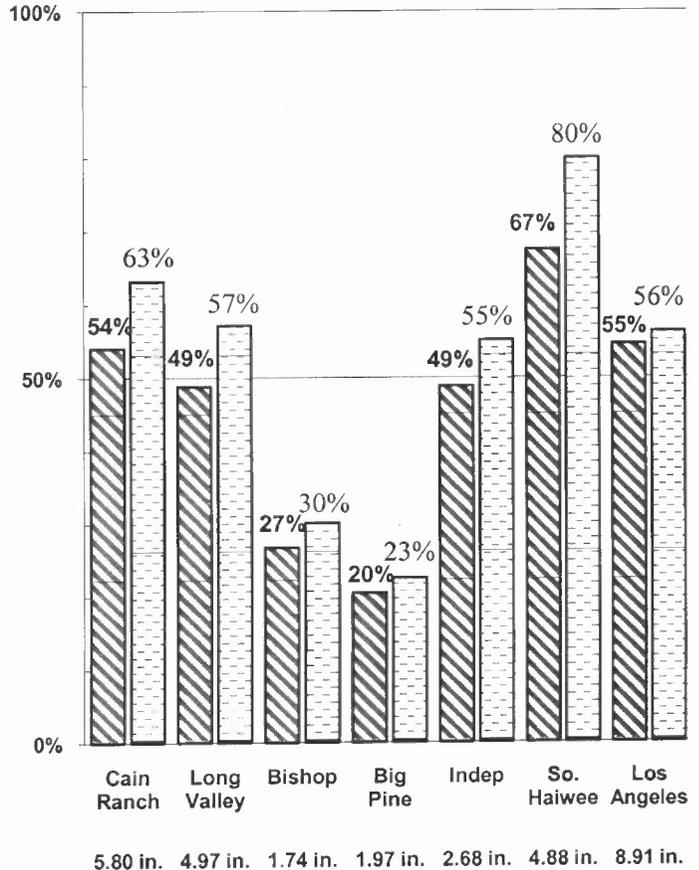
Snow Sensors

■ % of 1-Apr Normal
□ % of Normal to Date



Precipitation

■ % of 30-Sep Normal
□ % of Normal to Date

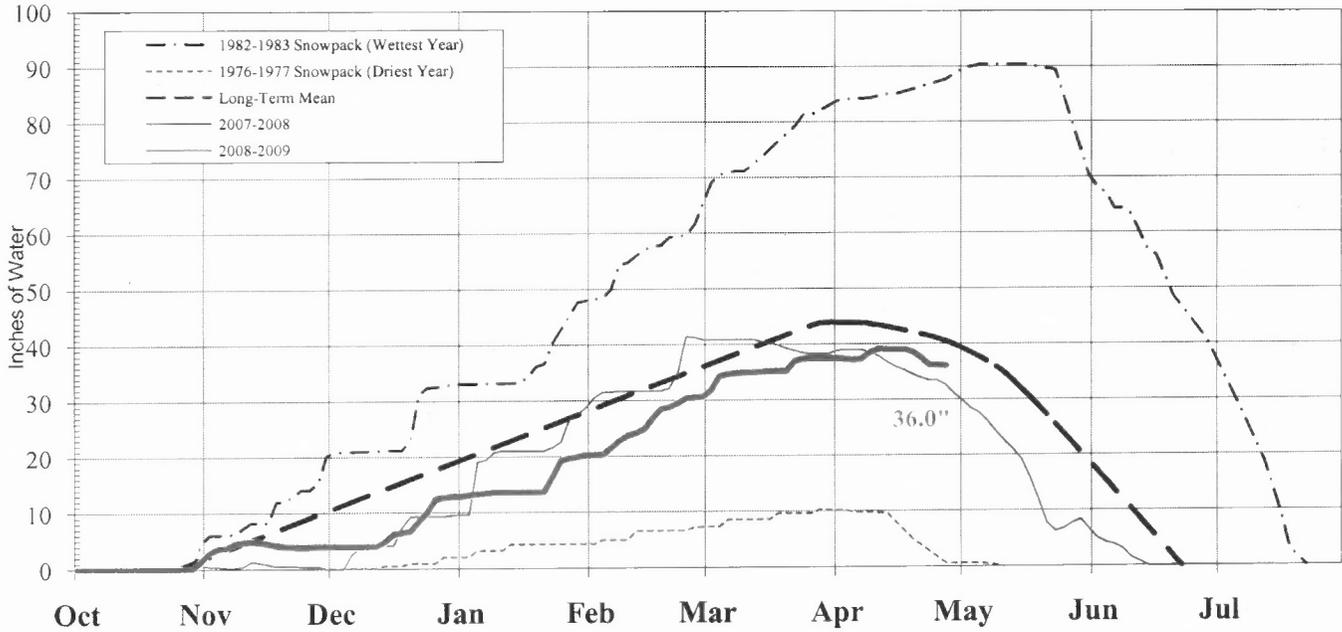


Station Location and Actual Measurement as Inches Water Content

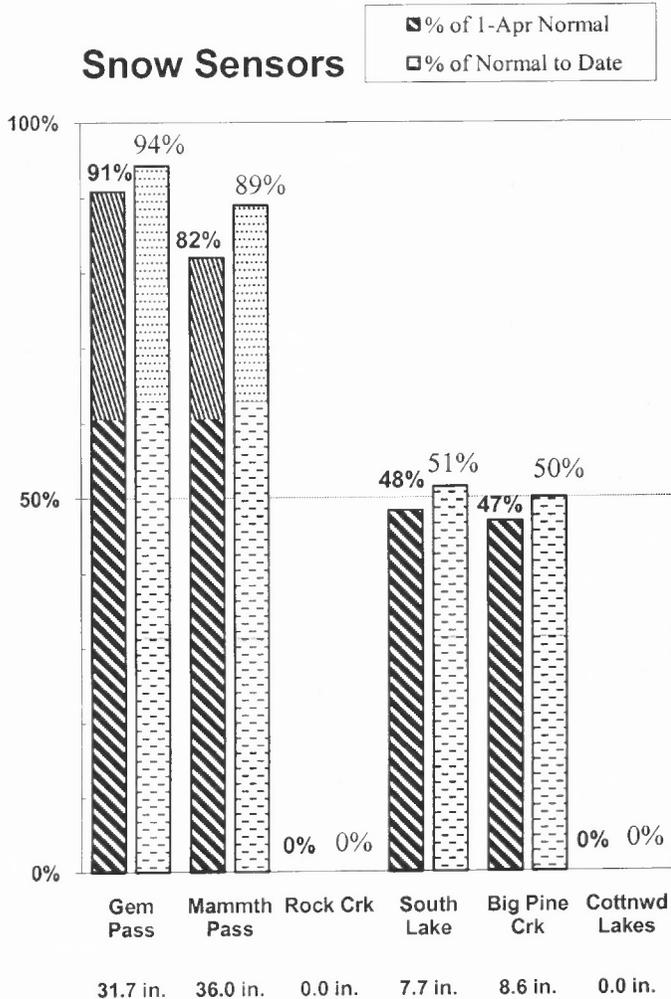
Precipitation totals are cumulative for water year beginning Oct 1

EASTERN SIERRA CURRENT PRECIPITATION CONDITIONS As of April 28, 2009

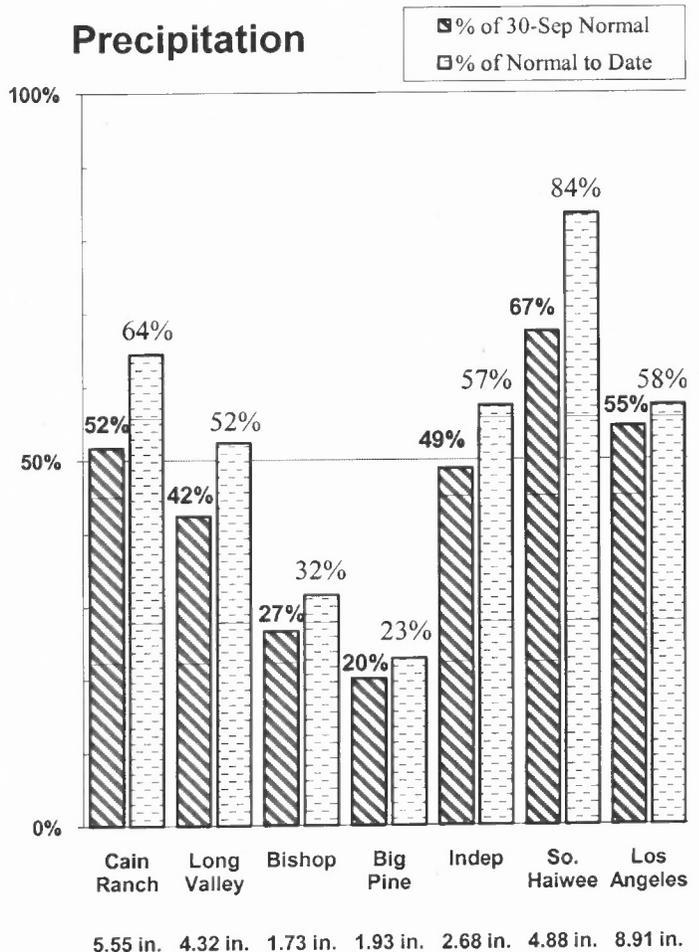
Mammoth Pass Snowpack



Snow Sensors



Precipitation



Station Location and Actual Measurement as Inches Water Content

Precipitation totals are cumulative for water year beginning Oct 1

5.c. - Colorado River Operations

Lower Colorado Region
Boulder City, Nev.

Media Contact: Bob Walsh Ed Virden
(702) 293 8421 (928) 343-8109

Released On: May 01, 2009

Reclamation Seeks Public Comment on Draft Environmental Assessment for Yuma Desalting Plant Pilot Run

The Bureau of Reclamation, in accordance with the National Environmental Policy Act, has developed a draft environmental assessment (EA) for a proposed pilot run of the Yuma Desalting Plant (YDP).

The proposed pilot run would commence in early 2010, and the plant would be run for 365 days at one-third capacity over a 12 to 18 month period. During this pilot run, the plant will produce an average of 61 acre-feet, or approximately 19.8 million gallons, of desalinated water per day. This water will be blended with untreated water and discharged to the Colorado River near the U.S. -- Mexico international border for inclusion in Treaty-required water deliveries to Mexico.

Over the course of the pilot run, approximately 29,000 acre feet of water (about 9.5 billion gallons) will be discharged to the river. This will consist of about 22,400 acre-feet of desalted water, and approximately 7,000 acre-feet of untreated water. (There are 325,851 gallons of water in an acre foot, which is enough to meet the annual needs of a family of four to six people.)

Reclamation is seeking public comment on the draft EA. The public comment period is open for 30 calendar days, until close of business on June 1. A copy of the draft EA can be downloaded from Reclamation's Yuma Area Office website, at:
http://www.usbr.gov/lc/yuma/environmental_docs/enviro_n_docs.html.

Comments should be provided to Mr. Sean Torpey, Environmental Planning and Compliance Group Manager at the Yuma Area Office. Mr. Torpey's contact information is: Yuma Area Office, 7301 Calle Agua Salada, Yuma, AZ 85364; email: storpey@usbr.gov; and Office fax: 928 343 8320. Comments must be submitted in writing via U.S. mail, e-mail, or fax, and must include personal identifying information of the submitter.

###

Reclamation is the largest wholesale water supplier and the second largest producer of hydroelectric power in the United States, with operations and facilities in the 17 Western States. Its facilities also provide substantial flood control, recreation, and fish and wildlife benefits. Visit our website at www.usbr.gov.



IN REPLY REFER TO:

United States Department of the Interior

BUREAU OF RECLAMATION

Upper Colorado Regional Office
125 South State Street, Room 6107
Salt Lake City, Utah 84138-1147



MAY 14 2009

UC-410
ACM-1.10

VIA ELECTRONIC MAIL AND U.S. MAIL

Interested Parties (See Enclosed List)

Subject: Selection of Letter of Interest, Basin Study Program 2009 – Seven Colorado River Basin States Joint Colorado River Basin Water Supply Study

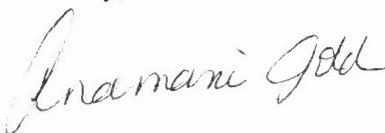
Dear Madams and Sirs:

Thank you for submitting a letter of interest proposing a study for consideration under the Bureau of Reclamation's Basin Study Program. Through the Basin Study Program, Reclamation will partner with basin stakeholders to conduct comprehensive studies to define options for meeting future water demands in targeted river basins in the West. We are pleased to inform you that your proposal was among those selected for Step 2 of the evaluation process. In Step 2, our Regional Office will work with you to develop a short (10 pages maximum) study proposal for consideration by a Reclamation-wide review committee (Review Committee).

The Review Committee will be made up of staff from across Reclamation with technical expertise relevant to the Basin Study process. The Review Committee will prioritize Basin Study proposals based on the selection criteria set forth in the enclosed "Overview of Proposal and Selection Process" and will make a recommendation to Reclamation's Commissioner regarding which studies will receive funding in fiscal year 2009.

The Bureau of Reclamation's Upper Colorado Region and Lower Colorado Region look forward to working together with you to develop a joint study proposal for the next stage of the selection process. If you have questions regarding specific information about the next stage of the award process, please contact Ms. Deborah L. Lawler of the Upper Colorado Region at 801-524-3685, or Ms. Amber Cunningham of the Lower Colorado Region at 702-569-2476. For TDD access in Utah, please call 800-346-4128. In Nevada call 800-326-6868/T or 800-326-6888/V.

Sincerely,


Dr. Larry Walkoviak
Regional Director

Enclosures – 2

Interested Parties

Patricia Mulroy
General Manager
Southern Nevada Water Authority
P.O. Box 99956
Las Vegas, NV 89193-9956

Jennifer Gimbel
Director
Colorado Water Conservation Board
1313 Sherman St., Room 721
Denver, CO 80203

Patrick T. Tyrrell
State Engineer
State of Wyoming
122 West 25th Street
4th Floor East
Cheyenne, WY 82002

Herbert Guenther
Director
Arizona Department of Water Resources
3550 N. Central Avenue
Phoenix, AZ 85012

George M. Caan
Executive Director
Colorado River Commission of Nevada
555 E. Washington Ave., Suite 3100
Las Vegas, NV 89101-1065

David Modeer
General Manager
Central Arizona Water Conservation District
P.O. Box 43020
Phoenix, AZ 85080

Gerald R. Zimmerman
Executive Director
Colorado River Board of California
770 Fairmont Ave., Suite 100
Glendale, CA 91203-1068

Dennis J. Strong
Director
Utah Division of Water Resources
Utah Interstate Stream Commission
P.O. Box 146201
Salt Lake City, UT 84114-6201

John D'Antonio
State Engineer
New Mexico Interstate Stream Commission
P.O. Box 25102
Santa Fe, NM 87504-5102

Don Ostler
Executive Director
Upper Colorado River Commission
355 South 400 East
Salt Lake City, UT 84111

Water for America Basin Study Program - Selection Process Overview

Introduction

In Federal Fiscal Year 2009, the Bureau of Reclamation is initiating its selection process for the Basin Study Program to ensure that we are ready to implement the Basin Studies once the FY 2009 budget is passed. The Basin Study Program is part of the *Water for America* initiative, which addresses 21st century water supply challenges, including chronic water supply shortages, increased population growth, climate variability, and heightened competition for finite water supplies. (For more information regarding *Water for America*, please visit our website, available at <http://www.usbr.gov/wfa/>) Through the Basin Study Program, Reclamation will partner with stakeholders to conduct studies that define options for meeting future water demands in river basins in the West where imbalances in supply and demand exist or are projected.

This document describes the process for non-Federal entities to submit a study proposal to Reclamation for consideration under the program, and includes: (1) An overview of the Basin Study Program; (2) program requirements (including eligibility); (3) Reclamation's two-step process for selecting proposed studies for funding under the program; (4) how to submit a "letter of interest" (Letter of Interest) under Step 1 of the selection process; (5) how to submit a study proposal (Study Proposal) if you are selected to proceed to Step 2 of the selection process; and, (6) the selection criteria.

In addition to reviewing the information provided here, we encourage you to contact your regional Reclamation office if you are interested in participating in a Basin Study.

Basin Study Program Overview

The purpose of the Basin Studies is to define options for meeting future water demands in river basins in the 17 Western States. Options that will be evaluated in the studies include changes to the operation of water supply systems, modifications to existing facilities, development of new facilities, and non-structural changes.

The Basin Studies will be cost-shared on a 50/50 basis with willing state, tribal, and local partners, and will generally be two years in duration. Because this is not a financial assistance program, Reclamation's share of the study costs may only be used to support work done by Reclamation or its contractors. Reclamation may not pass funding directly through to the non-Federal cost-share partners in the form of grants or cooperative agreements. Reclamation and the non-Federal cost-share partners will seek input from other basin stakeholders during the study process.

Each Basin Study will include four basic components:

- Projections of water supply and demand within the basin, or improvements on existing projections, taking into consideration the impacts of climate change;
- Analysis of how existing water and power infrastructure and operations will perform in the face of changing water realities such as population increases and climate change

- Development of structural and nonstructural options to improve operations and infrastructure to supply adequate water in the future; and
- A trade-off analysis of the options identified and findings and recommendations as appropriate. Such analysis simply examines all proposed alternatives in terms of their relative cost, environmental impact, risk, stakeholder response, or other attributes common to the alternatives. The analysis can be either quantitative or qualitative in measurement.

The Basin Studies will focus on river basins or sub-basins where water supply and demand imbalances may exist. A river basin can be defined as any topographically distinct watershed of land, streams and rivers that channel water to a single or primary waterway. Projections of water demands may include demands for agricultural, municipal, environmental, and recreational water uses, or other beneficial uses. Projections of water supply and demand will consider all potential water sources, including both ground and surface water.

The Basin Studies are critical to the West as we deal with the impacts of climate change, record droughts, and population increases. A more complete description of the Basin Study Program and the process for conducting a Basin Study is provided in the document titled *Basin Study Framework*, which is available on the *Water for America* website at <http://www.usbr.gov/wfa/>. You do not need the *Basin Study Framework* to complete your Letter of Interest, but you will need it if your study is selected to move forward to the proposal stage.

Basin Study Program Requirements

All Basin Studies must meet the following minimum requirements:

- Studies must focus on river basins or sub-basins in the 17 Western Reclamation States where imbalances in water supply and demand exist or are projected;
- Non-Federal partners must contribute at least 50 percent of the total study costs in non-Federal funding;
- Eligible non-Federal cost-share partners include states, tribes, water districts, cities or other local governmental entities with water management authority located in the 17 Western Reclamation States;
- Studies must be completed within two years from the date funding is awarded, unless Reclamation determines that an extension or phasing of the study is warranted (extensions and phasing will be approved only on a case-by-case basis);
- Studies must be conducted in accordance with the memorandum of agreement applicable to the particular study, to be developed by Reclamation in cooperation with the non-Federal cost-share partner(s) before work on the study begins.

More detailed study parameters guiding the actual study process are set forth in the *Basin Study Framework*.

Proposal Selection Process

With the \$4 million in funding requested in the President's budget for the Basin Studies in FY 2009, Reclamation plans to conduct 2-3 studies. The studies will begin in FY 2009, contingent upon congressional approval of the FY 2009 budget, and will be completed in 2011. We estimate that approximately \$1 million to \$1.5 million in Federal funding will be required for each Basin Study. However, the actual amount of funding required will vary depending on the size and complexity of the basin selected and the issues involved, along with the availability of data and models.

In order to ensure that funding is directed to studies that address the highest priority issues on a West-wide basis, Reclamation will select which studies to perform from a West-wide pool.

Reclamation will use a two-step process as follows:

- **Step 1 – Letters of Interest:** Reclamation's regional offices will seek letters of interest from states and major stakeholders throughout the 17 Western States. All non-Federal entities interested in cost-sharing with Reclamation to conduct a Basin Study will be required to prepare and submit a Letter of Interest to their regional Reclamation office by the February 4, 2009 deadline. The regional offices will review the letters of interest and notify the non-Federal study proponents whether their study concepts will proceed to Step 2 of the selection process. The requirements for preparing a Letter of Interest are described below, along with a description of the criteria that the regions will use to evaluate the letters of interest.
- **Step 2 – Study Proposal:** The regional office will work with those selected in Step 1 to develop a short (10 pages maximum) study proposal for consideration by a Reclamation review committee (Review Committee). The Review Committee will be made up of staff from across Reclamation with technical expertise relevant to the Basin Study process.

The Review Committee will prioritize the proposals based on the proposal selection criteria set forth below and will make a recommendation to Reclamation's Commissioner regarding which studies will receive funding in FY 2009. Reclamation's Commissioner will make a final determination regarding the Review Committee's recommendations. Proposals that meet program requirements but do not rank high enough to receive funding in FY 2009 may be reconsidered in 2010, upon request by the non-Federal study proponent(s).

Letter of Interest

If you are interested in participating in a Basin Study, you will need to prepare a brief Letter of Interest that is **no longer than 3 pages**, describing the proposed study and explaining how it meets the program requirements. This letter should be submitted to your regional Reclamation office at the location listed on the cover letter. Specifically, your Letter of Interest should describe or identify:

- Whether you are an eligible cost-share partner;
- The geographic area that the study would focus on;
- The water supply challenges that create or will lead to imbalances in supply and demand;
- The general focus of the study;
- A preliminary estimate of the dollar value of your cost-share which may include in-kind services.
- The level of stakeholder interest in the study;
- A list of potential cost-share partners; and
- The resources that the non-Federal study partners would make available for the study, including staff, technical expertise, and applicable data and models.

Reclamation will advise you in writing whether the proposed study described in your Letter of Interest will be advanced to Step 2 of the selection process. Reclamation's regional offices will apply the following criteria in reviewing your Letter of Interest:

- Whether the proposed study appears to meet program requirements;
- Whether the proposed Basin Study complements, or adversely complicates efforts in the study area;
- The degree to which the study meets Regional priorities;
- The degree to which the study meets the goals and priorities of the Basin Study Program and the study proposal selection criteria

Study Proposal

If you are selected by Reclamation to proceed to Step 2 of the selection process, staff from the regional Reclamation office will work with you on a collaborative basis to prepare the Study Proposal. At that time, we will provide you with a suggested proposal format. The criteria that the Review Committee will use to prioritize and select study proposals are as follows:

Study Proposal Selection Criteria

Study Proposals for conducting a Basin Study will be evaluated and prioritized by the Review Committee in accordance with the following 6 selection criteria:

1. The extent and consequences of existing or anticipated imbalances in water supply and demand. 33 POINTS

- a) Consider magnitude and frequency of water shortages (this should be a quantitative evaluation based on percentages of needs not met)
- b) Consider demands for all types of water uses, including but not limited to: Agricultural, municipal and industrial, Tribal water needs, environmental needs, recreation, and power generation
- c) Are imbalances due to water quantity, or water quality issues, or both?
- d) Consider the magnitude of the consequences (i.e., what the results would be if imbalances in supply and demand are not addressed)
- e) How soon would there be consequences?
- f) How severe would those consequences be?

2. The extent to which Federal involvement is needed due to the nature and complexity of the issues involved. 22 POINTS

This could include multijurisdictional issues, technical capabilities (e.g., Reclamation expertise in hydrology, engineering, or climate models), or issues of national significance, (i.e., food supply, energy, etc), and other appropriate issues.

3. The existence and quality of data and models available and applicable to the proposed study. 17 POINTS

Data and models could include but are not limited to:

- a) Hydrological models
- b) Operational models
- c) Climate models
- d) Water demand projections
- e) Water quality data
- f) Recreational water needs
- g) Environmental water needs
- h) Demographics

4. The strength of any nexus between the Basin Study and a Reclamation project or activity (e.g. something that affects a Reclamation project or activity). 15 POINTS

Studies with a stronger nexus to Reclamation will receive a higher score.

5. The level of Stakeholders interest in and support for the Basin Study. 10 POINTS

Is there widespread support for the study in the basin (i.e., support by diverse stakeholders and lack of opposition)?

6. Whether the non-Federal cost-share contribution exceeds the required 50 percent. 3 POINTS

Non-Federal cost-share contributions of greater than 50 percent will result in a higher score.

<Supporting Organization's Name>
<Date>

Ms. Lorri Gray-Lee
Regional Director
Bureau of Reclamation
Lower Colorado Region
PO Box 61470
Boulder City, NV 89006-1470

Mr. Larry Walkoviak
Regional Director
Bureau of Reclamation
Upper Colorado Region
125 S. State Street, Room 6107
Salt Lake City, UT 84138-1102

Subject: Letter of Support for Proposed Colorado River Basin Water Supply and Demand Study

Dear Ms. Gray & Mr. Walkoviak:

This letter expresses our support for the proposed Colorado River Basin Water Supply and Demand Study under the Basin Studies Program with the Bureau of Reclamation. The intent of the study includes reviewing and evaluating the current and projected water supplies and demands in the Colorado River Basin and its service areas and to identify potential opportunities for addressing supply/demand imbalances.

It is our understanding that throughout the study, the Federal and non-federal cost-share partners would make information available to Basin stakeholders and request their input. Stakeholder input will then be incorporated into the Basin Study as appropriate. The cost-share partners may also form working groups to conduct different aspects of the studies with the involvement of the stakeholders.

As a stakeholder, we request an opportunity to provide input, review, and comment on the Colorado River Basin Water Supply and Demand Study as it progresses. Thank you for your consideration.

Sincerely,

<Name, Title>
<Organization>

Schedule to Develop Basin Study Proposal

Thursday, May 14 - Initial draft of Proposal provided to Work group

Friday, May 15 - Work group meets to discuss draft Proposal and writings teams are created

Wednesday, May 27 – Writing Assignments Due to SNWA

SNWA will compile writing assignments into draft proposal & send out to everyone prior to the conference call on May 29

Friday, May 29 – **Conference Call** to discuss comments on draft proposal

Assign writing teams for A (Intro) & B (Abstract)

Wednesday, June 3 – New Writing Assignments Due to SNWA

Thursday, June 4 – SNWA will compile writing assignments & send updated draft proposal prior to meeting on June 5

Friday, June 5 – **Meeting** to discuss comments and edit Draft Proposal; all edits need to be incorporated before June 9

Tuesday, June 9 – Draft ready for review by Basin States Principals/Reclamation

Friday, June 12 - **Conference Call** to Provide Comments from Principals/Reclamation

Monday, June 15/16 – Incorporate all comments/rewrites including Cost Sharing & #6

Wednesday, June 17 – Provide Final to Basin States Principals/Reclamation for Approval

Friday, June 19 - Final approval by Basin States Principals/Reclamation

Friday, June 26 – Submit Proposals to Reclamation

5.d. - Basin States Discussions

Arizona Water Banking Authority

3550 N. Central Avenue, Phoenix, Arizona 85012

Telephone 602-771-8487

Fax 602-771-8685



April 15, 2009

AUTHORITY MEMBERS

Herbert R. Guenther, Chairman
Maureen George, Vice-Chairman
Tom Buschatzke, Secretary
John Mawhinney
Lisa Atkins

EX OFFICIO MEMBERS

The Honorable Robert Burns
The Honorable Kirk Adams

U.S. Department of the Interior
Bureau of Reclamation
Lower Colorado River Regional Office
Ms. Lorri Gray, Regional Director
P.O. Box 61470
Boulder City, Nevada 89006

Dear Ms. Gray:

In accordance with sub-article 3.4.2 of the Storage and Interstate Release Agreement, the Arizona Water Banking Authority submits the enclosed final verified accounting of the Southern Nevada Water Authority Interstate Account for calendar year 2008.

If you or your staff have any questions regarding this report, please contact me at (602) 771-8490.

Sincerely,

A handwritten signature in cursive script that reads "Kim Mitchell".

Kim Mitchell, Manager
Arizona Water Banking Authority

cc w/enc Patricia Mulroy, SNWA
Kay Brothers, SNWA
McClain Peterson, CRCN
Herb Guenther, ADWR
David Modeer, CAWCD
✓ Gerald Zimmerman, CRBC
Roger Patterson, MWD
Ruth Thayer, USBR
Bob Isakson, USBR

Annual Accounting of the Southern Nevada Water Authority Interstate Account
2008

Beginning Balance of Long-Term Storage Credits as of January 1, 2008 (AF)	527,520
Volume of Colorado River water delivered for storage by AWBA on behalf of SNWA (AF)	0
Number of Long-term Storage Credits Assigned/Transferred-IN (AF)	0
Number of Long-term Storage Credits Assigned/Transferred-OUT (AF)	0
Number of Long-Term Storage Credits Assigned/Transferred for Purposes of Development of Intentionally Created Unused Apportionment (AF)	0
Number of Long-Term Storage Credits Earned in 2008 ¹ (AF)	0
Total Number of Long-Term Storage Credits (AF)	527,520
Total Number of Long-Term Storage Credits to Determine Compliance with sub-article 3.3.1 (AF)	477,520

¹Calculated by taking water delivered for storage through December 31, 2008 minus operational and evaporation losses minus the mandatory 5% cut to the aquifer.

June 5, 2009

MEMORANDUM

TO: Basin States Group

FROM: Adam Bergeron
Assistant Attorney General
Natural Resources & Environment

RE: Summary of May 26, 2009 Grand Canyon Trust Order

Overview:

The Court granted summary judgment in favor of the Federal Defendants ("Feds") on Claims 6 and 8, but granted summary judgment in favor of the Grand Canyon Trust ("Trust") on Claim 7. The Court is taking Claims 1, 2 and 3 under advisement. The Court is remanding a portion of Fish and Wildlife Service's ("FWS") 2008 Biological Opinion ("BO") for further consideration. FWS has until October 30, 2009 to reconsider the 2008 BO. After that, the Court will establish a schedule for additional activities in the lawsuit.

Summary of Order:

Claim 6:

The Court entered summary judgment in favor of the Feds on Claim 6.

Reasoning:

Court's Question: Is the Bureau of Reclamation's ("BOR") 2008 EA valid?

- Did the Environmental Assessment ("EA") consider sufficient alternatives?
 - Trust argued that because MLFF constitutes a significant portion of the 2008 Experimental Plan ("EP"), BOR should have considered alternatives to MLFF such as SASF.
 - BOR stated that the purpose of the 2008 EP was to engage in Glen Canyon Dam ("Dam") releases designed to benefit the chub while complying with federal law and meeting the project purposes of the Dam, including power generation.
 - BOR explained that it sought to preserve recent increases in chub population while attempting to take further actions to benefit the chub, and therefore proposed that the EP was deliberately conservative and the logical next step in adaptive management.
 - Trust argued that the "no action" alternative was not viable because it did not satisfy the purposes of the EP and is a violation of the ESA. Trust also argued that the EA failed to consider SASF as an alternative.

- The Court concluded that, given the narrowly circumscribed purpose of the EP and the measured approach adopted by BOR, BOR's omission of SASF was not unreasonable.
- Also, the Court did not find that the approach taken by BOR in the EP defined the purpose of the project so narrowly as to be unreasonable.
- The Court stated that, by arguing that the EA should have put MLFF in question and considered alternatives such as SASF, the Trust is really arguing that BOR should also redo the 1995 FEIS. However, the two components of the EP are operational changes from MLFF and were evaluated under NEPA in the EA.
- Additional Arguments
 - The Court dismissed the Trust's arguments regarding the following because the Trust failed to raise them in comments on the draft EA:
 - 1) argument that the EA should have considered effects of MLFF on chub and its habitat because MLFF was system that would be used ten months of year;
 - 2) alternative argument that MLFF was the "no action" alternative and should have been evaluated for that reason;
 - 3) argument that tiering to prior NEPA documents was improper.
 - Trust also argued that the EA's FONSI ignored impacts to Grand Canyon National Park ("GCNP"). The Court stated that the EA did specifically consider the effect of the EP on park values, and that the Trust did not demonstrate that the EP components would adversely impact GCNP values. Therefore, the Court stated that it cannot conclude that the EA and its FONSI are legally flawed under NEPA by failing to consider effects of MLFF.
 - The Court, in reference to the comments by the superintendent of GCNP, stated that the Ninth Circuit has held that disagreements by other government agencies do not render an EA invalid under NEPA.
 - Finally, the Trust argued that BOR should have prepared a full EIS in light of the "highly controversial" nature of the EP. The Court found that the Trust has not shown that the two experimental components are highly controversial for purposes of NEPA, and therefore an EIS is not required for the EP on the basis of high controversy.
- Conclusion
 - The Court summarized by stating that given the deference owed to agencies under the APA, the limited purpose of the EP, and the procedural nature of NEPA, the Court concludes that the EA considered appropriate and reasonable alternatives and does not amount to a clear error of judgment. The Trust has not overcome the "presumption of regularity" afforded the EA.

Claim 7:

The Court entered summary judgment in favor of the Trust on Claim 7.

Reasoning:

Court's Question: Does the 2008 BO violate the ESA?

- The Court stated that the key portion of the 08 BO is the statement that it "replaces" the 94 BO that found MLFF to be a violation of ESA. The 08 BO thereby represents FWS's new opinion that MLFF does not violate ESA. According to the Court, "[t]his is a sharp departure from FWS's longstanding opinion."
- The Court stated that the 94 BO was clear in stating that MLFF is likely to jeopardize the continued existence of the chub and to destroy or adversely modify designated critical habitat. The Court also pointed out that FWS stated their position that BOR had not taken sufficient steps to implement steady flows required by RPA(1)(A) in 1999, 2002 and 2006. Further, FWS issued a report in 2007 confirming the adverse effects of MLFF on chub habitat.
- The Court characterized the 08 BO as changing "all of this, but without directly addressing the effect of MLFF on the chub or its habitat. The opinion never explains why FWS's long-held position is incorrect. It never discusses the many studies that seem to confirm that MLFF destroys chub habitat."
- The Court found the logic set forth, in which FWS can no longer conclude that MLFF is detrimental to the chub or will cause further declines, to be insufficient, even under deferential APA review. The Court set out the following rationale:
 - First, even if it is conceded that recent science shows a stabilization and increase of the chub population, the 08 BO does not explain why MLFF no longer destroys or adversely modifies chub critical habitat, particularly the mainstem sandbars and backwaters considered necessary for the growth and feeding of young chub. All of the studies cited in the 08 BO seem to suggest that MLFF will continue to adversely modify critical habitat.
 - Second, 08 BO constituted a significant change of course by FWS. Only one year earlier, FWS told BOR that MLFF erodes sandbars and destroys chub habitat. An agency changing its course must supply a reasoned analysis. Other than one "insufficient" paragraph in the 08 BO, FWS provided no explanation for its departure from the 94 BO.
 - Third, ESA requires FWS to consider not only whether a proposed action will jeopardize the survival of a species, but also whether it will jeopardize the species' recovery to non-threatened levels. FWS never addressed whether MLFF will advance or impede chub recovery. If FWS is announcing a new opinion that MLFF does not violate ESA, then FWS must address the effect of MLFF on chub recovery.
 - Fourth, ESA requires that FWS use best available science. "In failing directly to address the effects of MLFF on chub critical habitat, the 2008 Opinion fails to address much of the science that has developed in the last ten years. The opinion relies heavily on recent studies showing increases in chub population, but those studies do not themselves directly address the effects of MLFF on critical habitat. If FWS believes that the chub population studies provide a superior basis for assessing the effects of MLFF on habitat than the habitat studies, it must explain this belief."

- Conclusion
 - In summary, the Court stated that the 08 BO sufficiently discusses the two elements of the 08 EP, but the BO lacks a reasoned basis for its new conclusion that MLFF does not destroy or adversely modify critical habitat. The 08 BO lacks an explanation for FWS's change of position and a discussion of the effects of MLFF on chub recovery and fails to address these issues using the best science.

Claim 8:

The Court entered summary judgment in favor of the Feds on Claim 8.

Reasoning:

Court's question: Does the 08 EA violate the Grand Canyon Protection Act ("GCPA")?

- The Trust's GCPA claim focuses on MLFF, alleging it destroys beaches and backwater habitat and impedes recovery of humpback chub. The Trust claims that these effects of MLFF violate BOR's broad obligations under GCPA.
- The Court stated that the EP does not implement MLFF, but rather that the 1996 ROD implements MLFF.
- The Court stated that the Trust does not attempt to show that the two new components of the EP are detrimental to values protected by GCPA, but rather attempts a judicial challenge to the 1996 ROD (which is barred by statute of limitations). The Trust has also failed to show that the EP runs afoul of the complex balancing responsibility imposed on the Secretary of the Interior ("Secretary") by GCPA.
- The Court stated that broadly worded provisions of GCPA impose on the Secretary an obligation to balance many different interests. BOR's EA noted that the EP was designed to do just that. BOR evaluated not only the two components of the EP, concluding they would benefit the chub, but also the effect of the EP on other interests and obligations such as power generation.
- Conclusion
 - The Court stated that the Trust has not shown that BOR's balancing of these interests violated the broad directives of GCPA, particularly in light of the highly deferential approach the Court must take under the APA.
 - To the extent that the Trust asks the Court to enforce broad, programmatic directives of GCPA, it asks the Court to undertake a task entrusted by Congress to the Secretary. The US Supreme Court has cautioned against such judicial actions.
 - The Trust has not established a violation of GCPA.

Claim 1:

The Court decided to take Claim 1 under advisement and withhold judgment until after FWS files its revised 08 BO.

Reasoning:

Court's question: Does the operation of the Dam jeopardize the chub?

- Claim 1 alleges that BOR's operation of the Dam under MLFF is jeopardizing the chub in violation of ESA § 7(a)(2).
- BOR asserted that it reasonably relied on the FWS BO and therefore cannot be found to have violated the ESA. However, the Court noted that Federal Regulations make clear that BOR has an independent duty to determine the lawfulness of its actions, and that the decision to rely on the FWS BO must not have been arbitrary or capricious
- For purposes of Claim 1, the Court stated that it must determine whether the operation of MLFF under the current 08 EP "reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery" of the chub. The Court noted that chub population increased 20 to 25% from 2001 to 2006.
- Conclusion
 - The Court stated that it is "strongly inclined" to conclude that BOR's operation of the Dam under MLFF, with the two experimental components and eight additional conservation measures of the EP, is not arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law.
 - The Court also stated that one aspect of Claim 1 persuaded it to withhold judgment until after FWS has reconsidered the 08 BO. Jeopardy under ESA includes "both the survival and recovery" of the endangered species. Although recent studies show that chub are surviving below the Dam and appear to be recovering, FWS will specifically address the question of recovery when it reviews the 08 BO. Because recovery is part of ESA's no-jeopardy requirement, the Court concluded that it should await FWS's analysis before ruling on Claim 1.

Claim 2:

The Court decided to take Claim 2 under advisement and withhold judgment until after FWS files its revised 08 BO.

Reasoning:

Court's question: Does the operation of the Dam destroy critical chub habitat?

- Claim 2 alleges that BOR is violating ESA § 7(a)(2) by destroying and adversely modifying the chub's critical habitat. Destruction or adverse modification "means a direct or indirect alteration that appreciably diminishes the value of critical habitat for both the survival and recovery of a listed species. Such alterations include... alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical."
- FWS identified areas of the Colorado River that are critical habitat, including sandbars, backwaters, and other nearshore habitat. According to the Court, virtually all of the science in the administrative record concludes that MLFF destroys or adversely modifies nearshore habitat.
- FWS's 94 BO concluded that MLFF flows were likely to destroy or adversely modify designated critical habitat, and FWS reiterated these concerns in several documents delivered to BOR mentioned earlier in the Court's order. Further, according to the

Court, BOR's EA does not disagree with those documents. Also, BOR's BA concluded that post test flow regimes to minimize erosion have yet to be developed and tested.

- The Court was not persuaded by the 2004 Korman study presented as evidence after the most recent oral argument, and stated that “[t]his single modeling study does not appear to provide sufficient basis for reasonably concluding that MLFF operations do not destroy or adversely modify critical habitat. The overwhelming weight of the science suggests otherwise.”
- Conclusion
 - The Court is “strongly inclined to conclude that MLFF Dam operations destroy and adversely modify chub critical habitat in violation of the ESA. In light of the deference to be accorded federal agencies under the APA and because FWS will be required to address this very issue on remand, however, the Court concludes that it should withhold judgment on Claim 2 until FWS has completed its review.”

Claim 3:

The Court decided to take Claim 3 under advisement and withhold judgment until after FWS files its revised 08 BO.

Reasoning:

Court's question: Does the operation of the Dam “take” the chub?

- Claim 3 alleges that BOR is violating Section 9 of ESA by unlawfully “taking” the chub. ESA makes it unlawful for any person to “take” any endangered species. “Take” can mean to “harm” and the term “harm” includes “significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.” The Ninth Circuit has held that “a habitat modification which significantly impairs the breeding and sheltering of a protected species amounts to ‘harm’ under the ESA.”
- The Court stated that evidence produced to date strongly suggests that MLFF dam operations destroy and adversely modify critical habitat. The effect on chub breeding and sheltering is less clear in light of recent chub population data.
- Conclusion
 - Because the Court has elected to withhold ruling on habitat modification until after reviewing FWS's revised biological opinion, it likewise will defer ruling on Claim 3 until that time.

Issues for additional briefing on remedy:

- The Court directs the parties to file additional briefing after FWS reconsiders the MLFF portion of the 08 BO. That briefing is to include the question of appropriate remedies in the event the Court rules in favor of the Trust on Claims 1, 2, or 3.
- A court may require specific actions from an agency on remand, but must leave the substance and manner of achieving compliance to the agency.

- The DC Circuit held that the decision whether to remand a matter for further agency consideration or simply to order the agency to follow a different course “depends on (1) the seriousness of the [agency’s] deficiencies (and thus the extent of the doubt whether the agency chose correctly) and (2) the disruptive consequences of an interim change that may itself be changed.”
- The Court stated that the deficiencies in agency actions in this case are serious failures of administrative analyses, but it is not clear they have harmed the chub. (Court cites to new population data to support this statement).
- The Court further stated that enjoining BOR from using MLFF and requiring it to implement SASF (or even RPA element 1A), as the Trust requests, would have disruptive consequences for the many interests that rely on Dam operations, particularly electrical power interest. This is not a reason to decline the injunction, however, for “[t]he plain intent of Congress in enacting [the ESA] was to halt and reverse the trend toward species extinction, whatever the cost.” But mandating the use of SASF or a similar seasonally adjusted steady flow regime could be disruptive to the humpback chub. It is not clear, due to the possibility of strengthening non-native fish that prey on the chub and compete for food and habitat, that SASF would be an unqualified success for the chub.
- The Court is very aware that it is not an expert on these matters. The continuing favorable trend in chub population and uncertainties about the effect of SASF – both on chub and backwater habitat – cause the Court concern about whether the remedy for an ESA violation should be an injunction requiring implementation of SASF. The Court asks the parties to address this concern, and other thoughts they have on the appropriate remedy if an ESA violation is established, in the briefing required in the Order below.

Order:

The Court set forth eight sections in the actual Order portion of the decision. The Order is attached as it is best to review those portions in their entirety.

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**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF ARIZONA**

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10 Grand Canyon Trust,

11 Plaintiff,

12 vs.

13 U.S. Bureau of Reclamation, et al.,

14 Defendants.

No. CV-07-8164-PHX-DGC

ORDER

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Plaintiff Grand Canyon Trust (the "Trust") claims that the current operation of Glen Canyon Dam on the Colorado River violates the Endangered Species Act by jeopardizing and taking the endangered humpback chub and by destroying or adversely modifying its critical habitat. The Trust further claims that the Bureau of Reclamation ("Reclamation") and the Fish and Wildlife Service ("FWS") – two federal agencies with environmental responsibilities for the Dam – have failed to comply with relevant statutes. For the reasons that follow, the Court will grant summary judgment in favor of the Trust on Claim 7, grant summary judgment in favor of Reclamation on Claims 6 and 8, and take Claims 1, 2, and 3 under advisement. The Court will remand a portion of FWS's 2008 biological opinion for further consideration by October 30, 2009, and will establish a schedule for additional activities in this lawsuit once FWS has reconsidered its opinion.

1 **I. Background.**

2 **A. The Parties.**

3 The Trust is an organization created to “protect and restore the canyon country of the
4 Colorado Plateau,” including its “diversity of plants and animals.” Dkt. #59 ¶ 8. The Trust
5 has filed suit against Reclamation and its Commissioner (collectively, “Reclamation”) and
6 against FWS.¹ The Trust claims that Reclamation’s current operation of Glen Canyon Dam,
7 particularly the Dam’s fluctuating releases of water into the Colorado River, jeopardizes and
8 takes the humpback chub and destroys its critical habitat. The Trust also claims that
9 Reclamation and FWS have failed to comply with procedural requirements of the
10 Endangered Species Act, the National Environmental Protection Act, and the Grand Canyon
11 Protection Act. The Court allowed several parties to intervene as defendants, including
12 Arizona, California, Colorado, Nevada, New Mexico, Utah, Wyoming, the Colorado River
13 Commission of Nevada, the Southern Nevada Water Authority, the Colorado River Energy
14 Distributors Association, the Central Arizona Water Conservation District, the Imperial
15 Irrigation District, and the Metropolitan Water District of Southern California. Dkt. #98.

16 **B. The Colorado River and Glen Canyon Dam.**

17 The Colorado River is the most important water resource in the American West,
18 providing drinking water for more than 25 million people. USGS Circular 1282, State of the
19 Colorado River Ecosystem in Grand Canyon (“2005 SCORE Report”), Dkt. #136, Ex. 18 at
20 2. The river has formed the Grand Canyon – one of the natural wonders of the world – and
21 serves as an important point of access to the Canyon and as host for a wide variety of unique
22 resources and species. The river also produces electrical power, with Glen Canyon Dam
23 generating more than 3 million megawatt hours of electricity annually. *Id.* Given these and
24 other demands, the river is one of the most heavily regulated in the world. Statutes,
25 regulations, compacts, court decisions, treaties, and agreements all combine to form a “Law
26 of the River” that extends back more than 100 years.

27 _____
28 ¹ Reclamation and FWS will be referred to collectively as the “Federal Defendants.”

1 Glen Canyon Dam is located on the Colorado River just south of the Utah-Arizona
2 border. The Dam forms Lake Powell, a body water that is 186 miles long and the second
3 largest reservoir in the United States. Congress authorized construction of the Dam in 1956
4 for the purposes of “regulating the flow of the Colorado River, storing water for beneficial
5 consumptive use, [and] making it possible for the States of the Upper Basin to utilize . . . the
6 apportionments made to and among them.” 43 U.S.C. § 620. The Colorado River Basin
7 Project Act of 1968 required the Secretary of the Interior to adopt criteria for the long-range
8 operation of Glen Canyon Dam. 43 U.S.C. § 1552(b). Long Range Operating Criteria for
9 the Dam were adopted by the Secretary on June 4, 1970, and remain largely unchanged
10 today. *See* 35 Fed. Reg. 8951-02 (June 10, 1970); 70 Fed. Reg. 15873, 15874 (Mar. 29,
11 2005). They establish a minimum annual water release from Lake Powell of 8.23 million
12 acre feet. *Id.* at 15875.²

13 The humpback chub is a “big-river fish” that developed three to five million years
14 ago. The species lives in the relatively inaccessible canyons of the Colorado River. Six
15 humpback chub populations have been identified, five upstream of the Dam and one
16 downstream. Only the downstream population is at issue in this case. The humpback chub
17 was listed as endangered under the statutory predecessor to the Endangered Species Act. 32
18 Fed. Reg. 4001 (Mar. 11, 1967). In 1973, the chub was formally listed as endangered under
19 the Act. 38 Fed. Reg. 106 (June 4, 1973). In 1994, some 379 miles of the Colorado River
20 were designated by FWS as “critical habitat” for the chub. Dkt. #136, Ex. 11 at 12. “Critical
21 habitat” is habitat essential for the endangered species’ survival and therefore in need of
22 special management. 59 Fed. Reg. 13374 (Mar. 21, 1994).

23 The adult population of humpback chub in the Grand Canyon is estimated to have
24 been 10,000 to 11,000 in 1989, dropping to 4,500 or fewer in 2001. Dkt. #136, Ex. 11 at 13,
25 20. Of some significance for this case are recent studies showing that the chub population

27 ²An “acre foot” of water is the amount of water needed to cover one acre of land to
28 a depth of one foot. It amounts to 43,560 cubic feet of water, or about 325,851 gallons.
A million acre feet is, of course, one million times this amount.

1 has increased in recent years to a total of between 5,300 and 6,700 in 2006. *Id.* Recent data
2 also show a greater number of young chub in the mainstem of the Colorado River. *Id.* at 20.
3 The reasons for these increases are not presently known, but, as will be seen below, they
4 have influenced agency decisions in this case.

5 **C. Historical River Conditions and Dam Operations.**

6 The Colorado River historically was sediment-rich, with high flows in the spring and
7 lower, steadier, warmer flows in the summer and fall. Glen Canyon Dam changed these
8 characteristics in several important respects. The Dam now captures approximately 84% of
9 the sediment that formerly flowed down the river. The river below the Dam no longer varies
10 on the basis of seasonal run-off. The average water temperature in the river has dropped
11 significantly because the Dam releases water from the deeper reaches of Lake Powell.
12 Dkt. #136, Ex. 11 at 21; 2005 SCORE Report at 4.

13 From 1963 to 1991, the Dam was managed primarily to maximize power generation,
14 an approach that resulted in significant fluctuations of the river level. As power demand
15 increased during the daytime, more water would be released from the Dam to generate more
16 electricity, producing higher river levels. As power demand dropped at night, less water
17 would be released and the river level would also drop. Daily flows from the Dam could
18 fluctuate between 5,000 cubic feet per second (“cfs”) and 30,000 cfs under this approach,
19 resulting in single-day changes of up to 13 feet in the river’s water level. 2005 SCORE
20 Report at 4. Fluctuations were also seasonal, with more water being released during the high
21 power demand months of the summer and winter, and less during the spring and fall.

22 Environmental concerns about these Dam operations and a mandate from Congress
23 in the Grand Canyon Protection Act led Reclamation to issue a final environmental impact
24 statement for Glen Canyon Dam in 1995 (the “1995 FEIS”). Dkt. #122-2 at 3. The 1995
25 FEIS evaluated several alternative approaches to operating the Dam and ultimately
26 recommended a system described as “modified low fluctuating flow” or “MLFF.” As
27 explained in the FEIS, “this alternative would have the same annual and essentially the same
28 monthly operating plan” as the approach used from 1963 to 1991, but would limit the

1 magnitude of daily and hourly fluctuations in water releases from the Dam. MLFF also
2 included habitat maintenance flows intended “to re-form backwaters and maintain sandbars,
3 which are important for camping beaches and wildlife habitat.” *Id.* at 16.

4 The 1995 FEIS rejected an alternative known as “seasonally adjusted steady flow” or
5 “SASF.” SASF did not vary water releases on the basis of electrical power demands, but
6 instead “was developed to enhance the aquatic ecosystem by releasing water at a constant
7 rate within defined seasons and by using habitat maintenance flows. Seasonal variations in
8 minimum flows and habitat maintenance flows were designed with the goal of protecting and
9 enhancing native fish.” *Id.* at 20. Water releases under the SASF alternative would be
10 steady throughout any given month, but total monthly releases would be higher in the spring
11 and lower in the summer and fall, more closely tracking the pre-Dam fluctuations of the
12 river. *Id.* at 21.

13 Secretary of the Interior Bruce Babbitt accepted the recommendation of the 1995 FEIS
14 and, on October 8, 1996, signed a Record of Decision that selected MLFF as the operating
15 system for the Dam (the “1996 ROD”). Dkt. #27, Ex. 3. With the exception of some brief
16 experimental variations that will be mentioned below, MLFF has remained the Dam’s
17 method of operation to the present day.

18 **D. The Law – ESA Consultation and the Effect of a Biological Opinion.**

19 The Endangered Species Act (“ESA”) was enacted some 10 years after Glen Canyon
20 Dam was completed. To help ensure that endangered species are not jeopardized, the ESA
21 establishes a three-step procedure. First, an agency proposing to take an “agency action” –
22 in this case, Reclamation’s operation of the Dam – must inquire of the Secretary of the
23 Interior whether any threatened or endangered species may be present in the area of the
24 proposed action. 16 U.S.C. § 1536(c)(1). Second, if the answer is yes, the action agency
25 must prepare a “biological assessment” to determine whether such species “is likely to be
26 affected” by the proposed agency action. *Id.* Third, if the action agency determines in the
27 biological assessment that its proposed action may affect a threatened or endangered species,
28 the agency must engage in formal consultations with another federal agency designated to

1 protect the species, in this case FWS. 50 C.F.R. § 402.14(a). FWS must then issue a
2 “biological opinion” stating its view on whether the proposed agency action will affect the
3 endangered species or its habitat. 16 U.S.C. § 1536(b)(3)(A). If the opinion concludes that
4 the agency action is likely to jeopardize the protected species, FWS must outline “reasonable
5 and prudent alternatives” or “RPA” that will avoid the jeopardy. *Id.* If the biological opinion
6 concludes that the agency action will not result in jeopardy, or if it offers an RPA to avoid
7 jeopardy, FWS provides the action agency with an “Incidental Take Statement” specifying
8 the “impact of such incidental taking on the species,” any RPA that FWS “considers
9 necessary or appropriate to minimize such impact,” and setting forth “the terms and
10 conditions . . . that must be complied with by the Federal agency . . . to implement [those
11 measures].” 16 U.S.C. § 1536(b)(4).³

12 A biological opinion’s “Incidental Take Statement constitutes a permit authorizing the
13 action agency to ‘take’ the endangered or threatened species so long as it respects the [FWS]
14 ‘terms and conditions.’” *Bennett v. Spear*, 520 U.S. 154, 170 (1997). Thus, if the action
15 agency reasonably abides by the biological opinion and its RPA, the agency will not be found
16 in violation of the ESA. An action agency may elect not to comply with FWS’s biological
17 opinion, but it must state “in its administrative record its reasons for disagreeing with the
18 conclusions” of the opinion. *Id.* at 169 (citations omitted). As the Supreme Court has
19 explained, “[t]he action agency is technically free to disregard the Biological Opinion and
20 proceed with its proposed action, but it does so at its own peril[.]” *Id.* at 170. That “peril”
21 is possible violation of the ESA and accompanying judicial remedies.

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25 ³ Going back to step three, if the biological assessment of the action agency concludes
26 that the action is “not likely to adversely affect” an endangered or threatened species, the
27 action agency may seek informal consultation with FWS. 50 C.F.R. § 402.13(a). FWS may
28 issue a written concurrence in the determination or may suggest modifications to avoid the
likelihood of harm to the endangered species. 50 C.F.R. § 402.13(b). If FWS does not agree
that the agency action is not likely to adversely affect the protected species, formal
consultation must occur. 50 C.F.R. § 402.14.

1 **E. The 1994 FWS Opinion, the RPA, and Reclamation’s Compliance.**

2 At the heart of this case is a biological opinion issued by FWS in 1994 (the “1994
3 Opinion”).⁴ The opinion concerned Reclamation’s selection of MLFF as the operating
4 system for the Dam. FWS concluded that MLFF would jeopardize the humpback chub and
5 adversely modify its habitat. Dkt. #136, Ex. 17 at 3. This conclusion was based on the
6 declining chub population and the effect of MLFF on critical chub habitat, particularly the
7 nearshore sandbars and sun-warmed backwaters that were essential for the growth, feeding,
8 and protection of young chub. *Id.* at 20, 23-28. The 1994 Opinion noted that the fluctuating
9 flows of MLFF reduce the temperatures of backwaters by inundating them with colder water
10 as river levels rise, and reduce food sources in the backwaters. *Id.* at 23-24. The opinion
11 also noted that fluctuating water levels could force young chub into the more hazardous
12 mainstream of the river. *Id.* at 24.

13 As required by the ESA, FWS set forth an RPA that would minimize or avoid the
14 adverse effects of MLFF identified in the 1994 Opinion. *Id.* at 35. The RPA included
15 several elements. Although the parties have focused primarily on the steady-flow element,
16 all of the RPA elements are relevant to understanding the actions of the parties in this case.

17 **1. RPA Element 1.**

18 RPA element 1 called for Reclamation to develop an “adaptive management program”
19 for the operation of Glen Canyon Dam. The program, referred to as “AMP,” was intended
20 to create a forum for all agencies, states, tribes, organizations, and persons with interests in
21 the Dam, the Colorado River, and the Grand Canyon to have a voice in Dam operations. As
22 envisioned by the RPA, the AMP would be used to design studies to determine the effect of
23 river flows on endangered species and to implement actions to increase the likelihood of their
24 survival and recovery. *Id.* at 35. To institute AMP, Reclamation formed the Adaptive
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26 ⁴ The 1994 Opinion was signed on December 21, 1994, but was not transmitted to
27 Reclamation until January 7, 1995. The Trust refers to the opinion as the 1994 Opinion,
28 while Reclamation refers to it as the 1995 Opinion. The Court will refer to it as the 1994
Opinion.

1 Management Working Group (“AMWG”), a 25-member body with representatives from
2 Reclamation, FWS, the National Park Service, other federal and state agencies, the seven
3 Colorado River basin states, environmental groups (including the Trust), electrical power
4 groups, Indian Tribes, and recreation groups. 2005 SCORE Report at 10. The AMWG
5 makes recommendations to the Secretary of the Interior concerning Dam operations, and has
6 been responsible for many of the studies addressed in this order and actions designed to
7 benefit the chub that will be discussed below. FWS concluded in 1999 that Reclamation had
8 successfully completed this element of the RPA. Dkt. #22, Ex. 7 at 2.

9 2. RPA Element 1A.

10 Element 1A required Reclamation to institute a program of experimental releases from
11 the Dam that included high steady flows in the spring and low steady flows in the summer
12 and fall, and to quantify the effects of such flows on endangered and native fish. The RPA
13 required that the design of such flows be completed by October 1996, with the flows to start
14 in April of 1997. “If sufficient progress and good faith effort is occurring toward initiating
15 experimental flows,” the RPA stated, then implementation of the steady flows could occur
16 later in 1997. Dkt. #136, Ex. 17 at 35. FWS warned, however, that if “there is not sufficient
17 progress, Glen Canyon Dam would be operated as SASF flows during spring through fall
18 (April to October) beginning in 1998.” *Id.*

19 Reclamation used the AMP process to institute high flow tests in 1996 and 2004 and
20 a steady flow test from March to September of 2000 (Dkt. #27-3, Ex. 5 at 14-15), but has not
21 implemented the specific steady flows required by RPA element 1A – high steady flows in
22 the spring and low steady flows in the summer and fall. Nor has Reclamation implemented
23 SASF, the alternative steady-flow regime required by the RPA. As a result, FWS has on
24 several occasions notified Reclamation that element 1A of the RPA “has not seen sufficient
25 progress.” Dkt. #22, Ex. 7 at 3 & Ex. 8 at 3.

1 **3. RPA Elements 1B, 1C, 2, and 4.**⁵

2 Element 1B called for Reclamation to investigate a system for the “selective
3 withdrawal” of water from Lake Powell. The purpose would be to withdraw warmer water
4 from the lake and thereby increase river temperatures. Dkt. #136, Ex. 17 at 36. FWS stated
5 in 2002 that Reclamation had made progress on this element. Dkt. #22, Ex. 8 at 4.
6 Reclamation has created preliminary plans for a multi-level water intake structure that could
7 be used to draw warmer water from the lake. 2005 SCORE Report at 47.

8 RPA element 1C called for Reclamation to determine the effects of water temperatures
9 on various native fishes, including the humpback chub. Dkt. #136, Ex. 17 at 37.
10 Reclamation has commissioned a number of studies on this issue, and in 2002 FWS advised
11 Reclamation that work on this element was “progressing well.” Dkt. #22, Ex. 8 at 6. Several
12 studies included in the administrative record concern the effects of temperature on the chub.

13 RPA element 2 called for Reclamation to protect humpback chub in the Little
14 Colorado River by developing a management plan for the Little Colorado River. Dkt. #136,
15 Ex. 17 at 38. FWS reported in 2002 that Reclamation had made little progress on this
16 element, but was working with a watershed group for the Little Colorado River and would
17 produce a report in June of 2003. Dkt. #22, Ex. 8 at 6. The parties have not otherwise
18 apprised the Court of progress on this element.

19 RPA element 4 called for Reclamation to establish a second spawning population of
20 humpback chub downstream of the Dam. Dkt. #136, Ex. 17 at 39. The primary spawning
21 colony is located in the lower reaches of the Little Colorado River, near its confluence with
22 the Colorado River. To establish a second spawning population, Reclamation and other
23 agencies, in 2003, relocated 300 young humpback chub to a spot above Chute Falls, a natural
24 barrier on the Little Colorado River. Another 300 chub were moved there in July 2004,
25 followed by another 565 in July 2005. Chub survival and growth rates at this new location
26 have been high. The population above Chute Falls is now reproducing and moving

27 _____
28 ⁵ RPA element 3 concerned the razorback sucker, a native fish not at issue in this case.

1 downstream in the Little Colorado, and appears to be a new source for humpback chub in the
2 lower portions of the Little Colorado River and in the mainstem of the Colorado River.
3 Dkt. #27, Ex. 5 at 68-69.

4 **4. RPA Summary.**

5 Reclamation has completed elements 1 and 4 of the RPA and appears to have made
6 meaningful progress on elements 1B and 1C. The Trust's primary focus in this case is on
7 element 1A and Reclamation's failure to implement experimental high steady flows in the
8 spring and low steady flows in the summer and fall, or alternatively to implement SASF.

9 **5. Other Conservation Measures.**

10 In addition to the steps discussed above, the AMP process has produced other
11 conservation measures for the chub. Rainbow trout, a species of fish not native to the
12 Colorado River below the Dam, has thrived in the cold waters created by the Dam. The trout
13 prey on young humpback chub. To address this obstacle to chub survival, the AMP process
14 designed and implemented a program to remove rainbow trout from the key stretch of the
15 Colorado River near the confluence with the Little Colorado. In 2003 and 2004, 16,045
16 rainbow trout and many other non-native fish were mechanically removed from the river,
17 reducing the population of trout in this stretch by more than 60%. 2005 SCORE Report at
18 46-47. Rainbow and brown trout were also removed from other tributaries such as Bright
19 Angel Creek in anticipation of establishing chub populations in these locations. Additional
20 conservation measures will be discussed below.

21 **F. The 2008 FWS Opinion.**

22 As part of the AMP process, Reclamation created a 2008 Experimental Plan that
23 called for two modifications to MLFF that were designed to benefit the chub – a high water
24 release in March of 2008 to build beach and backwater habitat, and steady flows in
25 September and October of each year from 2008 to 2012 (the "2008 Experimental Plan"). As
26 required by the ESA, Reclamation performed an Environmental Assessment for this plan and
27 concluded that the environmental impact would not be significant.

28

1 Reclamation consulted with FWS concerning the 2008 Experimental Plan and, on
2 February 27, 2008, FWS issued a biological opinion (the “2008 Opinion”). The 2008
3 Opinion noted recent studies that have shown increases in the humpback chub population,
4 with at least one study concluding that the increases must have started between 1996 and
5 1999, before Reclamation began conducting experimental flows and removing non-native
6 fish from the river. The 2008 Opinion concluded that “some combination of conditions
7 under MLFF has benefitted the humpback chub, and that more recent conservation actions
8 [such as the removal of rainbow trout] likely have as well[.]” Dkt. #136, Ex. 11 at 52. With
9 respect to the two elements of the 2008 Experimental Plan, FWS opined that
10 “implementation of the March 2008 high flow test and the five-year implementation of
11 MLFF with steady releases in September and October, as proposed, is not likely to jeopardize
12 the continued existence of the humpback chub . . . and is not likely to destroy or adversely
13 modify designated critical habitat for the humpback chub.” *Id.* at 51.

14 The 2008 Opinion also noted that Reclamation intended to undertake eight
15 conservation measures to benefit the chub: (1) Reclamation and FWS will reinitiate
16 consultation concerning the chub if the population drops in any single year below 3,500 adult
17 chub; (2) Reclamation, through AMP, will develop a comprehensive plan for the
18 management and conservation of chub in the Grand Canyon; (3) Reclamation will work with
19 the National Park Service to establish spawning populations of the chub in tributaries of the
20 Colorado River such as Havasu, Shinumo, and Bright Angel Creeks; (4) Reclamation,
21 through AMP, will continue to control non-native fish that prey on the chub; (5) Reclamation
22 will takes steps to minimize variations in flow between months – variations that can
23 adversely affect backwater habitat; (6) Reclamation will undertake a nearshore ecology study
24 to examine the effects of flow variations on nearshore habitat; (7) Reclamation and FWS will
25 create a humpback chub refuge in a fish hatchery to protect against catastrophic loss of the
26 chub in the Colorado River; and (8) Reclamation will continue to help other stakeholders in
27 the Little Colorado River watershed develop a plan that protects watershed levels for the
28 chub. *Id.* at 9-11, 52-55. FWS found that these conservation measures increase its

1 confidence “that all adverse effects of the proposed action are reduced to the point that the
2 [2008 Experimental Plan] will not jeopardize the species or result in adverse modification
3 of critical habitat.” *Id.* at 52.

4 Significantly for this lawsuit, the 2008 Opinion also stated, in a single sentence and
5 with little explanation, that it “replaces” the 1994 Opinion – the opinion that found MLFF
6 violates the ESA. By replacing the 1994 Opinion, the 2008 Opinion also had the effect of
7 replacing the RPA, including the element 1A requirement that Reclamation implement its
8 own program of steady flows or SASF. Needless to say, the parties have very different views
9 concerning the 2008 Opinion. Reclamation cites the 2008 Opinion as conclusive evidence
10 that it is not violating the ESA by current Dam operations. The Trust argues that the 2008
11 Opinion is invalid, that it was created as a defense to this lawsuit, that the 1994 Opinion still
12 controls, and that the Dam operations therefore continue to violate the ESA.

13 **G. This Suit and the Parties’ Motions.**

14 The Trust filed suit on December 7, 2007, asserting five claims: (1) Reclamation is
15 violating the ESA by jeopardizing the humpback chub, (2) Reclamation is violating the ESA
16 by destroying or adversely modifying the chub’s critical habitat, (3) Reclamation is violating
17 the ESA by “taking” the chub, (4) Reclamation is violating the ESA by failing to consult with
18 FWS on the development of annual operating plans for the Dam, and (5) Reclamation is
19 violating the National Environmental Policy Act (“NEPA”) by failing to prepare
20 environmental assessments or environmental impact statements for each of the Dam’s annual
21 operating plans. Dkt. #1. After Reclamation issued the 2008 Experimental Plan and FWS
22 issued the 2008 Opinion, the Trust filed a supplemental complaint asserting three more
23 claims: (6) Reclamation’s Environmental Assessment for the 2008 Experimental Plan fails
24 to comply with NEPA, (7) FWS’s 2008 Opinion violates the ESA, and (8) the 2008
25 Experimental Plan violates the Grand Canyon Protection Act (“GCPA”). Dkt. #23.

26 On February 15, 2008, the Trust moved for summary judgment on the first five
27 claims. Dkt. #15. Reclamation responded with a motion to dismiss or, in the alternative,
28 cross-motion for summary judgment. Dkt. #25. After extensive briefing and argument, the

1 Court granted summary judgment for Reclamation on Claims 4 and 5, but denied the
2 remaining motions. *See* Dkt. #123. Because the outcome of Claims 1, 2, and 3 depends
3 heavily on the validity of the 2008 Opinion, the Court deferred ruling on these claims until
4 Claims 6, 7, and 8 were fully briefed. *Id.* The briefing has now been completed and oral
5 argument was held on April 9, 2009. The remainder of this order will address the legal
6 standards that govern this case, the validity of the 2008 Environmental Assessment (Claim
7 6), the validity of the 2008 Opinion (Claim 7), the validity of the 2008 Experimental Plan
8 under the GCPA (Claim 8), the merits of Claims 1, 2, and 3, and appropriate remedies.

9 **II. Legal Standard.**

10 **A. Standard of Review.**

11 Because the ESA, NEPA, and GCPA contain no standards for judicial review of
12 agency actions, the Court must evaluate the administrative decisions of Reclamation and
13 FWS using the Administrative Procedures Act (“APA”). *See Or. Natural Res. Council v.*
14 *Allen*, 476 F.3d 1031, 1036 (9th Cir. 2007) (“As the ESA does not itself specify a standard
15 of review of its implementation, we apply the general standard of review of agency action
16 established by the [APA].”); *Ctr. for Biological Diversity v. U.S. Fish & Wildlife Serv.*, 450
17 F.3d 930, 934 n.4 (9th Cir. 2006) (“When reviewing administrative decisions involving the
18 ESA, we are guided by section 706 of the Administrative Procedure Act.”); *Akiak Native*
19 *Cmty. v. U.S. Postal Serv.*, 213 F.3d 1140, 1146 (9th Cir. 2000) (APA standard used in
20 reviewing NEPA claim). The Court may set aside an agency’s decision under the APA only
21 if it is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with
22 law.” 5 U.S.C. § 706(2)(A); *Pac. Coast Fed’n of Fishermen’s Ass’n v. Nat’l Marine*
23 *Fisheries Serv.*, 265 F.3d 1028, 1034 (9th Cir. 2001). “Agency action should be overturned
24 only when the agency has ‘relied on factors which Congress has not intended it to consider,
25 entirely failed to consider an important aspect of the problem, offered an explanation for its
26 decision that runs counter to the evidence before the agency, or is so implausible that it could
27 not be ascribed to a difference in view or the product of agency expertise.” *Id.* (quoting
28 *Motor Vehicle Mfrs. Ass’n of U.S., Inc. v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43

1 (1983)). “This standard of review is highly deferential, presuming the agency action to be
2 valid and affirming the agency action if a reasonable basis exists for its decision.” *Nw.*
3 *Ecosystem Alliance v. U.S. Fish & Wildlife Serv.*, 475 F.3d 1136, 1140 (9th Cir. 2007)
4 (internal quotes and citation omitted).

5 **B. Scope of Review.**

6 Review under the APA usually is restricted to the administrative record. *See, e.g.*,
7 *Ariz. Cattle Growers’ Ass’n v. U.S. Fish & Wildlife Serv.*, 273 F.3d 1229, 1236 (9th Cir.
8 2001) (“[t]he reviewing court may not substitute reasons for agency action that are not in the
9 record”); 5 U.S.C. 706(2) (“the court shall review the whole record or those parts of it cited
10 by a party”). The Court may consider materials outside of the administrative record “(1) if
11 necessary to determine whether the agency has considered all relevant factors and has
12 explained its decision, (2) when the agency has relied on documents not in the record, . . .
13 (3) when supplementing the record is necessary to explain technical terms or complex subject
14 matter, [or] . . . (4) when plaintiffs make a showing of agency bad faith.” *Ctr. for Biological*
15 *Diversity*, 450 F.3d at 943. With the exception of the remedies discussion at the end of this
16 order and a few documents addressed in the Court’s order of April 6, 2009 (Dkt. #157), the
17 Court’s decision is limited to the administrative record supplied by the parties. Citations are
18 to exhibits provided with the parties’ briefing and found in the Court’s electronic docket.

19 **III. Claim 6 – Is Reclamation’s 2008 Environmental Assessment Valid?**

20 The Trust alleges that Reclamation’s Environmental Assessment of the 2008
21 Experimental Plan violates NEPA’s procedural requirements.

22 **A. NEPA Requirements.**

23 “NEPA is a procedural statute that does not mandate particular results, but simply
24 provides the necessary process to ensure that federal agencies take a hard look at the
25 environmental consequences of their actions.” *Sierra Club v. Bosworth*, 510 F.3d 1016,
26 1018 (9th Cir. 2007) (quotations and citation omitted). NEPA directs federal agencies to
27 prepare a detailed environmental impact statement or “EIS” for every “major Federal action
28 significantly affecting the quality of the human environment[.]” 42 U.S.C. § 4332(c). NEPA

1 permits an agency to prepare a lesser “environmental assessment” to determine whether the
2 environmental impact of a proposed action is sufficiently significant to warrant an EIS. *See*
3 40 C.F.R. § 1508.9. If the environmental assessment indicates that the agency’s action “may
4 have a significant effect upon the . . . environment, an [EIS] must be prepared.” *Sierra Club*,
5 510 F.3d at 1018 (citation and italics omitted). “If the proposed action is found to have no
6 significant effect, the agency must issue a finding to that effect,” known as a finding of “no
7 significant impact” or “FONSI,” “accompanied by a convincing statement of reasons to
8 explain why a project’s impacts are insignificant.” *Id.* (internal quotes and citation omitted).
9 In this case, Reclamation prepared an Environmental Assessment and FONSI with respect
10 to the 2008 Experimental Plan. *See* Dkt. 136, Exs. 1 & 5.

11 An environmental assessment need not be extensive. Relevant regulations require the
12 assessment to “[b]riefly provide sufficient evidence and analysis for determining whether to
13 prepare an environmental impact statement or a finding of no significant impact,” and to
14 include “brief discussions of the need for the proposal, of alternatives . . . , of the
15 environmental impacts of the proposed action and alternatives, and a listing of agencies and
16 persons consulted.” 40 C.F.R. § 1508.9. The Ninth Circuit has provided the following
17 guidance for reviewing an environmental assessment:

18 We note, first, that the scope of our review for such a claim is quite narrow.
19 We ordinarily must defer to the informed discretion of the responsible federal
20 agencies . . . [D]eference is accorded agency environmental determinations not
21 because the agency possesses substantive expertise, but because the agency's
22 decision-making process is accorded a presumption of regularity. Although
not immune from judicial scrutiny, agency decisions are subjected to the
narrow “arbitrary and capricious” standard. Accordingly, we consider only
whether the [agency’s] decision was based on a consideration of the relevant
factors and whether there has been a clear error of judgment.

23 *Akiak Native Cmty*, 213 F.3d at 1146 (quotation marks, citation, and footnote omitted).

24 **B. Did the Environmental Assessment Consider Sufficient Alternatives?**

25 The Trust contends that Reclamation considered too few alternatives in the 2008
26 Environmental Assessment. Specifically, the Trust argues that because MLFF constitutes
27 a significant portion of the 2008 Experimental Plan, Reclamation should have considered
28 alternatives to MLFF such as SASF.

1 Review of this argument begins with the purpose of the 2008 Experimental Plan.
2 “The stated goal of a project necessarily dictates the range of ‘reasonable’ alternatives[.]”
3 *City of Carmel-By-The-Sea v. U.S. Dep’t. of Transp.*, 123 F.3d 1142, 1155 (9th Cir. 1997);
4 *see also Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 196 (D.C. Cir. 1991) (“We
5 uphold an agency’s definition of objectives so long as the objectives the agency chooses are
6 reasonable, and we uphold its discussion of alternatives so long as the alternatives are
7 reasonable and the agency discusses them in reasonable detail.”). “The statutory and
8 regulatory requirement that an agency must consider ‘appropriate’ and ‘reasonable’
9 alternatives does not dictate the minimum number of alternatives that an agency must
10 consider.” *Native Ecosystems Council v. U.S. Forest Serv.*, 428 F.3d 1233, 1245-46 (9th Cir.
11 2005) (consideration of only preferred alternative and no-action alternative acceptable);
12 *Akiak Native Cmty.*, 213 F.3d at 1148 (agency’s consideration of two alternatives sufficient
13 under NEPA).

14 **1. The Purpose of the 2008 Experimental Plan.**

15 The stated purpose of the 2008 Experimental Plan was to engage in Dam releases
16 designed to benefit the humpback chub while complying with federal law and meeting the
17 project purposes of the Dam, including power generation. Dkt. #136, Ex. 1 at 5.⁶ The
18 releases were to include a spring high flow event during a period of enriched sediment
19 conditions to rebuild sandbars, beaches, and chub habitat, followed by five years of fall
20 steady flows to benefit the chub. Reclamation explained that it sought to preserve recent
21 increases in the humpback chub population while attempting to take further actions to benefit
22 the chub, and therefore proposed a plan that was deliberately conservative. *Id.* at 5, 11. The
23 plan included only two incremental steps – a single spring high flow and five years of fall
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26 ⁶ This is not unlike the purpose that Secretary Babbitt identified for the 1996 ROD:
27 the goal “was not to maximize benefits for the most resources, but rather to find an
28 alternative dam operating plan that would permit recovery and long-term sustainability of
downstream resources while limiting hydropower capacity and flexibility only to the extent
necessary to achieve recovery and long-term sustainability.” Dkt. #27, Ex. 3 at G-11.

1 steady flows – and the only alternative addressed in the Environmental Assessment was a “no
2 action” alternative which would continue operations under MLFF.

3 The Environmental Assessment evaluated the two steps proposed in the Experimental
4 Plan and found that they would not adversely affect the chub or its habitat. The March 2008
5 high flow of 41,500 cfs for 60 hours, which was timed to take advantage of increased
6 sediment recently discharged into the Colorado River by the Paria River (a tributary 15 river
7 miles downstream from the Dam), would be an “essential step” in conserving the sediment
8 necessary for chub spawning and in determining the long-term sustainability of sediment
9 resources in the river. *Id.* at 10. The five years of September-October steady flows would
10 be timed to coincide with the emergence of young chub from the Little Colorado River into
11 the mainstem of the Colorado. The steady flows would likely increase the warmth and
12 productivity of backwaters used by young chub to feed and grow. *Id.* at 11. As the
13 Environmental Assessment summarized:

14 Creation and improvement of backwater rearing habitat expected from the high
15 flow test could expand the spatial extent of backwater habitat. Steady flows
16 could result in more hydraulically stable nearshore rearing habitats, slightly
17 warmer temperatures and increased abundance of invertebrate prey items.
Collectively, these effects should result in improved growth and survival of
young-of-year humpback chub and other native fish prior to the onset of
winter.

18 *Id.* at 29 (citation omitted). Reclamation accordingly concluded that the 2008 Experimental
19 Plan “is a logical next step in the implementation of adaptive management and for the
20 conservation of the humpback chub.” *Id.* at 12.

21 **2. The Trust’s Arguments.**

22 The Trust argues that the Environmental Assessment’s consideration of only two
23 alternatives – the 2008 Experimental Plan and a “no action” alternative – fails to satisfy
24 NEPA’s requirement that all reasonable and appropriate alternatives be evaluated. The Trust
25 first argues that the “no action” alternative was not viable because it did not satisfy the
26 purposes of the Plan and is a violation of the ESA. Dkt. #132 at 12-13. But NEPA
27 regulations mandate consideration of a “no action” alternative in an EIS, *see* 40 C.F.R.
28

1 § 1502.14, strongly suggesting that such an alternative should also be considered in an
2 environmental assessment.

3 The Trust next argues that the Environmental Assessment failed to consider four
4 alternatives developed under the AMP program as a long term experimental plan (“LTEP”).
5 The LTEP alternatives include (1) continuing MLFF with periodic beach and habitat building
6 flows and some winter power enhancement flows; (2) a beach and habitat building flow
7 followed by steady flows in September and October (essentially the approach adopted in the
8 2008 Experimental Plan); (3) continuing MLFF but decreasing downramp rates and daily
9 minimum flows; and (4) implementing SASF. Dkt. #91, Ex. 21 at 1-2. The Trust does not
10 complain that alternatives 1 and 3 were not considered in the Environmental Assessment.
11 The first alternative is similar to the “no action” alternative that was considered – it would
12 continue MLFF with occasional high flows – and the third alternative was developed by
13 electric power interests and would implement none of the changes the Trust views as
14 important. The second alternative is essentially the 2008 Experimental Plan. Thus, of the
15 four LTEP alternatives developed by Reclamation, the Trust argues primarily that only one
16 of the alternatives – SASF – should have been addressed in the Environmental Assessment.
17 See Dkt. #132 at 13-14.⁷

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21 ⁷ In its reply brief, the Trust argues that the Environmental Assessment failed to
22 explain why a two-month steady flow period was adopted instead of a longer period. The
23 Court finds, however, that the Environmental Assessment provides a sufficient explanation.
24 The Assessment notes that longer periods of steady flow might cause an increase in the non-
25 native, warm-water fish that prey on the chub and compete for food and habitat. Dkt. #136,
26 Ex. 1 at 11. The Assessment did not close the door on longer periods, noting that they would
27 be considered if the chub population decreased under the Experimental Plan. *Id.* at 12. The
28 Court finds this explanation to be sufficient. NEPA requires that a more extensive EIS
“briefly discuss the reasons” for the elimination of an alternative. 40 C.F.R. § 1502.14(a).
The less extensive environmental assessment is to be “a concise public document” that
“briefly” explains its analysis. 40 C.F.R. § 1508.9(a). The Environmental Assessment’s
discussion of the steady flows satisfies this requirement of a brief explanation.

1 Given the narrowly circumscribed purpose of the 2008 Experimental Plan, the Court
2 concludes that Reclamation's omission of SASF was not unreasonable. In light of recent
3 gains in chub population, the purpose of the project was deliberately conservative: to
4 implement a high flow event during a sediment-rich period in the spring to rebuild beaches
5 and chub habitat, and to implement fall steady flows to aid young chub, all without violating
6 Reclamation's other obligations under the Law of the River or the purposes of the Dam such
7 as power generation. SASF did not fit this narrow objective; it would have worked a much
8 more dramatic change in Dam operations and river conditions. Because SASF was not
9 consistent with the measured approach adopted by Reclamation, NEPA does not require that
10 it be considered. As the Ninth Circuit has explained, "[a]lternatives that do not advance the
11 purpose of the . . . Project will not be considered reasonable or appropriate." *Native*
12 *Ecosystems Council*, 428 F.3d at 1247; *see also City of Angoon v. Hodel*, 803 F.2d 1016,
13 1021 (9th Cir. 1986) (per curiam) ("When the purpose is to accomplish one thing, it makes
14 no sense to consider the alternative ways by which another thing might be achieved."); *Trout*
15 *Unlimited v. Morton*, 509 F.2d 1276, 1286 (9th Cir. 1974) ("The range of alternatives . . .
16 need not extend beyond those reasonably related to the purposes of the project.").

17 The Trust argues that Reclamation cannot define the purpose of a project so narrowly
18 as to unreasonably restrict the alternatives considered. *See City of Carmel-By-The-Sea*, 123
19 F.3d at 1155. This is a correct statement of the law, but the Court does not find the approach
20 taken by Reclamation in the 2008 Experimental Plan to be unreasonable. Not wanting to
21 jeopardize the chub's recent population gains by too dramatic a change, Reclamation opted
22 for a conservative approach. In addition to the unknown effects of dramatic change,
23 Reclamation noted that longer periods of steady flow might cause an increase in warm-water
24 predators and competitors of the chub. Dkt. #136, Ex. 1 at 11-12.⁸ Given the deference due
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26 ⁸ The warm-water predators about which Reclamation and FWS were concerned
27 should be distinguished from the cold-water predators – primarily rainbow trout – that have
28 been mechanically removed from key stretches of the river. As Reclamation notes in the
Environmental Assessment, "[t]o date, efforts to control warm water nonnative fish predators

1 the administrative agency charged with managing the Dam, the Court cannot conclude that
2 the purpose of the Experimental Plan was unreasonably narrow.

3 The Trust might wish for a broader purpose, but NEPA is a procedural statute. *See*
4 *Sierra Club*, 510 F.3d at 1018. It does not mandate a broader purpose. As the Trust itself
5 notes, NEPA “is not predicated on whether the Experimental Plan is a ‘wise decision.’ The
6 only relevant issue is whether Reclamation satisfied NEPA’s mandate to analyze a range of
7 reasonable alternatives.” Dkt. #144 at 3; *see also The Lands Council v. McNair*, 537 F.3d
8 981, 1000 (9th Cir. 2008) (NEPA exists to ensure a process as opposed to imposing
9 substantive requirements on federal agencies). Given the narrow purpose of the Plan, the
10 Court concludes that it did.

11 What is more, by arguing that the Environmental Assessment should have put MLFF
12 in question and considered alternatives such as SASF, the Trust really is arguing that
13 Reclamation should redo the 1995 FEIS. The 1995 FEIS was a NEPA document and was
14 considerably more detailed than the 2008 Environmental Assessment. The 1995 FEIS
15 evaluated MLFF, SASF, and several other alternatives for Dam operations. *See* Dkt. #123
16 at 17-20. The FEIS process spanned five years and included wide publication, numerous
17 public meetings, and Reclamation’s receipt of more than 17,000 comments. Dkt. #27, Ex. 3
18 at G-5. The 1996 ROD, which selected MLFF, committed that “any operational changes will
19 be carried out in compliance with NEPA.” Dkt. #27, Ex. 3 at G-10. The two components
20 of the 2008 Experimental Plan are operational changes from MLFF and were evaluated under
21 NEPA in the Environmental Assessment.⁹

22 NEPA is designed “to ensure that federal agencies take a hard look at the
23 environmental consequences of their actions.” *Sierra Club*, 510 F.3d at 1018. Reclamation
24

25 _____
26 [have] not been shown to be effective.” Dkt. #136, Ex. 1 at 11.

27 ⁹ The Trust acknowledges that “[s]imilar experimental actions in prior years did not
28 conduct a re-evaluation of MLFF impacts under NEPA.” Dkt. #144 at 6. The Trust does not
suggest, however, that it ever objected to this incremental approach.

1 took a hard look at MLFF and SASF in the 1995 FEIS and the Trust has provided no basis
2 for the Court to conclude that NEPA mandates a second hard look.¹⁰

3 **C. Additional Trust Arguments.**

4 The Trust makes four additional arguments about the 2008 Environmental
5 Assessment. The Court will address each briefly.

6 First, the Trust asserts that the Environmental Assessment should have considered the
7 effects of MLFF on the chub and its habitat because MLFF was the system that would be
8 used ten months of the year under the 2008 Experimental Plan. Alternatively, the Trust
9 argues that MLFF was the “no action” alternative and should have been evaluated for that
10 reason. Reclamation responds that the Trust waived these arguments by failing to raise them
11 in the Trust’s comments on the draft Environmental Assessment. The Court agrees. The
12 Trust’s comment did not assert that the assessment was flawed because it failed to evaluate
13 MLFF. *See* Dkt. #136, Ex. 4. Failure to raise an objection in response to a draft NEPA
14 document forfeits that objection for purposes of later litigation. *Dep’t of Transp. v. Public*
15 *Citizen*, 541 U.S. 752, 764-65 (2004).

16 Second, the Environmental Assessment states that it is “tiered” to the 1995 FEIS.
17 Dkt. #136, Ex. 1 at 3. The Trust contends that tiering, although permitted by the regulations,

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19 ¹⁰ The Trust argues that the analysis of MLFF in the 1995 FEIS was inadequate, but
20 this argument comes several years too late. There is a six-year limitation period for NEPA
21 claims. *Sierra Club v. Penfold*, 857 F.2d 1307, 1315 (9th Cir. 1988). If the Trust wanted to
22 obtain judicial review of the 1995 FEIS and its recommendation of MLFF, it should have
23 sought such review within the period of limitations. (The Trust was involved in the NEPA
24 process that led to the 1995 FEIS. *See, e.g.*, Dkt. #27, Ex. 3 at G-7.) The Trust also argues
25 that the Environmental Assessment should have considered the effects of MLFF when
26 analyzing the “cumulative” effects of the 2008 Experimental Plan. But this really is just
27 another attack on MLFF. The Trust does not suggest that either of the two experiments
28 outlined in the Plan would adversely affect the chub and add to any cumulative negative
effects. *See* Dkt. #132 at 16. Finally, the Trust argues that much scientific data on MLFF
has developed since the 1995 FEIS. This is true, but the existence of such data does not
broaden the narrow purpose of the 2008 Experimental Plan. And the Trust does not claim
in this lawsuit that Reclamation should prepare a supplemental FEIS based on new data. *See*
40 C.F.R. § 1502.9(c)(1)(ii); *Marsh v. Or. Natural Res. Council*, 490 U.S. 360, 371-73
(1989); *Friends of the Clearwater v. Dombeck*, 222 F.3d 552, 557-58 (9th. Cir. 2000).

1 is improper in this case for several reasons, including Reclamation's failure to identify
2 specific portions of the 1995 FEIS to which the Assessment is tiered. The Trust failed to
3 raise this issue in its comment on the draft Environmental Assessment. *See* Dkt. #136, Ex. 4.
4 The argument therefore is waived. *Dep't of Transp.*, 541 U.S. at 764-65.

5 Third, the Trust argues that the Environmental Assessment's FONSI ignores impacts
6 on Grand Canyon National Park. This argument, again, focuses primarily on MLFF. As
7 already noted, the 2008 Experimental Plan did not introduce MLFF; that system was
8 introduced and evaluated in the 1995 FEIS. The Environmental Assessment did specifically
9 consider the effect of the Experimental Plan's two components on Park values. Dkt. #136,
10 Ex. 1 at 1, 5 & Ex. 5 at 7. The Trust does not demonstrate that these two components – the
11 March 2008 high flow and the fall steady flows for five years – will adversely impact Park
12 values. The Trust cites suggestions by the National Park Service that MLFF flows erode
13 beaches and habitat and that SASF flows should be implemented. Dkt. #91, Ex. 23. These
14 comments also focus primarily on MLFF. Given the narrow purpose of the Plan, the Court
15 cannot conclude that the Environmental Assessment and its FONSI are legally flawed under
16 NEPA by failing to consider the effects of MLFF. Moreover, the Ninth Circuit has held that
17 disagreements by other government agencies do not render an environmental assessment
18 invalid under NEPA. *See Akiak Native Cmty.*, 213 F.3d at 1146-47.

19 Finally, the Trust argues that Reclamation should have prepared a full EIS in light of
20 the "highly controversial" nature of the 2008 Experimental Plan. Again, however, the
21 controversy on which the Trust relies is the use of MLFF. The 2008 Experimental Plan
22 proposed two modest additions designed to capitalize on current sediment conditions in the
23 river and recent gains in chub population. The Trust has not shown that those two proposals
24 are highly controversial. Moreover, mere disagreement with a project or the existence of
25 information supporting an opponent's view do not render a project "highly controversial" for
26 purposes of NEPA. *Native Ecosystems*, 428 F.3d at 1240. "Simply because a challenger can
27 cherry pick information and data out of the administrative record to support its position does
28

1 not mean that a project is highly controversial or highly uncertain.” *Id.* The Court does not
2 find that an EIS is required for the 2008 Experimental Plan on the basis of high controversy.

3 **D. Claim 6 Conclusion.**

4 Given the deference owed to agencies under the APA, the limited purpose of the 2008
5 Experimental Plan, and the procedural nature of NEPA, the Court concludes that the
6 Environmental Assessment considered appropriate and reasonable alternatives and does not
7 amount to a clear error of judgment. The Trust has not overcome the “presumption of
8 regularity” afforded the Environmental Assessment. *See Akiak Native Cmty.*, 213 F.3d at
9 1146. The Court will enter summary judgment in favor of Reclamation on Claim 6.

10 **IV. Claim 7 – Does the 2008 FWS Opinion Violate the ESA?**

11 The 2008 Opinion issued by FWS constitutes a final agency action subject to judicial
12 review. *See Bennett*, 520 U.S. at 177-78; *Or. Natural Res. Council v. Allen*, 476 F.3d 1031,
13 1035-36 (9th Cir. 2007). The Trust contends that it is legally insufficient under the ESA.

14 The 2008 Opinion contains a detailed discussion of the Experimental Plan’s high flow
15 experiment and concludes that although it might initially have an adverse impact on young
16 chub caught in the high water, it likely will construct more sandbars and backwaters than
17 previous high flow experiments because of the substantial amount of sediment in the river
18 in early 2008. Dkt. #136, Ex. 11 at 44-45. FWS concludes that these formations will be
19 favorable to chub spawning and survival. *Id.*

20 The 2008 Opinion also contains a detailed discussion of the Experimental Plan’s two-
21 month steady flows in September and October of each year. *Id.* at 44-47. FWS opines that
22 the effect of these flows “on habitat persistence is most likely to be positive” and that water
23 temperatures are likely to be warmer, benefitting the chub. *Id.* at 46-47. FWS also
24 determines that the steady flows should increase food sources available for chub in the
25 backwaters. *Id.* at 48. The Trust generally does not challenge these conclusions.¹¹

26
27 ¹¹ The Trust does argue that the 2008 Opinion fails to address the effects of MLFF on
28 chub nearshore habitat. This is not correct. The 2008 Opinion notes that the 1996 high flow
experiment deposited more sandbars at a faster rate than predicted, but that “many sandbars

1 The key portion of the 2008 Opinion for purposes of this case is the statement that it
2 “replaces” the 1994 Opinion that found MLFF to be a violation of the ESA. *Id.* at 2. As
3 counsel for the Federal Defendants conceded at oral argument, the 2008 Opinion thereby
4 represents FWS’s new opinion that MLFF does not violate the ESA. This is a sharp
5 departure from FWS’s longstanding opinion.

6 The 1994 Opinion was clear: “the proposed operation of Glen Canyon Dam according
7 to operating and other criteria of the MLFF . . . is likely to jeopardize the continued existence
8 of the humpback chub . . . and is likely to destroy or adversely modify designated critical
9 habitat.” Dkt. #136, Ex. 17 at 3. In 1999, FWS stated that Reclamation had not taken
10 sufficient steps to implement the steady flows required by RPA element 1A. Dkt. #22, Ex.
11 7 at 3. Reclamation took the same position in 2002, stating that RPA element 1A “has not
12 seen sufficient progress.” Dkt. #22, Ex. 8 at 3. FWS reiterated this position in 2006 and
13 noted that “daily fluctuations are detrimental to native fish populations.” Dkt. #91, Ex. 21
14 at 3.

15 In 2007, just one year before it issued the 2008 Opinion, FWS issued a report that
16 confirmed the adverse effects of MLFF on chub habitat. Dkt. #91, Ex. 22. The report
17 observed that “[t]he much hoped for outcome of modest improvement in sandbar resources,
18 as originally proposed and predicted in the [1995 FEIS], has not been realized. . . . Loss of
19 sand habitats in the ecosystem was documented under the No-Action Era (1964-1990), but
20 has continued since dam operations have been altered to mitigate sandbar erosion [through
21 MLFF].” *Id.* at 213. “Although MLFF limitations on the daily allowable peak discharges

22 _____
23 built during the 1996 high flow test eroded in as little as several days following the
24 experiment.” Dkt. #136, Ex. 11 at 23. FWS attributes this erosion to MLFF. *Id.* at 24, 45.
25 The 2008 Opinion also considers the effect of MLFF on the March 2008 high flow designed
26 to build nearshore habitat: “MLFF flows in the months following the March 2008 test flow
27 will consist of moderately low fluctuating flows . . . , with maximum flow and range
28 fluctuations of 9,300-17,300 cfs occurring in July and August of 2008. Thus if the high flow
test is successful in creating backwaters they should persist over a longer period than
previous tests.” *Id.* at 45. The Court cannot accept the Trust’s claim that FWS failed to
consider the possible effects of MLFF on the March 2008 high flow event.

1 were intended to reduce sand export and bar erosion, it appears that the annual pattern of
2 monthly volumes released from the dam (with peak daily flows at their highest during the
3 summer sediment input months of July and August) is the greatest factor preventing
4 accumulation of new sand inputs from tributaries over multi-year time scales.” *Id.* at 214.
5 Thus, “[t]he [1995 FEIS] assumption that sand would accumulate on the bed of the river over
6 multiple years is now known to be flawed.” *Id.*

7 The 2008 Opinion changed all of this, but without directly addressing the effect of
8 MLFF on the chub or its habitat. The opinion never explains why FWS’s long-held position
9 is incorrect. It never discusses the many studies that seem to confirm that MLFF destroys
10 chub habitat. But in fairness, the 2008 Opinion does contain at least a limited explanation
11 of its departure from the 1994 Opinion. That explanation is set forth here in full:

12 In 1995, in a consultation on the operations of Glen Canyon Dam, specifically
13 on the MLFF, we anticipated that operation of Glen Canyon Dam (the
14 monthly, daily, and hourly operations as defined in the MLFF and the 1996
15 ROD) would jeopardize the continued existence of the species. Populations
16 in the upper Colorado River basin have declined as of January 2008. The
17 Grand Canyon population, which was the population analyzed in the 1995
18 biological opinion, appears to have recently improved to around 6,000 adult
19 fish. This is less than the number of adult fish thought to be present in the
20 Grand Canyon in 1995, and indeed the status of the species is reduced overall
21 from what it was in 1995. Much of the scope of dam operations for the next
22 five years under the [2008 Experimental Plan] will contain elements of the
23 1996 (MLFF) and 2007 (Shortage Guidelines) RODs, such as the range of
24 daily flow fluctuation and seasonal variations in monthly volume. However,
25 the most recent and best available estimates of humpback chub population
26 trend (Coggins 2007) indicate that there has been increased recruitment into
27 the population from some year classes starting in the mid- to late-1990s, during
28 the period of MLFF operations, causing the decline in humpback chub to
stabilize and begin to reverse. This improvement in the population trend has
been attributed in part to the results of nonnative fish mechanical removal,
increases in temperature due to lower reservoir elevations and inflow events,
the 2000 low steady summer flow experiment, and other experimental flows
and actions (USGS 2006a). Considering though that the most recent
population modeling indicates the increase was due to increased recruitment
as early as 1996 but no later than 1999 (Coggins 2007), the increase in
recruitment began at least four and as many as nine years prior to
implementation of nonnative fish control, incidents of warmer water
temperatures, the 2000 low steady summer flow experiment, and the 2004 high
flow test. The exact causes of the increase in recruitment, and whether it is
attributable to conditions in the mainstem or in the Little Colorado River are
unclear. Nevertheless, removal of nonnative fish, increased temperature due
to drought, and habitat conditions resulting from natural and experimental
actions will likely be beneficial to humpback chub, and further increases in
recruitment are likely based on recent catch rates of sub-adult humpback chub

1 (Coggins 2007). These results indicate that some combination of conditions
2 under MLFF has benefitted humpback chub, and that more recent conservation
actions likely have as well, and are likely to continue to.

3 Dkt. #136, Ex. 11 at 51-52.

4 FWS's rationale seems to progress as follows: (1) the 1994 Opinion predicted the
5 chub would decline under MLFF; (2) although there has been a general decline since 1995,
6 the chub population has stabilized and increased in the last few years; (3) modeling suggests
7 that the increase started under MLFF in the late 1990s, before other helpful conditions and
8 measures had occurred; (4) although the exact cause of the population increase is not known,
9 it appears the increase will continue and even accelerate under MLFF, particularly with the
10 helpful conditions and measures taken to date and the two components of the 2008
11 Experimental Plan; and (5) therefore, FWS can no longer conclude that MLFF is detrimental
12 to the chub or will cause further declines. For several reasons, the Court finds this logic to
13 be insufficient, even under deferential APA review.

14 First, even if it is conceded that recent science shows a stabilization and increase of
15 the chub population, the 2008 Opinion does not explain why MLFF no longer destroys or
16 adversely modifies the chub's critical habitat, particularly the mainstem sandbars and
17 backwaters considered necessary for the growth and feeding of young chub. The opinion
18 acknowledges that the fluctuating water levels of MLFF erode backwater sandbars and beach
19 habitat, reduce food production, and decrease water temperatures. Dkt. #136, Ex. 11 at 16,
20 21-25, 45. After conceding these points, the opinion devotes only one paragraph to critical
21 habitat, stating that "[c]ritical habitat . . . along the Colorado River will be affected in the
22 ways described above." *Id.* at 48-49. This statement would seem to suggest that the critical
23 habitat will continue to be adversely modified by MLFF, and yet the paragraph goes on to
24 assert – without citing any study – that the number of backwaters are likely to increase and
25 that the “quality of nearshore habitats, especially during September and October should also
26 improve, becoming warmer and more productive *relative to current conditions.*” *Id.* at 49
27 (emphasis added); *see also id.* at 55. The opinion seems to be saying that the two
28 components of the Experimental Plan will make things better than they would be without the

1 Plan. This might support an opinion that the two components of the Plan will not themselves
2 destroy or adversely modify critical habitat, but it provides no basis for concluding that
3 MLFF does not do so. All of the studies cited in the 2008 Opinion seem to suggest
4 otherwise. As noted above, an agency cannot entirely fail to consider an important aspect
5 of a problem, nor can it offer an explanation for its decision that runs counter to the evidence
6 before it. *Motor Vehicle Mfrs. Ass'n of U.S.*, 463 U.S. at 43; *Pac. Coast Fed'n of*
7 *Fishermen's Ass'n*, 265 F.3d at 1034. The 2008 Opinion fails adequately to address the
8 effect of MLFF on chub habitat.¹²

9 Second, the 2008 Opinion constitutes a significant change of course by FWS. Only
10 one year earlier, FWS told Reclamation that MLFF erodes sandbars and destroys chub
11 habitat. Dkt. #91, Ex. 22 at 213-14. Federal agencies certainly have the discretion to change
12 positions, “[b]ut an agency changing its course must supply a reasoned analysis.” *Motor*
13 *Vehicle Mfrs. Ass'n*, 463 U.S. at 57 (quotation omitted). As the Ninth Circuit has explained,
14 “an agency changing its course must supply a reasoned analysis indicating that prior policies
15 and standards are being deliberately changed, not casually ignored, and if an agency glosses
16 over or swerves from prior precedents without discussion it may cross the line from the
17 tolerably terse to the intolerably mute.” *Nw. Env'tl. Def. Ctr. v. Bonneville Power Admin.*,
18 477 F.3d 668, 687-88 (9th Cir. 2007) (internal quotation omitted). Other than the insufficient
19 paragraph quoted above, FWS provides no explanation for its departure from the 1994
20 Opinion.

21
22
23 ¹² During oral argument, counsel for the Federal Defendants was unable to identify
24 any study showing that MLFF does not harm critical habitat. After the argument, counsel
25 submitted a supplemental brief (Dkt. #161) citing a 2004 modeling study by Korman and
26 others. *See* Dkt. #151, Ex. 31. The 2008 Opinion relied on the Korman study to conclude
27 that the September-October steady flows would be more beneficial to chub habitat than
28 MLFF flows during the same period (Dkt. #136, Ex. 11 at 45-46), but not in support of the
conclusion that MLFF does not destroy or adversely modify critical chub habitat (*id.* at 48-
49). If FWS relied on this modeling study for its new opinion – to the exclusion of other
studies that have found MLFF detrimental to nearshore habitat (*see id.* at 21-25, 45) – it must
explain why.

1 Third, the ESA requires FWS to consider not only whether a proposed action will
2 jeopardize the survival of a species, but also whether it will jeopardize the species' recovery
3 to non-threatened levels. *Nat'l Wildlife Fed' v. NMFS*, 524 F.3d 917, 931 (9th Cir. 2008);
4 *Gifford Pinochet Task Force v. U.S. Fish & Wildlife Serv.*, 378 F.3d 1059, 1069 (9th Cir.
5 2004). Reclamation argues that "recovery" essentially equates with "conservation" (*see* 16
6 U.S.C. § 1532(3)) and that the 2008 Opinion does discuss chub conservation. *See* Dkt. #136,
7 Ex. 11 at 9-12. FWS also argues that the two components of the 2008 Experimental Plan are
8 expected to have positive long-term effects on the chub. *Id.* at 49. But FWS never addresses
9 whether *MLFF* will advance or impede chub recovery. If FWS is announcing a new opinion
10 that *MLFF* does not violate the ESA, then FWS must address the effect of *MLFF* on chub
11 recovery. 50 C.F.R. § 402.02.

12 Fourth, the ESA requires that FWS use "the best scientific and commercial data
13 available." 16 U.S.C. § 1536(a)(2). "The best available data requirement 'merely prohibits
14 [an agency] from disregarding available scientific evidence that is in some way better than
15 the evidence [it] relies on.'" *Kern County Farm Bureau v. Allen*, 450 F.3d 1072, 1080 (9th
16 Cir. 2006) (quoting *Sw. Ctr. for Biological Diversity v. Babbitt*, 215 F.3d 58, 60
17 (D.C.Cir.2000)). In failing directly to address the effects of *MLFF* on chub critical habitat,
18 the 2008 Opinion fails to address much of the science that has developed in the last ten years.
19 The opinion relies heavily on recent studies showing increases in chub population, but those
20 studies do not themselves directly address the effects of *MLFF* on critical habitat. If FWS
21 believes that the chub population studies provide a superior basis for assessing the effects of
22 *MLFF* on habitat than the habitat studies, it must explain this belief.

23 In summary, the 2008 Opinion sufficiently discusses the two elements of the 2008
24 Experimental Plan – the spring high flow experiment and the five years of fall steady flows
25 – but the opinion lacks a reasoned basis for its new conclusion that *MLFF* does not destroy
26 or adversely modify critical habitat. The 2008 Opinion also lacks an explanation for FWS's
27 change of position and a discussion of the effects of *MLFF* on chub recovery, and fails to
28

1 address these issues using the best science. The Court will grant summary judgment in favor
2 of the Trust on Claim 7.

3 **V. Claim 8 – Does the 2008 Environmental Assessment Violate the GCPA?**

4 Claim 8 alleges that the 2008 Experimental Plan violates the GCPA. This claim
5 focuses on MLFF, alleging that it destroys beaches and backwater habitat and impedes
6 recovery of the humpback chub. Dkt. #23 ¶ 87. The Trust claims that these effects of MLFF
7 violate Reclamation’s broad obligation under the GCPA “to protect, mitigate adverse impacts
8 to, and improve the values for which Grand Canyon National Park and Glen Canyon National
9 Recreation Area were established, including but not limited to natural and cultural resources
10 and visitor use.” Pub. L. No. 102-575, § 1802(a), 106 Stat. 4600.¹³

11 As explained above, the 2008 Experimental Plan does not implement MLFF. The
12 decision to adopt MLFF was made in the 1995 FEIS and the 1996 ROD. The Trust does not
13 attempt to show that the two new components of the Experimental Plan are detrimental to
14 values protected by the GCPA. And, as noted earlier, any judicial challenge to the FEIS and
15 ROD is untimely. *See* 28 U.S.C. § 2401(a); *Sierra Club*, 857 F.2d at 1315.

16 The Trust has also failed to show that the 2008 Experimental Plan runs afoul of the
17 complex balancing responsibility imposed on the Secretary of the Interior by the GCPA.
18 Section 1802(a) of the GCPA provides that “[t]he Secretary shall operate Glen Canyon Dam
19 in accordance with [the 1995 FEIS developed under] section 1804 and exercise other
20 authorities under existing law in such a manner as to protect, mitigate adverse impacts to, and
21 improve the values for which Grand Canyon National Park and Glen Canyon National
22 Recreation Area were established, including but not limited to natural and cultural resources
23 and visitor use.” Pub. L. No. 102-575, § 1802(a), 106 Stat. 4600. Section 1802(b) directs
24 the Secretary to “implement [section 1802] in a manner fully consistent with and subject to
25

26 ¹³ The Trust’s briefs characterize Claim 8 as alleging that Reclamation failed to
27 consider the GCPA when creating the 2008 Experimental Plan. Dkt. ##132, 144. But the
28 Supplemental Complaint does not plead a procedural claim. It alleges that the 2008
Experimental Plan – specifically, MLFF – violates the GCPA. *See* Dkt, #23, ¶ 87.

1 . . . the Colorado River Storage Project Act” and other statutes “that govern allocation,
2 appropriation, development, and exportation of the water of the Colorado River basin.” *Id.*
3 at § 1802(b). The Colorado River Storage Project Act, in turn, requires that the Dam “be
4 operated . . . so as to produce the greatest practicable amount of power and energy that can
5 be sold at firm power and energy rates.” 43 U.S.C. § 620f.

6 These broadly-worded provisions impose on the Secretary of the Interior an obligation
7 to balance many different interests in the operation of Glen Canyon Dam. Reclamation’s
8 Environmental Assessment noted that the 2008 Experimental Plan was designed to do just
9 that – “to determine if prescribed releases can benefit resources located downstream of the
10 dam in Glen, Marble, and Grand Canyons, Glen Canyon National Recreation Area and Grand
11 Canyon National Park, respectively, in accordance with applicable federal law, including the
12 GCPA, while meeting the project purposes of the dam.” Dkt. #136, Ex. 1 at 5. Reclamation
13 evaluated not only the two components of the Plan, concluding that they would benefit the
14 chub, but also the effect of the Plan on other interests and obligations such as power
15 generation.¹⁴ *Id.* at 35-37. The Trust has not shown that Reclamation’s balancing of these
16 interests violates the broad directives of the GCPA, particularly in light of the “highly
17 deferential” approach the Court must take under the APA. *Nw. Ecosystem Alliance*, 475 F.3d
18 at 1140.

19 Moreover, to the extent the Trust asks the Court to enforce the broad, programmatic
20 directives of the GCPA, it asks the Court to undertake a task entrusted by Congress to the
21 Secretary of the Interior. The Supreme Court has cautioned against such judicial actions:

22 If courts were empowered to enter general orders compelling compliance with
23 broad statutory mandates, they would necessarily be empowered, as well, to
24 determine whether compliance was achieved – which would mean that it

25 ¹⁴ The Environmental Assessment found that the electric-power-related cost of the
26 2008 high flow experiment would be \$4.1 million, and that the cost of replacing power lost
27 during the annual September-October steady flows would be \$815,000 annually. Dkt. #136,
28 Ex. 1 at 37. The assessment further found that replacement power most likely would be
generated by coal-fired power plants, resulting in approximately 45,800 tons of additional
carbon emissions into the atmosphere. *Id.*

1 would ultimately become the task of the supervising court, rather than the
2 agency, to work out compliance with the broad statutory mandate, injecting the
3 judge into day-to-day agency management. . . . The prospect of pervasive
oversight by federal courts over the manner and pace of agency compliance
with such congressional directives is not contemplated by the APA.

4 *Norton v. S. Utah Wilderness Alliance*, 542 U.S. 55, 66-67 (2004).

5 The Trust has not established a violation of the GCPA. The Court will enter summary
6 judgment in favor of Reclamation on Claim 8.

7 **VI. Claim 1 – Does the Operation of the Dam Jeopardize the Chub?**

8 Section 7(a)(2) of the ESA requires each federal agency to “insure that any action
9 authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued
10 existence of any endangered species or threatened species[.]” 16 U.S.C. § 1536(a)(2).
11 Claim 1 alleges that Reclamation’s operation of the Dam under MLFF is jeopardizing the
12 humpback chub in violation of this provision. To jeopardize “means to engage in an action
13 that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood
14 of both the survival and recovery of a listed species in the wild by reducing the reproduction,
15 numbers, or distribution of that species.” 50 C.F.R. § 402.02.

16 Reclamation’s primary defense to Claim 1 is the 2008 Opinion. Reclamation asserts
17 that it reasonably relied on the FWS opinion and therefore cannot be found to have violated
18 the ESA. Applicable federal regulations make clear, however, that Reclamation has an
19 independent duty to determine the lawfulness of its actions: “Following the issuance of a
20 biological opinion, the Federal agency shall determine whether and in what manner to
21 proceed with the action in light of its section 7 obligations and the . . . biological opinion.”
22 50 C.F.R. § 402.15(a). The Ninth Circuit has explained that “[c]onsulting with FWS alone
23 does not satisfy an agency’s duty under the Endangered Species Act. An agency cannot
24 ‘abrogate its responsibility to ensure that its actions will not jeopardize a listed species; its
25 decision to rely on a FWS biological opinion must not have been arbitrary or capricious.”
26 *Res. Ltd., Inc. v. Robertson*, 35 F.3d 1300, 1304 (9th Cir.1994) (quoting *Pyramid Lake*
27 *Paiute Tribe of Indians v. U.S. Dep’t of the Navy*, 898 F.2d 1410, 1414 (9th Cir. 1990)); *see*

28

1 *also Ctr. for Biological Diversity v. Rumsfeld*, 198 F. Supp. 2d 1139, 1156-57 (D. Ariz.
2 2002).

3 In addition to the Environmental Assessment addressed above, Reclamation produced
4 a substantial Biological Assessment of the 2008 Experimental Plan. *See* Dkt. #27, Ex. 5.
5 This Biological Assessment was issued in December of 2007 as part of Reclamation's
6 consultation with FWS. Information from the Biological Assessment is relevant to the
7 Court's evaluation of Claim 1, and will be summarized in the following paragraphs. To
8 illustrate the science relied on in the Biological Assessment, the Court will include
9 Reclamation's abbreviated citations to various studies. More complete citations can be found
10 in section 7 of the Biological Assessment. *See* Dkt. #27, Ex. 5 at 97-134.

11 In 2001, the humpback chub population below the Dam reached a low of 2,400 to
12 4,400 fish (Gloss and Coggins 2005; Coggins, et al. 2006). The population subsequently
13 increased by 20 to 25%, reaching approximately 6,000 by 2006 (Coggins 2007). Population
14 modeling indicates that the increase actually began as early as 1996, but no later than 1999
15 (Coggins 2007). The increase thus started several years before Reclamation's elimination
16 of rainbow trout, higher water temperatures due to drought, the 2000 steady flow experiment,
17 or the 2004 high flow test, all of which should benefit the chub. Dkt. #27, Ex. 5 at 67-68.

18 Recent data also show greater numbers of young humpback chub in the mainstem of
19 the Colorado River than in previous years. During 2002-2006, a total of 442 humpback chub
20 were captured in the mainstem as far as 30 miles upstream from the confluence with the
21 Little Colorado River (Ackerman 2007). Of the 442 fish, 225 were caught between 11 and
22 30 miles upstream of the Little Colorado. It is unlikely that young humpback chub could
23 swim upstream for that distance in cold river temperatures.¹⁵ The distribution of these fish,
24 as well as the fact that they were smaller in size than chub located below the Little Colorado
25

26
27
28 ¹⁵ Studies have established that chub tire more quickly in cold temperatures than in
pre-Dam river temperatures. *See* Dkt. #136, Ex. 11 at 22.

1 River, suggest that the spawning source for the fish is at least 11 miles upstream of the Little
2 Colorado confluence. Dkt. #27, Ex. 5 at 67-68.

3 Young-of-year and juvenile chub observed outside the Little Colorado River were
4 most abundant 50 to 70 river miles below the Little Colorado during 2000 and 2004, and 100
5 to 140 river miles below the Little Colorado during 2000 (Ackerman 2007; AGFD 1996;
6 Johnstone and Loretta 2004, 2007; Trammell, et al. 2002). Seine catches of all young-of-
7 year humpback chub outside the nine main groups in the Grand Canyon were, in 2004, at
8 their highest level in 21 years (Johnstone and Loretta 2007). The Middle Granite Gorge
9 group of humpback chub (which is more than 50 river miles downstream from the Little
10 Colorado) has been stable or increasing in size since 1993 (Trammell, et al. 2002) and may
11 be sustained by migration from the Little Colorado group as well as local reproduction.
12 Some scientists (Valdez, et al. 2000a) have identified this group as the most likely location
13 for a second spawning population in the main channel. Dkt. #27, Ex. 5 at 68. Four juvenile
14 humpback chub were caught 170 river miles below the Little Colorado River in 2005
15 (Ackerman, et al. 2006). The small size of these fish and the low probability that they could
16 survive the extreme rapids of the inner gorge of the Grand Canyon strongly suggest that their
17 origin is natural reproduction outside the Little Colorado River. *Id.* at 24.

18 As noted above, in addition to these positive trends, Reclamation has established a
19 second spawning population of chub above Chute Falls on the Little Colorado River
20 (Sponholtz, et al. 2005; Stone 2006). Chub survival and growth rates at this new location
21 have been high. The population above Chute Falls has been reproducing and moving
22 downstream in the Little Colorado (Sponholtz, et al. 2005; Stone 2006), and now appears to
23 be a new source for humpback chub in the lower portions of the Little Colorado River and
24 in the mainstem (Stone 2007). Dkt. #27, Ex. 5 at 67-69.

25 Reclamation has also engaged in several rounds of mechanical removal of rainbow
26 trout. Because the chub population was increasing before these predators were removed, the
27 removal likely will result in further increases in the chub population. Warming of the river
28 due to drought conditions in Lake Powell is also likely to have beneficial effects. *Id.* at 74.

1 The Trust does not dispute the accuracy of these numbers, but it does assert that chub
2 reproduction outside of the Little Colorado River has not been clearly established. The Trust
3 primarily argues that the best science continues to show that MLFF destroys or adversely
4 modifies critical chub habitat in the mainstem. That, of course, is the issue raised by Claim
5 2. For purposes of Claim 1, the Court must determine whether the operation of MLFF under
6 the current 2008 Experimental Plan “reasonably would be expected, directly or indirectly,
7 to reduce appreciably the likelihood of both the survival and recovery” of the humpback
8 chub. 50 C.F.R. § 402.02.¹⁶

9 Although the Trust has cited some studies suggesting as a general matter that MLFF
10 is detrimental to the chub population, the more specific population studies show that the chub
11 is rebounding. The population increased 20 to 25% from 2001 to 2006. A new and separate
12 spawning population has been established in the Little Colorado River. There is reason to
13 believe that chub are reproducing in mainstem areas away from the Little Colorado. And the
14 non-native fish removal undertaken by Reclamation is likely to result in further population
15 gains.

16 Given this information, the Court is strongly inclined to conclude that Reclamation’s
17 operation of the Dam under MLFF, with the two experimental components and eight
18 additional conservation measures of the 2008 Experimental Plan, is not arbitrary, capricious,
19 an abuse of discretion, or otherwise not in accordance with law. 5 U.S.C. § 706(2)(A).
20 Reclamation has considered the relevant science on chub survival, and the Court “must defer
21 to the informed discretion of the responsible federal agencies.” *Marsh*, 490 U.S. at 377.
22 Moreover, when experts express conflicting views, “an agency must have discretion to rely
23 on the reasonable opinions of its own qualified experts even if, as an original matter, a court
24 might find contrary views more persuasive.” *Id.* at 378.

25
26 ¹⁶ There currently exist no recovery goals for the chub against which recovery can be
27 measured. Reclamation issued such goals, but they were set aside in a lawsuit filed by the
28 Trust. *See Grand Canyon Trust v. Norton*, No. 04-CV-636 PHX FJM, 2006 WL 167560 (D.
Ariz., Jan. 18, 2006). New recovery goals apparently have not yet been established – the
parties have cited none in their briefs.

1 One aspect of Claim 1, however, persuades the Court to withhold judgment until after
2 FWS has reconsidered the 2008 Opinion. As noted above, jeopardy under the ESA includes
3 “both the survival and recovery” of the endangered species. 50 C.F.R. § 402.02. Although
4 recent studies show that chub are surviving below the Dam and appear to be recovering,
5 FWS will specifically address the question of recovery when it reviews the 2008 Opinion.
6 Because recovery is part of ESA’s no-jeopardy requirement, the Court concludes that it
7 should await FWS’s analysis before ruling on Claim 1.

8 **VII. Claim 2 – Does the Operation of the Dam Destroy Critical Chub Habitat?**

9 Section 7(a)(2) of the ESA requires each federal agency to insure that its action is not
10 likely to “result in the destruction or adverse modification of the habitat of [any endangered]
11 species[.]” 16 U.S.C. § 1536(a)(2). Claim 2 alleges that Reclamation is violating this
12 provision by destroying and adversely modifying the chub’s critical habitat. Destruction or
13 adverse modification “means a direct or indirect alteration that appreciably diminishes the
14 value of critical habitat for both the survival and recovery of a listed species. Such
15 alterations include, but are not limited to, alterations adversely modifying any of those
16 physical or biological features that were the basis for determining the habitat to be critical.”
17 50 C.F.R. § 402.02. In determining the Colorado River to be critical habitat for the chub,
18 FWS identified “areas of the Colorado River system that are inhabited or potentially
19 habitable by fish for use in spawning, nursery, feeding, and rearing, or corridors between
20 these areas.” 59 Fed. Reg. 13374 (Mar. 21, 1994). Numerous studies cited by both parties
21 identify such areas as sandbars, backwaters, and other nearshore habitat.

22 Virtually all of the science contained in the administrative record concludes that
23 MLFF releases from the Dam destroy or adversely modify nearshore habitat. As already
24 noted, FWS’s 1994 Opinion concluded that MLFF flows were “likely to destroy or adversely
25 modify designated critical habitat.” Dkt. #136, Ex. 17 at 3. This was not only because of
26 nearshore erosion, but also because fluctuating flows limited solar warming and food
27 production in backwaters. *Id.* at 23, 27. FWS reiterated these concerns in several documents
28 delivered to Reclamation, as described earlier in this order. FWS’s 2007 report noted that

1 “large scale fluctuations in daily discharge . . . result in stage changes that are thought to
2 reduce the availability and quality of nearshore habitats” for the chub. Dkt. #22, Ex. 13 at
3 21. This report further noted that fluctuating flows cause “remaining sediment to be lost
4 continually.” *Id.* at 20.

5 In a 2002 study, the United States Geological Survey (“USGS”) and other scientists
6 found that “releases from Glen Canyon Dam are continuing to erode sandbars and beaches
7 in the Colorado River in Grand Canyon National Park.” Dkt. #132, Ex. 47 at 1. The 2005
8 SCORE Report issued by USGS noted “that dam operations during the last 10 years under
9 the preferred alternative of the MLFF have not restored fine-sediment resources of native fish
10 populations in Grand Canyon.” Dkt. #22, Ex. 11 at 208. The report further observed that
11 “restoration of sand-based, nearshore habitats, termed ‘backwaters,’ has also not been
12 realized under the strategy of MLFF and hydrologically triggered experimental high flows.”
13 *Id.* at 214.

14 A 2007 USGS report concluded that “[t]he much hoped for outcome of modest
15 improvement in sandbar resources, as originally proposed and predicted in the [1995 FEIS]
16 has not been realized. Dkt. #91, Ex. 22 at 213. A 2008 USGS peer-reviewed publication
17 concluded that “[D]am releases that vary seasonally and daily to meet electricity demand,
18 such as approved by the ROD, are not optimal for retaining sand on the riverbed prior to
19 redistribution to higher elevations by high flow events.” Dkt. #113, Ex. A at 6.

20 Reclamation’s Biological Assessment does not disagree. It notes that the 1996 high
21 flow experiment created 26% more backwaters, but “most of these newly created habitats
22 disappeared within two weeks due to reattachment bar erosion (Bruder, et al. 1999; Hazel,
23 et al. 1999; Parnell, et al. 1997; Schmidt, et al. 2004).” Dkt. #27, Ex. 5 at 84. It further notes
24 that “[n]early half of the total sediment aggradation in recirculation zones had eroded away
25 during the 10 months following the experiment and was associated in part with relatively
26 high fluctuating flows of 15,000-20,000 cfs (Hazel, et al. 1999).” *Id.* The Biological
27 Assessment concluded that “[p]ost-test flow regimes to minimize erosion have yet to be
28 developed and tested.” *Id.*

1 As already mentioned, during oral argument counsel for Reclamation was unable to
2 identify any study showing that MLFF does not harm critical habitat. After the argument,
3 and presumably after searching the administrative record, counsel submitted a supplemental
4 brief (Dkt. #161) that cited one 2004 modeling study by Korman and others. *See* Dkt. #151,
5 Ex. 31. The study used a two-dimensional mathematical model to predict the effects of
6 various flow patterns on nearshore habitat at seven discrete locations downstream of the
7 Little Colorado River. It did not involve any actual tests of the river itself. The model
8 suggested that “the effect of dam operations on suitable fish habitat is extremely variable
9 across seasons and reaches, and the effect is not always negative,” and found that “[d]am
10 operations have increased suitable shoreline habitat availability in the spring but have
11 reduced it in most reaches from August to February.” *Id.* at 395. This single modeling study
12 does not appear to provide a sufficient basis for reasonably concluding that MLFF operations
13 do not destroy or adversely modify critical habitat. The overwhelming weight of the science
14 suggests otherwise.

15 Given this evidence, the Court is strongly inclined to conclude that MLFF Dam
16 operations destroy and adversely modify chub critical habitat in violation of the ESA. In
17 light of the deference to be accorded federal agencies under the APA and because FWS will
18 be required to address this very issue on remand, however, the Court concludes that it should
19 withhold judgment on Claim 2 until FWS has completed its review.

20 **VIII. Claim 3 – Does the Operation of the Dam “Take” the Chub?**

21 Section 9 of the ESA makes it unlawful for any person to “take” any endangered
22 species. 16 U.S.C. § 1538(a)(1)(B). “The term ‘take’ means to harass, *harm*, pursue, hunt,
23 shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.” 16
24 U.S.C. § 1532(19) (emphasis added). The term “harm” includes “significant habitat
25 modification or degradation where it actually kills or injures wildlife by significantly
26 impairing essential behavioral patterns, including breeding, feeding or sheltering.” 50 C.F.R.
27 § 17.3. The Ninth Circuit has held, therefore, that “a habitat modification which significantly
28 impairs the breeding and sheltering of a protected species amounts to ‘harm’ under the ESA”

1 and therefore constitutes taking under 16 U.S.C. § 1538(19). *Marbled Murrelet v. Babbitt*,
2 83 F.3d 1060, 1067 (9th Cir. 1996).

3 As noted above, the evidence produced to date strongly suggests that MLFF Dam
4 operations destroy and adversely modify critical chub habitat. The effect on chub breeding
5 and sheltering is less clear in light of recent chub population data. Because the Court has
6 elected to withhold ruling on habitat modification until after reviewing FWS's revised
7 biological opinion, it likewise will defer ruling on Claim 3 until that time.

8 **IX. Issues for Additional Briefing on Remedy.**

9 In the order set forth below, the Court directs the parties to file additional briefing
10 after FWS reconsiders the MLFF portion of the 2008 Opinion. That briefing is to include
11 the question of appropriate remedies in the event the Court rules in favor of the Trust on
12 Claims 1, 2, or 3. To ensure that the parties address issues of concern to the Court on the
13 question of remedies, the Court will set forth additional thoughts here.

14 District courts have “broad latitude in fashioning equitable relief when necessary to
15 remedy an established wrong.” *Nat’l Wildlife Fed’n*, 524 F.3d at 936 (quoting *Alaska Ctr.*
16 *for the Env’t v. Browner*, 20 F.3d 981, 986 (9th Cir. 1994)). A court may require specific
17 actions from an agency on remand, but must leave the substance and manner of achieving
18 compliance to the agency. *Id.* at 937. Other than cases recognizing the district court’s broad
19 equitable powers, the Court has found no Ninth Circuit cases discussing the nature of
20 appropriate remedies in APA and ESA cases. The United States Court of Appeals for the
21 District of Columbia Circuit, which hears many federal agency matters, has provided helpful
22 guidance. It holds that the decision whether to remand a matter for further agency
23 consideration or simply to order the agency to follow a different course “depends on (1) the
24 seriousness of the [agency’s] deficiencies (and thus the extent of doubt whether the agency
25 chose correctly) and (2) the disruptive consequences of an interim change that may itself be
26 changed.” *Milk Train v. Veneman*, 310 F.3d 747, 755-56 (D.C. Cir. 2002) (quoting
27 *Allied-Signal Inc. v. U.S. Nuclear Regulatory Comm’n*, 988 F.2d 146, 150-51 (D.C. Cir.
28 1993)).

1 The deficiencies in agency actions in this case are serious failures of administrative
2 analyses, but it is not clear they have harmed the humpback chub. As noted above, chub
3 population is increasing below the Dam, and recent events such as Reclamation's removal
4 of rainbow trout and the warming of river temperatures due to drought suggest that the
5 increases will continue. Indeed, data released in the last few weeks by the USGS confirm
6 the favorable trend, showing that the population of adult chub downstream of the Dam
7 increased again in 2008, reaching an estimated 7,650 – a 50% increase since 2001. Dkt.
8 #165, Ex. 2 at 2.¹⁷

9 Enjoining Reclamation from using MLFF and requiring it to implement SASF (or
10 even RPA element 1A), as the Trust requests, would have disruptive consequences for the
11 many interests that rely on Dam operations, particularly electrical power interests. This is
12 not a reason to decline the injunction, however, for “[t]he plain intent of Congress in enacting
13 [the ESA] was to halt and reverse the trend toward species extinction, *whatever the cost.*”
14 *TVA v. Hill*, 437 U.S. 153, 184 (1978) (emphasis added). But mandating the use of SASF
15 or a similar seasonally adjusted steady flow regime could be disruptive to the humpback
16 chub. In light of recent gains in chub population and the introduction of other measures
17 likely to continue those gains, FWS and Reclamation concluded that a go-slow approach was
18 advisable. FWS expressed concern that longer periods of steady flow could strengthen non-
19 native warm-water fish that prey on the chub and compete for food and habitat. Dkt. #136,
20 Ex. 11 at 49; *see also* Ex. 1 at 11. It is not clear, therefore, that SASF would be an
21 unqualified success for the chub.

22
23
24 ¹⁷ This new information was not contained in the administrative record that was before
25 FWS or Reclamation at the time of the actions challenged in this lawsuit, but may be
26 considered by the Court in evaluating appropriate remedies. *See Friends of the Clearwater*
27 *v. Dombeck*, 222 F.3d 552, 560 (9th Cir. 2000). For this reason, the Court will grant the
28 Federal Defendants' motion for leave to file notice of the recent study results. Dkt. #165.
In fairness to the Trust, the Court has also reviewed the time-lapse videos submitted by the
Trust but previously excluded by the Court because they were not part of the administrative
record. *See* Dkt. #157.

1 Moreover, more than a decade of studies appears to have raised questions about
2 whether SASF is the best method for conserving nearshore habitat. The USGS's 2005
3 SCORE Report expressed uncertainty on this issue:

4 Other dam operations may be more effective at retaining tributary inputs [of
5 sand into the Colorado River], such as [MLFF] operations modified such that
6 equal volumes of water are released from the dam each month. Alternatively,
7 a scenario of seasonally adjusted steady flows, which was an alternative in the
8 [1995 FEIS], may be effective. Because of the severely reduced sand supply,
9 however, even during periods of minimum release requirements of 8.23
10 million acre-feet (10,148 million m³) per year *the possibility exists that no
operational scenario will result in management objectives being achieved for
restoring sandbars, simply because of the volume of water that must be
released on an annual basis. If so, other, more effective alternatives for
restoring and maintaining sandbars and related habitats may need to be
evaluated.*

11 Dkt. #136, Ex. 18 at 27 (emphasis added). Thus, the SCORE report, which the Trust
12 characterizes as the most comprehensive evaluation of river conditions to date, expresses
13 uncertainty as to whether SASF is the best approach for conserving chub habitat.

14 The Court is very aware that it is not an expert on these matters. The continuing
15 favorable trend in chub population and uncertainties about the effect of SASF – both on the
16 chub and backwater habitat – cause the Court concern about whether the remedy for an ESA
17 violation should be an injunction requiring the implementation of SASF. The Court asks the
18 parties to address this concern, and other thoughts they have on the appropriate remedy if an
19 ESA violation is established, in the briefing required below.¹⁸

20 **IT IS ORDERED:**

- 21 1. The 2008 Opinion's conclusion that MLFF does not violate the ESA is
22 remanded to FWS for reconsideration consistent with this order. If, after
23 reconsideration, FWS again concludes that MLFF does not violate the ESA,
24

25 ¹⁸ Federal Defendants should not assume from these comments that the Court is
26 unwilling to order the implementation of a steady-flow regime. The Court believes that
27 additional FWS input is required in the form of a revised opinion, and will read with interest
28 the parties thoughts on an appropriate remedy, but ultimately will seek to fashion an
appropriate remedy if it concludes that current Dam operations violate the ESA.

1 FWS should provide a reasoned basis for that opinion, explain its reasons for
2 the change from its previous pronouncements, address the issue of chub
3 recovery, and use the best available science. FWS shall have until
4 **October 30, 2009**, to revise the opinion. A copy of the new opinion shall be
5 provided to counsel for the Trust on or before the close of business on
6 **November 2, 2009**.

7 2. The portion of the 2008 Opinion finding that the two components of the 2008
8 Experimental Plan do not violate the ESA shall remain in effect. Reclamation
9 may continue operating the Dam in accordance with the 2008 Experimental
10 Plan.

11 3. If FWS's revised opinion concludes that MLFF operations do not violate the
12 ESA, the parties simultaneously shall file memoranda, not to exceed 25 pages,
13 addressing their respective positions on (a) the validity of the revised
14 biological opinion, (b) the merits of Claims 1, 2, and 3 in light of the revised
15 opinion, and (c) any remedies the Court should impose if it grants summary
16 judgment in favor of the Trust on Claims 1, 2, or 3. The memoranda shall be
17 filed by **December 4, 2009**. The parties simultaneously shall file reply
18 memoranda, not to exceed 15 pages, by **December 18, 2009**.

19 4. If FWS's revised opinion withdraws FWS's conclusion that MLFF operations
20 do not violate the ESA, or otherwise concludes that MLFF violates the ESA,
21 the parties shall file a status report by **November 6, 2009**, advising the Court
22 of the new conclusion. The Court will then schedule a status conference with
23 the parties to learn Reclamation's intentions in light of the new opinion and to
24 consider what additional steps the Court should take in this litigation,
25 including the possibility of further briefing and remedies.

26 5. The Trust's motions for summary judgment (Dkt. ##15, 131) are **granted** with
27 respect to Claim 7 and **denied** with respect to Claims 6 and 8.
28

