



# Upper Colorado River Endangered Fish Recovery Program

Dated: July 21, 2015

May 27, 2015, Final Management Committee Webinar Summary

**Participants: See Attachment 1**

**CONVENE: 9:00 a.m.**

Introductions, review/modify agenda and time allocations, and appoint a timekeeper.

1. Approve March 24, 2015 draft meeting summary – The draft summary was posted to the fws-coloriver listserv by Angela Kantola on March 31, 2015. No comments have been received to date. The Committee approved the summary as written.
2. Washington D.C. briefing trip report – Henry Maddux said the trip went well with good participation from both programs. Pete Cavalli (Upper Basin Biology Committee) and Bill Miller (San Juan Biology Committee chair) both attended; it's very helpful to have biologists participate to respond to questions regarding status of the fish and so forth. The congressional and committee staffs and agency representatives visited in D.C. always appreciate the diversity of participants from the recovery programs. Colorado wasn't able to participate again this year; other Program partners hope to work with Colorado early next year to see if there might be a way they can get permission to participate. The group distributed both the Program Highlights booklets and flash drives this year. The flash drives got mixed reviews – some folks loved them, others weren't allowed to use them for security reasons, so we may need to consider different options next year. The appropriations committees seemed fairly far along in their process, with some having already held hearings. Next year we may try to move the trip to the week before the Easter recess (even though this does shorten the time available to complete the briefing book). "Dear Colleague" letters that partners have prepared in the past may be back in vogue. Committee staff believes they are helpful, so we'll likely do those letters next year. Tom Pitts agreed and said that Constituents appreciate these and the strong bipartisan support they show. Henry said that in many of the visits, the group was asked about the status of the fish and when the Program will "end" (shift to maintaining recovery). In the meeting with Interior representatives (FWS & NPS), the discussion turned to showing success and they had a good conversation about moving toward downlisting and eventual delisting. Next year, we'll begin dialogue about reauthorizing the programs' funding legislation, so we'll need to begin planning for that. The group split up to make a number of concurrent visits this year, which worked well. Henry said they'd like to reduce the briefings to Tuesday through Thursday next year plus a few "clean-up" visits to missed offices on Friday morning. They had some difficulty meeting with some of the subcommittees – not all were responsive to requests for meetings. However, they did drop off briefing materials for those they didn't meet with. Henry said the draft trip report will be out soon. Patrick McCarthy affirmed the interest was expressed in eventual downlisting/delisting and what post-recovery maintenance will look like, especially with Interior leaders. Perhaps we should consider preparing more substantive materials along these lines for next year. Tom Pitts suggested that in addition to discussing post-maintenance recovery, we also need to clearly define the path to recovery. Tom Pitts emphasized the necessity of this trip to keep our congressional delegations and others informed about the recovery programs; Henry agreed. We will need to have a clear message regarding timelines to recovery next year. Patrick said that in several briefings he heard the notion expressed that securing flows (via PBOs, RODs, etc.) should be enough, so we need to better emphasize *all*

the actions needed for recovery (and for the San Juan, the limitations on flows and the need for compensatory measures). Henry noted the insert and fold-out on nonnative fish piece in this year's briefing book was excellent this year. Tom Chart thanked the trip participants for the hard work they put into the trip. Tom Chart asked about any other things we should highlight next year, in addition to balance of recovery elements and timelines to recovery. Henry suggested a half page on post-recovery maintenance would be helpful. Henry added they saw quite a bit of turnover in committee and congressional staff this year so they were briefing many folks about the programs for the first time.

### 3. Updates

- a) Floodplains (Johnson Bottom, Stewart Lake, Leota, others) – Tom Chart discussed Green River floodplain management, saying we're in the midst of peak flows now. The Larval Trigger Study Plan formed the crux of the spring flow request from Flaming Gorge to have peak flows coincide with the presence of larval razorback suckers. Conditions were drier this year than last, with target flows of 8,300 – 14,000 cfs at Jensen. The first larval razorback was detected on May 7 this year, which is one week earlier than we've ever seen before (data goes back to mid-nineties). (February and March warm conditions likely contributed to this.) The Green River didn't freeze over this year, for the first time in Program biologists' memory. Flows reached 8,300 cfs on May 8 and the Stewart Lake gate was opened. The Flaming Gorge peak release (7,500-8,000 cfs) began May 14 and lasted 6 days with a provisional average daily peak of 14,900 cfs (15,800 cfs instantaneous) at Jensen on May 21. We saw good connection at Stewart Lake throughout the releases, and also at Johnson Bottom. The gates at Johnson were opened on May 11. Larvae have been detected in both of these floodplains. The Escalante Ranch and Above Brennan floodplain sites also connected (though Brennan had a heavy concentration of nonnative fish). Johnson and Stewart have gates to prevent larger nonnative fish from entering. Biologists will monitor water quality at these sites throughout the summer and return fish to the river before water quality degrades. Crews also have been sampling for larval fish in the Gunnison River and in the 18-Mile Reach of the Colorado River. Tom thanked the field biologists for their diligent monitoring of these sites.
- b) Lake Powell – Tom Chart said the San Juan Program has taken the lead on Lake Powell investigations and found large concentrations of razorback sucker and Colorado pikeminnow in the San Juan inflow. A waterfall at that inflow typically prevents fish from returning upstream. Investigations on the Colorado River arm began last year. The Service's Grand Junction CRFP office and UDWR-Moab have collected 215 razorback suckers in 7 trips so far this year; 17 of these fish did not have tags (don't know if those are lost tags or possibly wild-produced fish). Some fish were stocked as early as 2003 in the Green, Colorado, and Gunnison rivers. Two bonytail also were captured this year. Razorback suckers have been captured in several locations and in spawning condition. Results from 2014 larval sampling indicate that razorback sucker larvae were the second-most commonly caught in light traps (young threadfin or gizzard shad being the most common). Work continues in the San Juan arm also. Using different configurations of PIT tag antennas, biologists have detected 400 razorback suckers, 10 Colorado pikeminnow, and one bonytail below waterfall so far this year. Several of the razorbacks had been stocked in the Green and Colorado Rivers, indicating interchange between fish stocked in the San Juan and Colorado River subbasins. Dave Speas said the large 2014 larval presence also is significant in light of limited 2014 sampling window. Brian Hines said UDWR has tried to set light traps on every trip and have collected 81 samples with larval fish this year. Henry asked if inflow areas are included in population estimates; Tom Chart said not to date. We're trying to glean population estimates on razorback through Colorado pikeminnow monitoring, which doesn't include Cataract Canyon or Lake Powell inflows. Brian would like to see if they can generate population estimates from the inflow next year. Tom Pitts asked how these fish "count" toward progress to recovery; Tom Chart said nothing precludes them from being counted; especially on the Colorado

River arm where there's no barrier to returning upstream. These fish contribute to recovery as much as main channel fish. Henry asked if the Biology Committee is considering expanding use of novel antenna arrays. Tom Chart said we've placed portable antennas on the Green River razorback sucker spawning bar and Dave Speas has deployed some in canyon habitat to detect humpback chubs. Mark McKinstry and others deployed a pit antenna overnight just below the San Juan waterfall next to a fyke net; no razorback suckers were caught in the net while 60 razorback were detected with the antenna. Sonic tags also have been deployed in the San Juan arm, also. Dave Speas added that a workshop on how to use these technologies and analyze data was part of the 2015 Researchers Meeting and the Biology Committee will be discussing this further tomorrow.

c) Nonnative fish

- Screening – Kevin McAbee provided the Committee with a first draft memo on potential screening in March (cost-share, priorities, etc.). He incorporated comments from Tom Chart, Henry Maddux, Melissa Trammell, and Patrick McCarthy to the extent possible and sent a revised draft back to the Management Committee a few weeks ago. Melissa's comments were the most substantial, focusing on reservoirs in the "red" category. Melissa is concerned about characterizing red reservoirs as ones for which the "Program will not provide funding to just preserve a nonnative sportfishery"; however, the only reservoirs classified red are those not possible to treat with current technology. This seems misguided in that it could mean we don't address problematic reservoirs if, for example, the state was unwilling. Kevin sees the red category as a way for the states to help anglers understand why they can't retain populations of problematic nonnative fish in reservoirs. He agreed with Melissa, however, that we don't want to just walk away from these reservoirs. Instead, his hope is that it will help set us up to develop new lake management plans, etc. Melissa suggested classifying the three reservoirs that we can't screen now as "black," and keep the red classification (and we can say we have no reservoirs in that category right now). Tom Chart noted that the red category positions the Program for locations where these most problematic species may turn up next. The Program should not bring funds to the red category situations because that would be in complete conflict with our Basinwide Strategy. Kevin referred to the list of reservoirs he provided, which can be used by the states to explain why they can't just screen a reservoir and retain problematic species in it. The list classifies a reservoir as green where removal actions occurring and there are no plans to maintain populations of problematic species. The list still has a number of unknowns, especially timelines and costs, because several will require new lake management plans, alternatives analysis, etc. >Kevin will work on finalizing the memo and we'll keep a review of the reservoir list on the Management, and possibly, Biology committee agendas. Kevin reviewed the reservoir list (Attachment 3). A group of PDO, BOR, CPW, UDWR and CRD representatives with net vendor Pacific Netting Products (PNP) regarding the Elkhead net (and discussed others such as Catamount and Highline). Kevin had expressed concern about installing the net right before runoff, but PNP says it only takes a day to actually install the net and CRD says the most difficult part of the work (earthmoving, anchor installation, etc.) will be completed long before runoff. The process is streamlined on Elkhead because the River District is managing the project, there's limited O&M, Colorado is providing cost-share, and Federal funds are being provided under an existing contract (other reservoirs will not have these advantages). PNP is a specialized company working on just these kinds of nets (large in-reservoir fish management nets). They think we are overestimating the costs of nets and said they believe they can provide substantially lower estimates. Krissy Wilson said UDWR has realized they won't be able to install the permanent screen on Starvation Reservoir until fall 2016 (as opposed to 2015).

- Colorado's Nonnative Fish Management Workgroup – Harry Crockett said the group has been considering options for increasing effectiveness of nonnative fish control. A fourth meeting will be held June 1 with the potential for two more meetings. After Monday, they will prepare recommendations for CPW's Director Broscheid. Being considered are: expanding I&E and public

awareness; evaluating harvest incentive programs; evaluating harvest regulations (unlimited bag and/or must-kill); evaluating more compatible species/hybrids; changing reservoir operations; and screening and containment options. The group has focused mostly on the first three. Harry says they expect to discuss harvest incentives, I&E, and must kill or catch and keep regulations (and likely emergency regulations at Elkhead) further on Monday. CPW held a weekend fishing contest at Ridgway as a test and is planning another this summer. Michelle said they presented this information to CWCB's board last week and notified the board that a portion of the Species Conservation Trust Funds would be used for the proposed harvest incentive program.

- Utah catch-and-kill regulations, education and outreach – Krissy said Matt Breen worked with Gary Winterton on a [Hooked on Utah program](#) on the Green River's native and nonnative fish (including harvest regulations, species identification, and recovery efforts) that aired May 3. It was a great show and done in a very positive and constructive manner. It emphasized importance of the endangered fish, that the place for nonnatives is in specific reservoirs rather than rivers, and even showed razorback sucker and bonytail. The program has aired on several channels and been featured in several papers, as well, so it's really getting message out and being very well received.
- CWCB's Species Conservation Trust Fund – Michelle said the bill passed the legislature, so they have funds for next year for the Ute Water Lease, \$1M for nonnative fish work (~\$500K on Walton Creek restoration and ~\$500K on projects prioritized with CPW, e.g., Ridgway net, etc.).

d) Capital projects – Brent Uilenberg reviewed the status of various capital projects.

- Stewart Lake gate – the gate is being fabricated. Provo BOR expected to work with UDWR Vernal and install after wetland draining in 2015 (likely September).
- Tusher Wash – Reclamation anticipates an FY16 award for the weir wall and they are negotiating the O&M contract. PIT antennas will be incorporated into the NRCS diversion rebuild once a design and construction company is selected.
- Wahweap dike repairs – Provo USBR and UDWR had a site visit and identified problems that could be corrected. A proposal for preparing designs is pending from USBR-Provo. Reclamation will keep the Program Director's office and the Management Committee informed as this proceeds.
- OMID – Reclamation still hopes to award a contract for the regulating reservoir this year. Existing facilities are operating well.
- Gravel-pit ponds – Upon further investigation, Reclamation has learned that the notches in the LaFarge Ponds were included to maintain equilibrium between ponds and river during runoff. Plugging those notches would require an engineering evaluation and potentially the need to reinforce berms with riprap. Brent is concerned about the implications for Program liability for channel migration were we to go this route. Lori Martin and Brent have concluded that plugging the notches is likely not viable, so we will need to consider chemical reclamation to control northern pike in those ponds. Tom Pitts asked if it's possible to contain rotenone in the ponds. Brent said this would only work in late summer after pumping the ponds to lower the water level. The ponds would then be treated and the chemical neutralized. Harry said water rights may be an issue in pumping the pond. In the interim, CPW installed a Merwin fish trap that can catch and retain fish for a week or so. Brent said Rifle's consultant thought there may be many more similar ponds along the river. Brent suggested we need a current inventory from Colorado (Mine Reclamation Board) on how many of these ponds were permitted with notches, then the next step will be to identify how many have nonnative fish. Access will be another concern. How to address the problem will be another question; >The Program Director's office will work with CPW to develop a plan. Harry acknowledged the problem of these ponds (and 2008 Google map images clearly show a number of them that connect), but suggested that we keep in mind that we've only caught a few dozen northern pike in the Colorado River. Dave Speas said the urgency is to get out ahead of the problem so we don't end up with a situation like we have in the Yampa River.

#### 4. Hydrology and related updates

- a) 2015 hydrology – Jana Mohrman reviewed current hydrological conditions (Attachment 4). Despite the rains, USDA still considers much of the basin to be in drought (due to soil moistures). However, it has been something of a “miracle May” and the precipitation is making a difference for overall runoff into Lake Powell. Reservoir managers will talk again next week and may authorize CROS releases. Models are forecasting above-normal precipitation in the basin for the next six months.
  - b) 15-Mile Reach Proposed water lease – Michelle said they presented the lease proposal to the Board, have been discussing details with Ute Water, and are working on contracting language, public concerns, etc. The Board supported moving forward. They hope to have the contract finalized by July 1 when funds are available. Then they’ll work with Jana, Reclamation, and HUP participants to determine water to be released from Ruedi (interests along the Fryingpan River will be kept informed). It is thought that this year’s lease will be from July 1 to September 30, 2015, and be renewable, with available water to be determined each year, up to 12,000 af. The water could be used for base flows this year, but we also could consider early spring augmentation in the future. The Committee thanked CWCB for pursuing this lease.
  - c) 15-Mile Reach PBO review – Jana Mohrman thinks we have in-house capability for the biological portion (e.g., nonnative fish control, screen operations, etc.). She’d hoped USBR-Loveland might help with hydrological portion, but Ron Thomason moving on to a different job with COE in Portland. However, he may be willing to work on it as a consultant if we’re interested (which Jana recommends). Jana would like to complete the review by end of CY 2015. >Jana will sketch out a proposal for WAC consideration.
  - d) Proposal for completing CFOPs report – Tom Pitts said this is a requirement of the 15-Mile Reach PBO (looking at an additional 20,000 af of water to augment peak flows). We’ve concluded that existing pools could be used under certain circumstances, but a report is pending on how that would be accomplished. Tom recommended that we develop a scope of work for a contractor to complete the report by the end of this year, using Section 7 funds at NFWF. Tom Chart supported this approach, and the Committee approved. >Jana and Tom Pitts will draft a scope for Program review and approval.
  - e) Green River flow recommendation evaluation – Tom Chart said Kirk LaGory and Kevin Bestgen are leading a team from the Biology and Water Acquisition committees (Dave Speas, Heather Patno, Melissa Trammell, Krissy Wilson, Jerry Wilhite, Jana Mohrman, Kevin McAbee, Tom Czaplá, and Tom Chart). They had a kickoff meeting in early May and reviewed an outline for the evaluation. The group will receive monthly updates from LaGory and Bestgen and hold bimonthly webinars. The first draft will go to the team in ten months with final evaluation completed eight months later. >Tom Chart will send Leslie James a list of the core documents.
5. FY 16-17 Program Guidance – In light of Program Guidance that exceeded anticipated available funding, the Committee discussed the spreadsheet of FY16-17 projects identifying “discretionary” vs. “non-discretionary” projects. Angela Kantola said it’s early in the FY16-17 work-planning process with costs and available funds not yet final, but it’s clear that we have more work to do than funds to do it. Brent said Reclamation had a 2016 request for supplemental appropriations to which Dave Speas and Mark McKinstry responded; Dave said he asked for about \$900K. Clayton applauded Dave and Mark for making that request. Henry suggested that with almost everything identified as “non-discretionary,” some of those items might be higher priorities than others. Angela Kantola agreed, saying we likely will have to develop a

draft work plan prioritizing projects to be funded at different funding levels.

6. 12:15 Updates on recovery planning (Chart, all, 20 min.)
  - a) Colorado pikeminnow population viability analysis (PVA) – Population viability analysis (PVA) will be pursued as the next step in Colorado pikeminnow recovery planning. The Program Director’s office is working on a draft scope of work that will be shared within three weeks. The PVA may be two-tiered (long-term viability and sensitivity analysis of threats). The comment deadline on the current draft plan has been extended to June 30.
  - b) Humpback chub – Letters of appointment were mailed last week with response requested within three weeks. A kickoff meeting will review terms of reference, roles and responsibilities.
  - c) Razorback sucker species status assessment (SSA) – The Service is working on a project plan outlining the process. Region 6 has the lead, but will coordinate with Regions 2 and 8. A contractor has been recommended to provide the Service technical input (compiling new information since the last 5-year review).
7. PDO Personnel updates (administrative and database positions); FWS representation on the Management Committee – The administrative office position is being reviewed in Human Resources. Next the Program Director’s office will draft a position description for the database manager. Bridget Fahey said she’s accepted position at Service headquarters overseeing the branch of listing and litigation, so this is her last meeting. Bridget said she’s really appreciated the opportunity to serve on the Management Committee of this Program, which is considered both a regional and national model for recovery implementation. The Committee is definitely a “performing” team that communicates with professionalism and respect. Bridget said she’s been impressed by how the Program accomplishes both day-to-day and year-to-year and she appreciates the Management Committee’s and Program Director’s office leadership. Bridget hopes to see Program partners in their future Hill visits. Henry Maddux, Tom Pitts and the Committee thanked Bridget for her excellent work. The Region and the States will really miss her and look forward to including her in briefings next year. Bridget said Seth Willey will represent the Service on the Committee in the interim while Mike Thabault finishes some reorganization.
8. Review previous meeting assignments – See Attachment 1.
9. Schedule next webinar – Webinar 9 a.m. to noon on July 21 (sufficient progress and other items); next meeting in Denver August 17-18 (with an evening barbecue on the 17<sup>th</sup>).

**ADJOURN: 12:45p.m.**

## Attachment 1: Participants

Colorado River Management Committee Webinar, May 27, 2015

### Management Committee Voting Members:

Brent Uilenberg	Bureau of Reclamation
Michelle Garrison	State of Colorado
Tom Pitts	Upper Basin Water Users
Steve Wolff	State of Wyoming
Bridget Fahey and Seth Willey	U.S. Fish and Wildlife Service
Melissa Trammell	National Park Service
Patrick McCarthy	The Nature Conservancy
Clayton Palmer	Western Area Power Administration
Leslie James	Colorado River Energy Distributors Association
Henry Maddux	State of Utah

### Nonvoting Member:

Tom Chart	Recovery Program Director, U.S. Fish and Wildlife Service
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### Recovery Program Staff:

Kevin McAbee	U.S. Fish and Wildlife Service
Angela Kantola	U.S. Fish and Wildlife Service

### Others

Jerry Wilhite	Western Area Power Administration
Harry Crockett	Colorado Parks and Wildlife
Dave Speas	Bureau of Reclamation
Jana Mohrman	U.S. Fish and Wildlife Service
Krissy Wilson	Utah Division of Wildlife Resources, Biology Committee Chair
Brian Wooldridge	U.S. Fish and Wildlife Service
Brian Hines	Utah Division of Wildlife Resources

## Attachment 2 Meeting Assignments

1. **Tom Pitts** will work with **Clayton Palmer and Brent Uilenberg** and provide a list of additional Program contributions to be added to the Program's budget pie chart that appears in each year's briefing book. *In process.* For the 2012 & 2013 *Program Highlights*, we used the \$37.4M annualized estimate. **Western** contracted with Argonne to model and report actual Flaming Gorge power replacement costs going back to 2001. Subsequently, **Western** will provide annual power replacement cost for the previous year each January for inclusion in the *Program Highlights* pie charts. Those pie charts will include a footnote explaining the calculation and assumptions. **Program participants** will identify other significant costs that have not previously reported (e.g., the Granby component of 10,825 which is estimated at \$16M, \$1.25M contributed by Colorado for GVWM and \$1.5M for OMID, CRWCD contributed property for OMID, etc.) (*Done*). **Tom Chart** will ask **Dave Campbell** to work with the SJCC to determine their additional costs not currently reported (e.g., Southern Ute expenditures on population model). Also, **Patrick McCarthy** will provide information on TNC's capital contributions in the San Juan Program. *A Cost Subcommittee met several times via conference call to review the proposal for and results of the power replacement costs analysis. 1/29/14: Water user and Colorado additional costs added and documented in Kantola's Briefing Book Pie Chart Data spreadsheet. Power revenue replacement costs "placeholder" from previous years retained until Argonne report finalized and approved (currently in revision). 3/20: Tom Pitts said that a few adjustments on water user contributions will need to be made, but we seem to have the totals and process for updating pretty much squared away. Tom Pitts will work with the water users to develop an annual report on O&M and contract costs on the 10,825 water. 5/27/15: Clayton Palmer said Argonne's work had been delayed by their involvement in the LTEMP EIS, but they recently had a conference call on completing work on power replacement costs and hope to have draft to share with the subcommittee soon.*
2. **Tom Pitts** will work with **Henry Maddux, Bridget Fahey, and Brent Uilenberg** to frame a discussion about what will recovery look like as it relates to flows, ongoing operation & maintenance, continued monitoring, and responding to nonnative fish concerns. They will then bring it back to the Management Committee at a later date. *2/3/15: Henry Maddux said this may be part of comments on the Recovery Plan and become part of the recovery plans. 5/27/15: Tom Pitts suggested this will need to outline commitments necessary to maintain the Program's accomplishments. Tom Chart said perhaps this is something that can be outlined before next year's briefing trip.*
3. **Michelle Garrison and Jana Mohrman** will add appropriate detail to the White River Management Plan scope of work for the in early November (*done*) and Colorado will issue an RFP (*in process*). **Michelle** will share the updated White River Management Plan SOW with the Management Committee when it goes out for bid and discuss who may want to be on the review panel. *3/24/15: If things go well, a contractor should be on board by June 2015. 5/27/15: Michelle said this remains high on their list of priorities.*
4. The **Program Director's office** will share Elkhead net design documents with the Biology and Management committees and ask anyone with concerns to respond within a week of that e-mail.
5. The draft revised compatible/non-compatible species list for reservoir stocking has been sent to the Biology Committee for approval (and then will come to the Management Committee). Yellow bullhead and blue catfish should be added to the list of non-compatible species. The footnote that smallmouth bass may be stocked in waters above Flaming Gorge Reservoir should say "in waters above Flaming Gorge Dam." The **Management Committee** had until April 7 (*deadline extended to April 24*) to submit comments on the draft memo regarding a priority system and cost share structure for reservoir screening to Kevin McAbee and Tom Chart, and then the **Program Director's office** will finalize the draft memo for Committee approval.

**The Management Committee** will review the reservoir screening table (once finalized) as a standing agenda item (perhaps on the Biology Committee's agendas, as well).

6. The **Program Director's office** will work with **CPW** to develop a plan to inventory reclaimed gravel pit ponds permitted with notches (Colorado Mine Reclamation Board), identify how many have nonnative fish, and how to address the problem.
7. **Jana Mohrman** will develop a proposal for WAC consideration to contract the hydrological portion of the 15-Mile Reach PBO review.
8. **Jana Mohrman** and **Tom Pitts** will draft a scope for Program review and approval for a contractor to complete the CFOPs report by the end of this year
9. **Tom Chart** will send Leslie James a list of the core documents for the Green River flow recommendation evaluation.

Reservoirs likely needing screens	Reasoning for screen	Proposed screen type and location	Status	Proposed completion date	Total estimated cost	Program portion
<b>Red Fleet Reservoir</b>	Currently contains illegally introduced <b>walleye</b> population; New LMP includes sterile predators ( <b>sterile walleye &amp; wipers</b> )	Downstream flat plate screen in entire channel (best estimate at this stage)	LMP will soon be sent to Wyoming, Colorado, and FWS per the Stocking procedures; Rotenone treatment planned to remove existing walleye; Screen alternatives analysis beginning	LMP - Summer 2015; Rotenone - October 2015; Screen - Temporary Spring 2016; Permanent Spring 2018	~\$210,000 (plus UDWR labor) for treatment; Screen unknown	\$90,225.00 (Rotenone portion)
<b>Elkhead Reservoir</b>	Contains <b>smallmouth bass</b> and <b>northern pike</b> populations; LMP draft includes management as a largemouth bass, bluegill, and black crappie fishery	Outlet screens (in place) & spillway net (in planning);	Net scheduled for install before runoff in 2016; LMP will likely be sent to Utah, Wyoming, and FWS by July 31; BOR, CWCB, & CRD are working on contracting; CRCD is coordinating engineering; CPW is drafting LMP	Net install - Spring 2016; LMP - Fall 2015	\$880,000 for first net (including installation)	\$380,000
<b>Starvation Reservoir</b>	Contains <b>fertile walleye</b> and <b>smallmouth bass</b> populations	Flat plate screen across stilling basin during spill (proposed); Outlet not screened but not thought to be a problem	Temporary screen in place. Operated in 2014 and 2015; If reservoir spills, requires rotenone stilling basin annually (accomplished in 2014); Install permanent screen with same orientation as the temporary screen; LMP to be drafted; may consider sterile walleye & smallmouth bass stocking as a management strategy;	Temporary Screen - March 2015 (done); Permanent Screen install - Fall 2016 (dependent upon completion and approval of LMP); Rotenone treatments in stilling basin - ongoing	\$300,000 initial estimate (90% design). Cost could be reduced if BOR force labor is used and scheduled to coincide with other onsite maintenance	\$ 225,000
<b>Ridgway Reservoir</b>	Contains illegally introduced <b>smallmouth bass</b> population	Preliminary evaluation demonstrates net, coanda screen, or rigid screen are likely the most effective and feasible alternatives	Tri-County WCD avoiding spills (avoided in 2014, avoided so far in 2015); CPW applied a no-limit bag for SMB on April 1, 2015, is conducting harvest tournaments, and is investigating other removal options;	net or screen - unknown		
<b>Catamount Reservoir</b>	Contains <b>northern pike</b> population	spillway net and penstock screening (preliminary concepts)	CPW actively removing northern pike; has reduced size structure of the pike population and improved other fish population conditions (trout, sucker, etc); over 14,000 pike removed; Catamount Metro has FERC exemption for hydropower that requires screening of new facilities;	spillway net - unknown;	ballpark of less than \$100,000 (PMP representatives)	

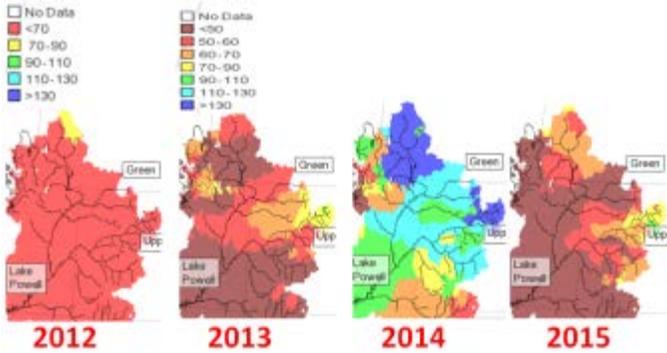
Reservoirs likely needing screens	Reasoning for screen	Proposed screen type and location	Status	Proposed completion date	Total estimated cost	Program portion
<b>Stagecoach Reservoir</b>	Contains <b>northern pike and walleye</b> populations	likely not needed if Catamount screened	CPW will remove northern pike as part of ongoing projects; Upper Yampa WCD can hold reservoir below pike spawning habitat in above average years, but not in below average years; CPW requests they hold reservoir lower in all years until after pike spawn; Other options (vegetation mowing, harvest incentive, etc.) have been discussed;	unknown		
<b>Chapman Reservoir</b>	Contains illegally introduced <b>northern pike</b> population	likely not needed if Catamount screened (upstream of Stagecoach per Harry) or if chemically treated	On CPW's chemical treatment schedule (postponed due to weather issues in previous years)	unknown		
<b>Crawford Reservoir</b>	Contains <b>smallmouth bass, walleye and northern pike</b>	unknown		unknown		
<b>Private Ponds (Larson Ponds, LaFarge Pond, etc.)</b>	Contain <b>northern pike and smallmouth bass</b> populations	unknown	Filling in stream breaches at La Farge (& likely others) is problematic for liability and cost reasons (per Uilenberg); CPW is actively netting (2015) to remove nonnative fish and prevent aquatic biota connections to the river;	unknown		
					<b>Total future Program commitments</b>	<b>\$ 695,255</b>

Reservoirs with existing screens or screens not needed	Reasoning for screen	Existing screen type and location	Status	Completion date	Total estimated cost	Program portion
<b>Rifle Gap Reservoir</b>	Contains <b>smallmouth bass, walleye and northern pike</b>	Coanda screen downstream of outlet	Screen completed in 2013; Excluding small and large fish; no nonnative fish captured in creek below screen since installation; LMP approved by FWS, submitted to UT and WY; Proposed stocking of 100% triploid walleye (fertile walleye removal for 2 years) and unlimited bag of SMB;	Completed in 2013		\$0 (CPW purchased with Section 6 and other CPW funds)
<b>Highline Lake</b>	Compliance with stocking procedures. Contains largemouth bass, crappie, and trout	Net across spillway	Net operational since 1999, replaced twice.	Installed in 1999; Replaced in 2006 and 2014	\$225,000 for first net; \$100,000 for second net; \$90,000 for third net;	\$415,000
<b>Miramonte Reservoir</b>	Contained illegally stocked <b>smallmouth bass</b> population	n/a	Reservoir treated in 2013 to remove smallmouth bass	Completed in 2013		\$25,000 for rotenone costs
<b>Paonia Reservoir</b>	Contained illegally stocked <b>northern pike</b> population	n/a	Reservoir treated in 2012 to remove northern pike	Completed in 2012		\$3,000 for rotenone costs
<b>Juniata Reservoir</b>	Contains <b>smallmouth bass and walleye</b> populations	Coanda screen on outlet into irrigation ditch that connects to Kannah Creek	Screen function or extent of escapement by SMB or WLY unknown.			
<b>Rio Blanco Reservoir</b>	Contain <b>northern pike and smallmouth bass</b> populations	Rotating drum screen on the inlet canal	A closed basin fishery that is topped off with White River water periodically but location is very close to the river, creating a risk of escapement from angler fish movement or river connection			
					Total past Program commitments	\$ 443,000

Reservoirs likely unable to be screened	Species of concern	Why screen not feasible	Possible management alternatives			
<b>McPhee Reservoir</b>	Contains <b>fertile walleye and smallmouth bass</b> populations		McPhee does not drain to river. Escapement is not confirmed, but partners feel it is highly unlikely			
<b>Lake Powell</b>	Contains <b>fertile walleye, striped bass, gizzard shad and smallmouth bass</b> populations	High levels of inflow (up to 70K cfs) - but some sort of screen may be feasible in future				
<b>Flaming Gorge Reservoir</b>	Contains <b>smallmouth bass and burbot</b> populations		Burbot risk assessment in draft. Burbot life history may not place them at high risk of escapement. However, 3 burbot have been captured below Flaming Gorge in recent years; One seen during LTSP releases immediately below dam;			

## Attachment 4 Hydrologic Conditions

### May 1<sup>st</sup> 2012/2013/2014/2015 Water Supply Forecast

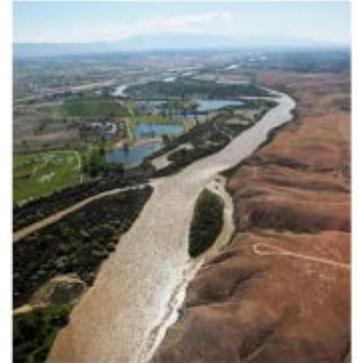


### 'Miracle May' for Colorado Water Levels

THE DAILY  
SENTINEL  
GRAND JUNCTION, COLORADO

Eric Kuhn of the River District said "Late May storms are predicted to add an additional 1M to 1.5 M acft of inflow to lake Powell." Lake Powell's elevation of 3,593 feet, is about 100 feet above the level at which it can generate power, 100 feet equates to ~ 7.8 M acft of usable storage (USBR).

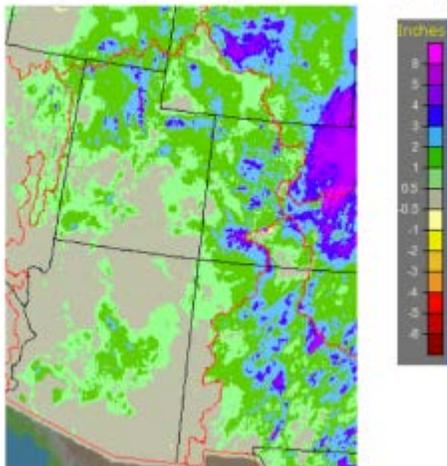
<http://www.gj Sentinel.com/news/articles/miracle-may-8132-for-colorado-6232/water-levels>



Colorado River near Fruita  
May 21, 2015

### Departure from Average Precipitation (May 1<sup>st</sup> -20<sup>th</sup>)

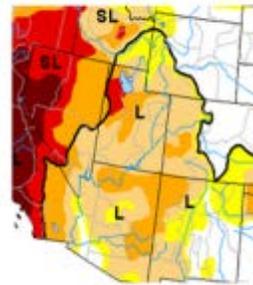
Through May 19, month-to-date precipitation has totaled 200 to 300% of normal in locations such as Grand Junction, Salt Lake City, Denver, Colorado; and Evanston, Wyoming. Parts of New Mexico have been even wetter in recent weeks, relative to normal, with May 1-19 totals reaching 5.45 inches (524% of normal) in Clayton and 1.50 inches (484%) in Albuquerque



6/2/2015

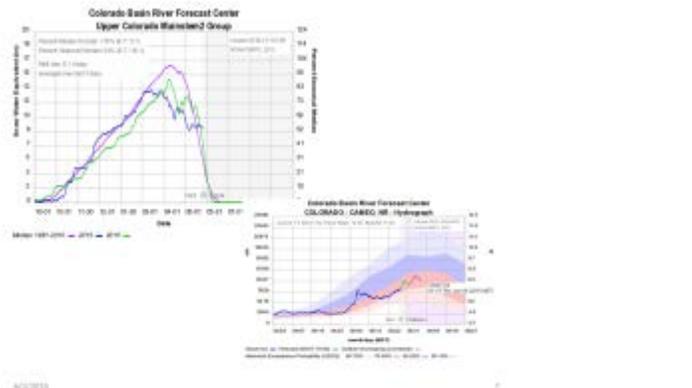
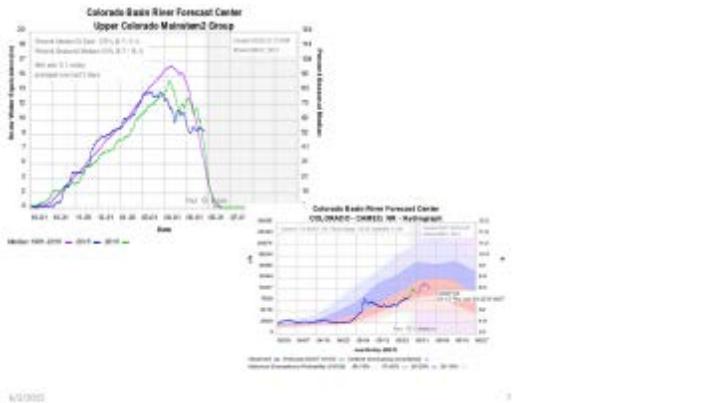
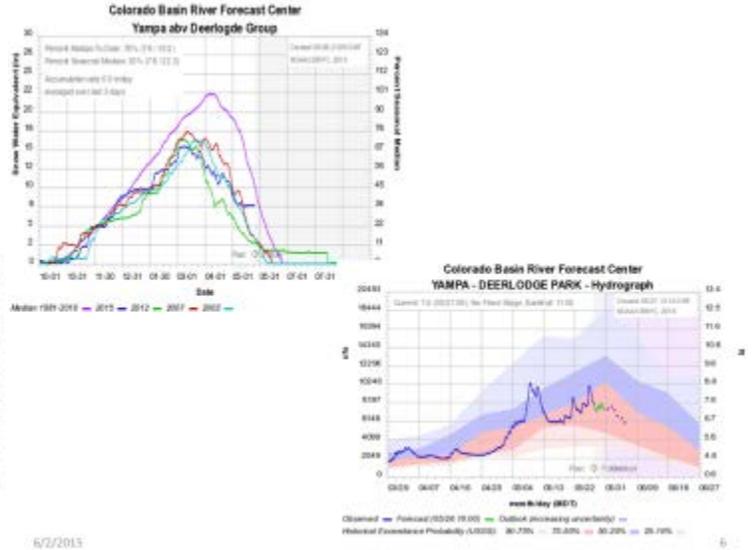
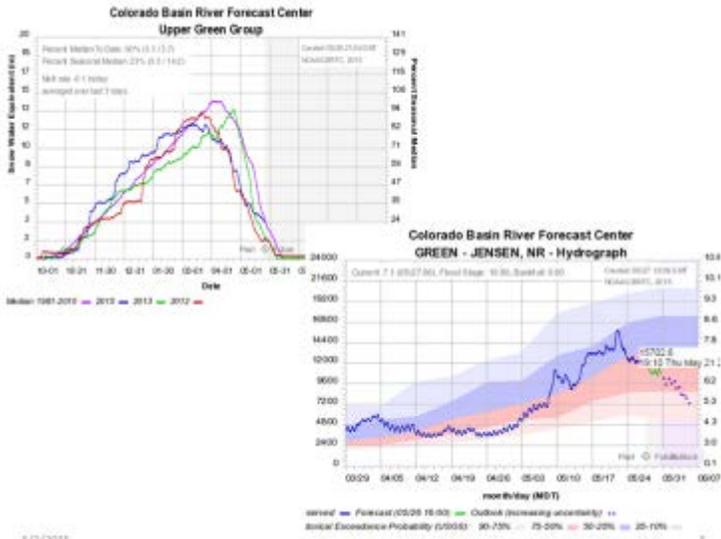
### US Drought Monitor

May 19, 2015



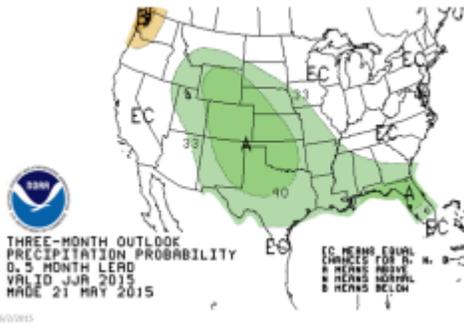
Drought Severity	DIC Soil Moisture Model
Abnormally Dry	Long time drought: slowing planting, growth of crops in pastures. Closing out of drought: some drying water deficit, pastures in crops on fallow, stressed.
Moderate Drought	Some damage to crops, pastures, gardens, reservoirs, or wells low, some water shortages developing in residential, voluntary restrictions implemented.
Severe Drought	High or extreme losses likely, water shortages common, water restrictions imposed.
Extreme Drought	Major crop losses, reservoir water shortages or restrictions.
Exceptional Drought	Exceptional and widespread production losses, depletion of water in reservoirs, streams, and wells (ready water emergency).

6/2/2015





June - August Precipitation Model Prediction



August - October Precipitation Model Prediction

