

# Executive Committee Meeting

## *October 18, 2012*

### Meeting Materials:

Meeting Agenda

Meeting Minutes

Middle Rio Grande Conservancy District Proposal: Mesohabitat Data from Population Monitoring Program

Adaptive Management Recruitment Analysis [presentation]



**Middle Rio Grande Endangered Species  
 Collaborative Program  
 EXECUTIVE COMMITTEE  
 MEETING AGENDA  
 Thursday, October 18, 2012  
 9:00 am – 1:00 pm**

**LOCATION:** Bureau of Reclamation, 555 Broadway Blvd. NE, Albuquerque, NM

1. **INTRODUCTIONS AND REVIEW OF PROPOSED AGENDA\*** *5 minutes*
2. ***DECISION* – APPROVAL OF SEPTEMBER 20 EC MEETING SUMMARY\*** *10 minutes*
3. **BOR UPDATE** (*M. Hamman*) *20 minutes*
  - A. **Water Management Plan/Minnow Action Team Update**
4. **USACE UPDATE** (*LTC Gant*) *20 minutes*
  - A. **Adaptive Management Scope Update** (*S. Bittick*)
  - B. **Cochiti Deviation Analysis Update** (*M. Porter*)
5. **SERVICE UPDATE** (*W. Murphy*) *60 minutes*
  - A. **Species Update**
  - B. **Section 10(j) Non-Essential Experimental Population Planning Update** (*M. Brennan*)
  - C. **CPUE Demographics Workshop Update\*** (*J. Davis/R. Billings/D. Gensler*)
6. **CONTRACTING UPDATE ON MRGCD PROPOSAL** (*J. Lewis*) *10 minutes*
7. ***DECISION* – SET AS A VERY HIGH PRIORITY THE ACQUISITION OF MESOHABITAT BY SEINE HAUL POPULATION MONITORING DATA**
8. ***DECISION* – REQUEST COMPLETE COPIES OF CONTRACT NO. 03-CR-408029 FOR EC REVIEW**
- BREAK** *15 minutes*
9. **CC UPDATE ON FY13 BUDGET PRIORITIES\***(*R. Billings/J. Wilber*) *20 minutes*
10. **BUDGET DISCUSSION** (*S. Farris/A. Moore*) *10 minutes*
11. **RIP 3<sup>rd</sup> PARTY SUBCOMMITTEE MANAGEMENT\* UPDATE** (*S. Farris*) *45 minutes*
12. ***DECISION* – INCORPORATE 3<sup>RD</sup> PARTY WRITE-UPS INTO DRAFT PROGRAM DOCUMENT?**
13. **RIP ACTION PLAN UPDATE** (*J. Wilber/G. Haggerty/W. Murphy*) *30 minutes*

*\*denotes read ahead*

**Members**

ABCWUA  
 ISC  
 NMDA  
 Sandia Pueblo  
 UNM

APA  
 Isleta Pueblo  
 NMGF  
 Santa Ana Pueblo  
 USACE

CABQ  
 NMAGO  
 MRGCD  
 Santo Domingo Tribe  
 USFWS  
 Reclamation

#### **14. MEETING SUMMARY**

#### **15. PUBLIC COMMENT**

#### **16. ANNOUNCEMENTS**

#### **17. *DECISION* - NEXT SCHEDULED EC MEETING November 15, 2012 from 9:00 am – 4:00 pm?**

#### **Upcoming Dates and Deadlines:**

**Date:** November 13, 2012 from 11:30 am-12:30 pm at ISC

**Title:** 21st Century Trends in Observed Temperature and Precipitation in the Rio Grande Basin above Elephant Butte Dam

**Presenter:** Ariane O. Pinson

**Description:** Trends in climate change in the Rio Grande basin above Elephant Butte Dam, New Mexico and Colorado, are examined for the period 2001-2010 relative to 1990-1999 and 1950-1999. These data show a trend towards a warmer and drier climate across the region, although different portions of the landscape are responding at different rates. The observed changes in the Rio Grande basin are in accord with changes observed throughout the southwestern and western United States, and are in line with model projections for increased warmth and aridity in the region across the 21st Century.

- November 16, 2012 - Service intends to issue draft BO
- February 2013 - CPUE Workshop

**Middle Rio Grande Endangered Species Collaborative Program**  
**Executive Committee Meeting**  
**Thursday, October 18<sup>th</sup>, 2012**  
**9:00 am – 2:00 pm**

**Actions**

- Rolf Schmidt-Petersen will provide his suggested revisions to the September 20<sup>th</sup>, 2012 EC meeting summary to Ali Saenz for distribution to EC members for review and approval at the next EC meeting.
- Jericho Lewis will provide MRGCD with a copy of the ASIR Population Monitoring contract.
- If any EC member has concerns or issues with the RIP 3<sup>rd</sup> Party Management Subcommittee documents (management positions, duties, transition plan, descriptions, etc.) that need to be addressed now rather than later, please inform Steve Farris immediately so that he can arrange a special meeting of the Subcommittee and the concerned party(s).

**Decisions**

- Approval of the September 20<sup>th</sup>, 2012 EC meeting summary was postponed until the November EC meeting in order to allow members to review the suggested edits which will be distributed.
- With no objections voiced and quorum present, the EC agreed to provide the RIP Program Document focus group with the draft RIP 3<sup>rd</sup> Party Management Subcommittee documents (including the transition plan) in order for the appropriate information to be incorporated into the draft Program Document.

**Considerations**

- With the delay of the CPUE Workshop to February 2013, it was observed that the EC should consider extending the establishment of Interim Metrics by at least 6 additional months.

**Requests**

- After closed session discussions on the request for the EC to place a high priority on the acquisition of mesohabitat data from the past, it was requested that Reclamation continue to investigate acquiring the requested data.
- It was suggested that the CC could explore the potential streamlining or “pulling together” of all the monitoring activities for 2013 in an attempt to “free up” or find some funds that could be set aside for the spawning needs of next spring. There are several monitoring related projects (although not all are recommended for funding at this time) that have estimates of almost half of the FY13 budget. It is acknowledged that monitoring is very important, especially when the population is known to be declining and at low levels. However, the overall goal should be focused on supporting actions in the next year to bolster the species (and not lose the gains of the last 10 years).

**Announcements**

- Hilary Brinegar has officially resigned from NMDA. Her last day will be November 30<sup>th</sup>. She is taking a new position with Merron & Associates as they open a new office in Las Cruces.

**Next Meeting: November 29<sup>th</sup>, 2012 from 9:00 AM to 4:00 PM at Bureau of Reclamation**

- Tentative agenda items include: (1) reaffirmation of Estevan López as the non-federal co-chair and considerations of an alternate; (2) approval of the September 20<sup>th</sup> and October 18<sup>th</sup>, 2012 EC meeting summaries; (3) vote on/adopt the final draft Program Document; (4) vote

on/adopt the final draft RIP Action Plan; (5) extend the Interim Metric time period due to the delay in the CPUE workshop - ?; (6) Recruitment Analysis (Cochiti Deviation) Update – Mick Porter - ?; (7) Farewell to Hilary Brinegar; (8) scheduling of December meeting

- Future Agenda Items: (1) Updated 10(j) population schedule and report out on FWS Regional Office approval to proceed; (2) Updates/continued discussion on the acquisition of past mesohabitat data;

#### **Upcoming Dates and Deadlines:**

- October 29<sup>th</sup> – Draft Final Program Document and Draft Final RIP Action Plan out for EC review, in preparation for Nov EC meeting; *update - this will be adjusted based on the rescheduled November EC meeting date and progress of these focus groups*
- October 29<sup>th</sup> and 30<sup>th</sup> – MRG Water Management Coordination Meeting
- November 13<sup>th</sup> – Climate Change in MRG Presentation (@ joint work group meeting)
- November 16<sup>th</sup>, 2012 - Service intends to issue a *partial* draft BO to action agencies; *update – this will most likely be adjusted as above*
- November 29<sup>th</sup> – EC meeting, 9:00am to 4:00pm at Reclamation
- December TBD – EC meeting
- February 2013 – CPUE workshop

## **Meeting Summary**

#### **Introductions and review of proposed agenda:**

- Brent Rhees brought the meeting to order and introductions were made.
- The agenda was approved with no changes.

#### **Reappointment of Federal Co-chair:**

- A letter from Ann Castle reappointing Brent Rhees was provided as a read ahead.
- It was suggested the EC consider reaffirming Estevan López as the non-federal co-chair in November. It was also suggested the EC consider appointing an alternate non-federal co-chair.
  - At this time, Rolf Schmidt-Petersen has been stepping into the role as needed. But since he is ISC's alternate on the EC, it was suggested the EC consider officially appointing another non-federal EC member.

#### **Decision-Approval of September 20<sup>th</sup>, 2012 EC meeting summary:**

- It was pointed out that the comment on minnow numbers should reflect that population numbers continue to decline (and are not slightly up; see pg. 6, second bullet).
  - Suggested language was: "...numbers continue to decline and are at extremely low levels."
- After a member expressed concern with the organization and content captured in a specific section from the September meeting. As it didn't appear that any of the proposed changes would impact today's discussion topics, the approval of the meeting notes was postponed until the November meeting in order to allow time for the suggested changes to be submitted in tracked-changes format for all EC members to review.
  - The potential content changes were briefly reviewed during the meeting:
    - (1) The BA update assessment discussion reads as if there were concerns with the BA development process. However, the actual concern from the September meeting was related to agencies having their own BOs and "nothing to pull" them all together.

- From the State's standpoint, Reclamation's BA (including MRGCD's contributions) with the State's supplement and the Corps' BA, provides sufficient coverage for water users and addresses the 3 major elements of concern.
  - (2) The Water Management approach discussion (pg. 5) did not contain any indication that Reclamation is moving away from individual water management agreements and towards the concept that the RIP Action Plan and Cooperative Agreement would be sufficient for the purposes of the BA/BO.
  - (3) The discussion regarding the budget issues is missing the framework question on how to align the \$1.5 million from Reclamation to the President's budget and authorizing legislation for the year. The action item that Rick Billings and Matt Schmader were going to meet with Steve Farris to discuss those budget issues was not captured.
  - (4) There were some other minor concerns with content and the way the meeting was summarized.

**Bureau of Reclamation (BOR) Water Management Plan/Minnow Action Team Update:**

- Reclamation has indeed shifted from the original thinking on the "individual" water management agreements that would "roll up" into the total. Now, the idea is to proceed with a more collective or global Water Management Plan (WMP) that would contain the ideas, activities, placeholders, schedules, etc for the tools. This WMP would be the "master" water management plan. It can be compared to the non-water activities in the Long-term Plan (LTP) in that items captured in the "list" could be "dropped" into the 5-year action plan. The longer-term items can then be incorporated into the next 5-year plan.
  - The intent is to have the water management entities, the Service, and the pueblos together in a workshop environment to discuss all ideas, "do-ability", and priority of the items. The workshop will produce a document that is basically the master water management plan populated with items and actions. This workshop has been scheduled for October 29<sup>th</sup> and 30<sup>th</sup> in Santa Fe, and Josh Mann was recognized for all of his efforts.
    - There will probably be some follow up assignments and/or meetings and maybe even subcommittees to continue the development and refinement and subsequent work. There may also be a parking-lot of items that aren't as easily addressed.
    - Mike Bitner, thanks to the Albuquerque Bernalillo County Water Utility Authority, will be the facilitator for the workshop. The workshop attendees will be tasked with trying to rank the water management activities in a scientific framework as much as possible.
    - This will be an iterative process. The document will be provided to the EC at some point.
  - Senator Udall was invited to participate in the kick-off session. He has confirmed his attendance.
- *Minnow Action Team Update:* The precursor to the interdisciplinary team (a.k.a. WAMBAT) to look at hydrologic conditions, biologic aspects, annual goals, etc. met on October 2<sup>nd</sup> with as many participants as possible.
  - There were good discussions on what could and could not be done this fall and winter to improve the status of the minnow. It is assumed that this will be a dry winter following 3 dry monsoon seasons – this is an unprecedented situation and demands proactive planning.

- Jennifer Faler will be polling the group to arrange the next meeting for some time within the next few weeks.
- The group arrived at the following ideas/recommendations (please refer to the handout provided for additional details):
  - If a rain event occurs before irrigation ends, the Service could use rescue and salvage data to perform a risk assessment. If there is low risk to the fish, nothing has to be done. If there is medium risk, then the water managers should meet again to develop an action plan and implement non-water solutions.
  - If the population numbers continued to remain “bleak”, additional surveys could be done in areas other than the 20 sites in order to help quantify the severity of the situation.
  - Consider restructuring the population monitoring contracts to require monthly data transmittals in lieu of quarterly reports (i.e., more timely deliverables and data to inform on-the-ground needs).
  - Find funding to purchase the historical population monitoring data from ASIR.
- In response to a question on how the fixing of the Minnow Sanctuary is coming along, it was shared that it will take funding to complete the repairs. There is no timeframe for getting the sanctuary online. If the water group makes this a recommended priority, then maybe there could be some action/progress.

#### **USACE Update:**

- *Adaptive Management (AM) Scope Update:* As reported at the last 2 EC meetings, the Corps received the AM proposal from the contractor. However, the government estimate and proposal estimate were far too different to negotiate. The Corps has been reviewing the assumptions and yesterday they withdrew the Request for Proposal (RFP). The Corps will be meeting internally to determine the path forward. The intent is to still award some AM contract work, but different contracting options might have to be considered.
  - In response to a question regarding the potential loss of funding, it was shared that “the money is safe.” The “clock is ticking” but the Corps’ staff has been careful in trying to keep the funding secure.
- *Adaptive Management Recruitment Analysis Update:* Mick Porter provided an update on the ongoing Recruitment analysis to support the Cochiti Deviation.
  - Attendees were reminded that the purpose of this analysis is to evaluate the spring runoff flows for minnow recruitment (reproduction) in the Middle Rio Grande (MRG) valley. The analysis is focused on recruitment trends of the young fish sampled in May, June, and July.
  - This analysis could be very informative to the Water Action and Minnow Action teams – especially as it addresses the question “how is recruitment determined by (a) spring volume?, (b) spring hydrograph?, and (c) inundation area?”
    - The analysis includes a strategic look at how the minnow responds to any number of hydrologic variables to determine any correlations of the biology to the hydrology.
    - Factors being considered include: peak flow, April-June volume, May-July volume, inundated area, mean or minimum flow over a specific time period, magnitude of flow, etc.
  - For the purposes of this analysis, “recruitment” is defined as the occurrence of young-minnows in the May through July monitoring data.
  - Using monitoring datasets from 2002 to 2011(except 2009) from ASIR and the Service, the spring flows were compared to the production of young minnows. *It*

*was noted that it wasn't until 2002 that ASIR began the monthly sampling which is critical for the recruitment analysis. This is why no earlier data has been included. There is a gap in the monitoring for spring 2009.*

- In an example, the log transform of the 2005 CPUE data was plotted against the May-July (3 month) time period. Remember there can be no 0s in log transform so a 1 is added. Day 0 is May 1 – this was selected as the day closest to the “typical” beginning of the spawn. The colored lines are the slope of the recruitment seen over the 3 months.
  - Remember that 2005 was a high flow year with flood control operations implemented and resulting in a long duration. There was a lot of water in the system and a lot of offspring were produced.
  - This log transform of the annual CPUE data was used to compute the slope of recruitment for other years.
  - In a comparison graph of 2003, 2004, and 2005 recruitment it can be seen that 2004 was more “average” or “moderate” compared to the boom of 2005. In comparison, 2003 was very dry with a low peak, short duration and low numbers of offspring produced.
  - 2010 and 2011 have a very similar pattern to 2004 and 2003, respectively. 2012 data is not available yet.
    - Comparison of these trends can tell us about minnow reproduction, how flow creates habitat for reproduction, how minnow use the habitat, etc.
- In summary, it was shared that the current focus is on the recruitment trends in response to the spring hydrograph. It is recommended that the fish data be transferred into the Database Management System (DBMS) monthly. The Corps will use the detailed analysis to evaluate potential adjustments to the Water Operations.
- One of the next steps is to develop annual population trajectories for analysis.
- *Questions:*
  - **Question:** Is the analysis just looking at the production of fish from the spring flow and not a deviation analysis?
    - **Response:** The deviation is included in the analysis because all years from 2002 to 2011 are being analyzed. This will allow a comparative look at the differences between years when a deviation took place, with those where more passive management occurred. The analysis is a combination of active and passive adaptive management to strengthen the analysis by increasing the range of flows being evaluated.
  - **Question:** Are there any ideas on the survival rates for the young-of-year to Age 1?
    - **Response:** The Population Variability Analysis (PVA) work group has done much work and data crunching on that topic. They have calculated the average survival rates over the years but not the year-to-year comparisons. It is acknowledged that this will be an important piece.
  - **Question:** Will results be available before the planning period for the next spring runoff?
    - **Response:** The intent is to be done with the analysis by the end of the calendar year. The EC will be provided with an update on



the progress and the results will be provided to the Water and Minnow Action Teams.

- The PVA work group will also be updated at their next meeting. Ongoing or additional work will be coordinated with them to make sure that all are on the same track. They will also probably provide peer review and recommendations.

### Service Update:

- *Species Update:* Jason Davis provided a minnow update through September 2012. Please refer to the handout for additional details.
  - The minnow numbers in the MRG are extremely low. The decline in fish abundance is evident within each of the 3 projects:
    - *Rescue & Salvage:* a total of 4,164 minnow (>30mm) have been salvaged from the Isleta and San Acacia reaches and were transported to a continuously flowing site in the San Acacia Reach. A total of 49.4 unique miles have been salvaged.
      - Each subsequent drying event saw fewer and fewer fish until no minnow were found in any of the isolated pools.
    - *Augmentation Monitoring:* 3 long-term monitoring sites (Angostura at Atrisco Outfall, Isleta at the Isleta Diversion Dam, and Isleta at the Alejandro Gate) indicate a severe decrease in minnow since July 2011. In September, there were 0 minnow at the Atrisco site and the Alejandro Gate.
    - *Population Monitoring:* the latest numbers are the lowest they have been since 1993 and are similar to numbers documented in 2003.
      - Out of 20 sites, 4 were dry and minnow were only collected at 3 of the remaining 16 sites. There were only 5 minnow total out of 320 seine hauls.
  - The September numbers have resulted in a targeted stocking number of 297,000 minnow. This is the highest number since augmentation began.
    - Dexter will produce 240,000 minnow; the BioPark will contribute 50,000 minnow; and the Los Lunas Silvery Minnow Refugium will contribute 7,000 minnow.
    - Approximately 100,000 minnow will be provided to Big Bend.
    - This is (was) the last year in the augmentation study. The minnow numbers in Albuquerque were just above the threshold so Albuquerque will not be stocked in this effort (fall 2012) but stocking may begin again if/as needed.
  - It was reported that it's been two years in a row where we've had less than 500,000 acre feet measured at Otowi annually.
    - There has been low snowmelt runoff both years and, correspondingly, reduced silvery minnow spawning success.
      - The two years are the types of consecutive dry years the State and Reclamation identified as critically dry. These are years when upstream water management options become more limited.
  - Reclamation reported that 52,000 acre feet of supplemental water have been used during this historic amount of drying period.
  - The ISC reported that without water operations including MRGCD irrigation operations occurring this summer the river would have been even drier. Even if all MRG river diversion ceased, the natural flow would not have been enough to keep the river wet at Albuquerque.

- A member asked if irrigation operations had resulted in more water in the river. The ISC responded yes it had.
- *Section 10(j) Non-Essential Experimental Population Planning Update:* Mark Brennan presented “RGSM NEP Site Analysis: determination of best river reach to implement next RGSM NEP reintroduction.
  - The objective of this work was to determine the feasibility of conducting a second section 10(j) NEP reintroduction of silvery minnow in an unpopulated reach of the Rio Grande or Pecos River within the historic range of the species.
    - Getting a second population is one of the first steps in recovery to downlist from endangered to threatened; as such, this is a very important goal in the recovery of species.
  - This analysis began with the review of past records and analyses from 10 years ago, including the 2003 ranking of reaches for critical habitat determination and Appendix F of the minnow recovery plan. The current conditions within the reaches (including hydrology, geomorphology, water quality, ecology conditions, etc.) were also explored and considered, relative to this information from 2003.
  - A decision matrix was developed and a technical working team was developed to help go through the evaluation and ranking process. The technical work group helped determine the best parameters to investigate that were important to silvery minnow biological needs and habitat requirements. They also provided weighted ranking on the environmental and non-environmental parameters.
    - There are 9 remaining unpopulated reaches. The first determination was to omit any that were just not appropriate: those less than 100 miles in length because of poor retention/self-sustainability potential and those with poor hydrology/flow/connectivity. Five reaches were eliminated using these coarse filters.
    - This left 4 remaining reaches - all initially defined as being inter-reservoir. The longest functional sections of each without obstructions were then determined: (1) Sumner-Brantley (210 miles on the Pecos in NM); (2) Red Bluff-Rio Grande (228 miles on the Pecos in TX); (3) Amistad-Falcon (143 miles on the Rio Grande in TX); and (4) Falcon-Gulf (105 miles on the Rio Grande in TX).
    - The parameter data for these 4 reaches were the focus of the decision matrix. Weighted values were given to a parameter’s relative influence on minnow needs and were based on the expert opinions of the technical working group.
    - The parameters were put into four groups: habitat, water quality, ecological and non-environmental. These groupings were used as the basis for testing the relative influence of these different types of parameters on the suitability of conditions in each of these 4 reaches.
    - A sensitivity analysis was completed to determine if any particular group or groups were stronger, pushing the model, or causing a “shift” because they were having more effect.
      - *Results:* In terms of the sensitivity analysis of the environmental parameters only (habitat, water quality, environmental), the Amistad and Sumner reaches were the 2 that were consistently strong in all values. They remained the strongest 2 in the analysis of all parameters combined, including the non-environmental group. Based on current knowledge these 2 are the strongest potentials and are almost equal.
  - In summary, Mark shared that there is less data available for these areas compared to the MRG but the group did the best possible work with what was available. The

- conclusion is that the Sumner and Amistad reaches are the strongest options and are similar in potential.
- The next steps would include the NEPA and public scoping. These could provide new information and help inform the selection between them.
    - This information has been presented to the Service's Regional Office and Assistant Regional Director and we are waiting further direction.
    - The Service was asked to revise the timeline and present information back to the EC when available.
  - In response to a question about the potential for competing species in those reaches, it was shared that yes, there are competing and non-native species in both reaches. There will be a lot of factors that have to be considered in the selection of the reach. Each of these top 2 reaches still have certain issues that will have to be addressed in the final selection and any reintroduction planning.
  - In response to a question on the contact with folks on the Pecos, it was shared that this is not a proposal to put fish into the river at this point; it is just a preliminary analysis of potential to do so. Once direction has been provided from the Regional Office, the Service will then contact all the key players in the selected area to begin talks and planning.
    - It was recommended that the Service reach out to any agricultural constituents in that area as well. The Service responded that all involved constituents will be directly contacted if and when this process proceeds.
  - *CPUE Demographics Workshop Update:* As reported at the last EC meeting, the CPUE workshop has been postponed until February next year. When the CPUE workshop was first proposed, the Service agreed to help fund and bring in the independent reviewers. Unfortunately, that funding opportunity has passed and the Service had an abrupt change in staff. The Service is fully committed to the success of the workshop and hopes to have a better idea of funding come January. Rick Billings will continue to work with Jim Brooks to kick-start the effort again.
  - It was acknowledged that this delay could be a hurdle in establishing the interim metrics and that we may have to extend it out about 6 months.

**Discussion of MRGCD Proposal:** Jericho Lewis, Reclamation's Contracting Officer, received and reviewed MRGCD's data priority proposal. In his report out to the EC, Jericho focused specifically on Item #14 regarding the Federal Acquisition Regulations (FAR).

- As MRGCD pointed out in their proposal, the contract in question is an old contract with ASIR from 2003. Jericho clarified that the rights to data in general refers not to the amount and type of data collected but refers to the usage of the data by the government. But the FAR also indicates that the contract shall accordingly specify the data to be delivered. Bear in mind that the contract in question was closed out in 2008. Also, all the deliverables specified in the contract were provided by the contractor. Reclamation, in coordination with the Program, inspected and accepted those data deliverables. All the final reports are available. The contract is closed out. There is no legal recourse.
- At this point in time, Patrick Redmond provided a verbal summary of MRGCD's proposal.
  - There are 2 parts to the proposal: (1) to reach a definite resolution on issues that have been on the table for quite some time now; and (2) to have the EC determine the prioritization on the acquisition of this data.
  - The data in question is the mesohabitat data by seine haul that was collected by ASIR as part of the population monitoring program going back to 2006 and

maybe even earlier. The point of getting this data is (1) for use in PVA and other analyses and (2) informing the refinement of the protocols.

- The RIP has set as a main task the evaluation and refinement of the metrics and protocols. The CPUE workshop is a milestone event in the refinement and determination of how to best use the CPUE data. The EC is being asked to determine, once and for all, the priority on getting this data. MRGCD requests the EC set this acquisition as a high priority. This data needs to be available for RIP purposes.
- Due to sensitivity regarding this topic and reporting on informal discussions with the contractor, a closed session was agreed to. With the exception of Patrick Redmond, Jericho Lewis, and David Gensler, only EC members and alternates participated in this portion of the meeting. Please contact your EC member or attendee for details on this session.

**Closed Session Report Out:** Upon return, Brent Rhees shared that Reclamation will continue investigating acquiring the mesohabitat by seine haul data. MRGCD will work with Jericho Lewis to get access to the 2003 population monitoring contract for their review.

**RIP 3<sup>rd</sup> Party Subcommittee Management Update:** An updated subcommittee document on the RIP management was provided in hardcopy.

- *Financial Management Entity:* The Financial Management Entity (FME) is basically the “banker”. All the Program funds (federal, non-federal, and others) will be provided to them to hold, distribute, pay, and otherwise manage. The 3<sup>rd</sup> Party Management would be implemented through this FME in accordance with the applicable laws and requirements. The FME will contract with the person selected by the EC to fill the Executive Director position and pay their salary and associated benefits. The FME will also employ the Executive Director staff as directed by the Executive Director. The Executive Director will communicate with the FME all the directions and decision/requests from the EC with the exception of matters of his/her own employment. Those will go through the EC and be provided in writing from the co-chairs to the FME.
- *Executive Director:* The Executive Director will be selected and serve at the direction of the EC. Overall, the Executive Director is going to carry out the wishes of this committee. But s/he will be responsible for hiring, firing, and supervising Program staff and contractors. The Executive Director will provide the annual staff planning including personnel budget, positions of staffs, etc. In addition, the Executive Director will prepare quarterly reports, briefing papers, etc. This person will coordinate the EC meetings: scheduling, distributing information packets, agenda formation, etc. They will oversee contract management, cost share oversight, coordinate activities of the MRG RIP committees, and provide support for independent science panel. The Executive Director and staff will prepare solicitation packages for proposals and review/approve invoices for contractor payment.
- *Independent Science Panel:* the EC will contract with this panel for outside review and independent advice on how to move forward.
- *Science Coordinator:* The Science Coordinator will be the chairperson of the 3 RIP teams (water action team, focus teams, and adaptive management team). Their work will be guided by the Action Plan. This person will assign tasks to these implementation teams and report to the Executive Director on an ongoing basis and directly to the EC as needed.
- *Budget Subcommittee:* After several meetings and much discussion, it was recommended that there be a Budget Subcommittee (BS). The intent of the budget subcommittee is “to

- permit those government agencies with regulatory, procurement or property interests in the Action Plan, Annual Work Plan and associated budgets to identify and resolve potential conflicts to avoid delay in the budget process.”
- This subcommittee will initially consist of Reclamation, the Corps, the Service, ISC, and MRGCD. The agencies involved will review the Action Plan, annual work plans, and associated budgets to make a consensus recommendation for EC approval. Any part that is not a consensus recommendation will be temporarily removed from the plan so that the other parts can move forward independently. Then the members of the BS would endeavor in good faith to resolve the issues successfully. There will be a provision that the EC can subsequently vote to add members to the BS.
  - *Science Work Teams:* There will be 3 teams with the Science Coordinator as the non-voting chair. There has been a great deal of interest and concern expressed in making sure the institutional and historical knowledge is not lost during the transition.
    - At the last subcommittee meeting, there were 2 possible organizational options: (1) 3 teams: water action team, adaptive management team, and focus teams; and (2) a single, large Science Team - with the rationale that water action and adaptive management teams need to be working closely together. The current recommendation is to proceed with the first option of 3 teams and address the concerns of transparency and coordination through quarterly adaptive management meetings attended by the EC, Executive Director, Science Coordinator, and the implementation team members. Each implementation team could present quarterly progress.
    - *Water Action Team:* The water action team is to discuss (and maybe decide?) on water operation strategies to meet EC goals, develop annual flow schedules, evaluate species needs, evaluate available resources and develop recommendations for that year.
    - *Adaptive Management Team:* The adaptive management team is to develop hypotheses, monitoring studies to determine effectiveness, suggest tests and studies, and prioritize science needs, etc. The integration of adaptive management into all parts of the Program can be facilitated through the quarterly management meetings.
    - *Focus Teams:* The purpose of the focus teams is to respond to the specific assignments given by EC. They will involve multiple areas of expertise and hopefully pull from all the science work groups that exist now. The intent is to have the teams respond to specific questions from the EC and be fully integrated into the actions of the RIP and adaptive management.
  - *Transition Plan:*
    - The transition to a new management will take some time. FY13 will be our “year of transition.”
    - There will be many activities to get the 3<sup>rd</sup> Party Management identified and contracted. And there will probably be a lot of work that has to occur simultaneously, on concurrent paths in order to get everything accomplished and in place. For example, the Executive Director position will need to be advertised and maybe even interviewed before the FME has been given a notice to proceed.
    - An aggressive schedule is being proposed; it is aggressive but doable. The new 3<sup>rd</sup> Party entity and staff need to be in position to implement the FY14 Action Plan and work plan(s).
      - Some of the work may need to be accomplished through email communications and approval.

- It is envisioned that an EC member will provide office space and that entities contributing funds to provide to the FME will sign a Memorandum of Agreement (MOA).
  - The budget process/approval will have to be moved up in the fiscal year to get funds to the FME to execute.
- In response to a question on the continuance of the existing work groups, it was responded that the current work groups should continue on their current missions and stay on the approved work plans through the transition process. The CC will carry on as usual during the transition period. There will probably be some overlap.
- In response to a question about the process for compiling and addressing the various comments (including reconciling them) provided to the 3<sup>rd</sup> party management subcommittee, it was shared that the comments were put into bullet points and captured in the updated version of the handouts.
  - One member expressed concern that there has been no real substantive addressing of the comments. The text of this version is exactly the same as it was 1 month ago. Also expressed was a concern that the more details provided on the transition to a 3<sup>rd</sup> Party Management and reorganization leads to even more questions. For example, if the FME is not given the Notice to Proceed (NTP) until March 2014, how can we realistically expect to draw quality applicants for the Executive Director position? With nothing in place – no agency, no guarantees, no legal underpinning – how can we expect the candidates to take it seriously? The aggressive schedule is really trying to do too much at one time. We would have to redo the By-laws prior to implementing. Also, how can the FME manage federal funds without the NTP and the MOAs that authorize the collection and dispersion of money? That is not scheduled to occur until mid-summer.
    - In response, it was acknowledged that there is great risk in advertising and recruiting someone when the FME is not in place yet. The regulatory and fiscal responsibilities have to be ironed out through the MOA agreement(s). The first year could be used to accomplish the hiring of the 3 key positions and then delay the FME management or other contracting until FY14.
    - With respect to the By-laws, we would need to first incorporate the budget subcommittee and related decisions.
    - Another member commented that while a lot of good work has been done, it seems to be a lot of effort and activity to arrange management and oversight for a \$1.5 million program. And realistically the budgets aren't expected to see any improvements in the next several years. It just seems awfully unwieldy for a program with decreasing finances.
      - It was responded that this is why the transition plan was developed. Between the budget and time, it is unrealistic to think we can start with a “full-blown Platte River-type program.” We have to start with the essential basics and with time blossom into a full program. We have to plan that growth over time.
      - Another response was that it is assumed that other entities will be able to figure out how to contribute and thus build up a more robust program over time. This is a “tough” year – out of water, out of money, out of patience. Everything is converging in 2013. We have to wrestle with it and make the transition work. Reclamation feels this is doable if we are transparent and acknowledge the challenges up front.

- It was commented that the estimated fringe benefits are very optimistic. The current fringe benefits elsewhere are around 50%, not 30%. Also, the FME-type businesses look to take 10% for administration. It was cautioned that the EC be prepared for these types of budget realities.
- A member voiced the concern that while the makeup of the BS is currently focused on the entities with the greatest involvement in funding and resources, the pueblos as sovereign nations seem to be excluded.
  - It was responded that the purpose of the subcommittee is to make recommendations to the EC. Everyone, including the pueblos, will be able to voice an opinion when those recommendations are elevated for EC approval. This is a way to have the entities who are most likely to struggle with a recommendation have the discussions ahead of time in order to avoid time crunches with the budget approvals.
  - It was also responded that the composition of the BS is at the discretion of the EC. The EC can add members as it deems appropriate.

### **Decision – Incorporate 3<sup>rd</sup> Party Write-ups into Draft Program Document?**

- Regarding the decision to incorporate the 3<sup>rd</sup> Party Write-ups into the Draft Program Document, several concerns and questions have been raised, and we just saw these re-drafts today. But the EC feedback on the documentation has to be provided to the Service for BO development as soon as possible.
  - It was suggested that the 3<sup>rd</sup> Party write-ups be included since the RIP documents are still in draft form. There will still be opportunity for comments and revisions. The EC is providing the “ok” to proceed on the current path – it doesn’t mean we are approving every “i” and “t.”
  - The official approval is needed before the write-ups can be given to the Program Document group to include.
  - In response to a question and concern on how the incorporation of the 3<sup>rd</sup> Party write-ups might affect having the Final Draft Program Document approved/adopted at the November meeting, it was shared that the Program Document group is meeting this afternoon (after the EC meeting) and will begin the process immediately. At least all the information would then be in one single document. The Program Document group will strive to keep to the set schedule allowing for approval in November.
    - It was pointed out that the Program Document doesn’t have placeholders for all the “nuts and bolts” of the transition, but some of the content can be included. For example, details on procurement will not be included in the Program Document framework at this time. Also, the Organizational Chart will not be included in the Program Document either, however, short descriptions of the key positions and teams can be. The Program Document is intended for the governance issues.
  - In response to a question directed to the Service about what they need to be comfortable with the RIP documents, it was shared that there are a lot of nuances to that question. The Service needs an assurance that the EC is going to do what it says it is going to do. Whatever that body of work is, the Service needs to know there are sufficient agreements and commitments and that it will get done. It is up to the collective group to figure out what they are proposing to do. However, at this time, the Service does not have a problem with the way the RIP documents are being formulated.
  - It was commented that the next step(s) include (1) figuring out how get from “now” to a 3<sup>rd</sup> Party Management including the “nuts and bolts” and timelines; and (2) determine what, in the broader view, that independent 3<sup>rd</sup> Party

Management would look like. To get there, it was recommended that the EC approve providing these write-ups to the Program Document group to incorporate. Hopefully, many of the questions and concerns could be addressed in that focus group.

- If any EC member has concerns or issues with the RIP 3<sup>rd</sup> Party Management Subcommittee documents (management positions, duties, transition plan, descriptions, etc.) that need to be addressed now rather than later, please inform Steve Farris immediately so that he can arrange a special meeting of the Subcommittee and the concerned party(s).
- With no objections voiced and a quorum present, the EC agreed to provide the RIP Program Document focus group with the draft RIP 3<sup>rd</sup> Party Management Subcommittee documents (including the transition plan) in order for the appropriate information to be incorporated into the draft Program Document.

**RIP Action Plan Update:** The RIP Action Plan focus group is making progress. The group has been meeting regularly and received comments on the draft document in early October from several entities as well as some work groups. The group is currently addressing those comments. The responses to all the comments will be made available. The Action Plan group is also working with the Program Document group to make sure there is consistency between the narratives and that the right level of description is provided in the Action Plan. The group is also working to populate the table with some of the conservation measures that have been provided by the different agencies - whether tools to address the tasks or tasks within themselves. Some of the tools and ideas suggested at the water management workshop in October could be incorporated into the Action Plan as appropriate.

**FY13 Budget Priorities Discussion:** The CC would still like more guidance on the 2013 prioritization from the EC. At their last meeting, the CC attempted to identify the “mission critical” activities. The CC will be going through contracts to try to figure out how to control costs. The CC will also look at contract expirations to see if those affect the prioritization.

- It was suggested that the CC could explore the potential streamlining or “pulling together” of all the monitoring activities for 2013 in an attempt to “free up” or find some funds that could be set aside for the spawning needs of next spring. There are several monitoring related projects (although not all are recommended for funding at this time) that have estimates of almost half of the FY13 budget. It is acknowledged that monitoring is very important, especially when the population is known to be declining and at low levels. However, the overall goal should be focused on supporting actions in the next year to bolster the species (and not lose the gains of the last 10 years).

**Meeting summary:** Brent Rhees very briefly summarized the highlights from today’s meeting:

- Jericho Lewis will work with MRGCD to provide access to the 2003 population monitoring contract;
- The RIP 3<sup>rd</sup> Party Management documents will be incorporated into the RIP Program Document;
- Rolf Schmidt-Petersen will use track-changes to capture his suggested edits to the September meeting summary; the revised version will be distributed to the EC for review and approval at the November meeting;
- Brent Rhees was reappointed as the federal co-chair.

**Public comment:** There was no public comment.



**Announcements**

- Hilary Brinegar has officially resigned from NMDA. Her last day will be November 30<sup>th</sup>. She is taking a new position with Merron & Associates as they open a new office in Las Cruces.

**Next Meeting: November 29<sup>th</sup>, 2012 from 9:00 AM to 4:00 PM at Bureau of Reclamation**

- Tentative agenda items include: (1) reaffirmation of Estevan López as the non-federal co-chair and considerations of an alternate; (2) approval of the September 20<sup>th</sup> and October 18<sup>th</sup>, 2012 EC meeting summaries; (3) vote on/adopt the final draft Program Document; (4) vote on/adopt the final draft RIP Action Plan; (5) extend the Interim Metrics due to the delay in the CPUE workshop - ?; (6) Recruitment Analysis (Cochiti Deviation) Update – Mick Porter - ?; (7) Farewell to Hilary Brinegar; (8) scheduling of December meeting
- Future Agenda Items: (1) Updated 10(j) population schedule and report out on FWS Regional Office approval to proceed; (2) Updates/continued discussion on the acquisition of past mesohabitat data;

**Upcoming Dates and Deadlines:**

- October 29<sup>th</sup> – Draft Final Program Document and Draft Final RIP Action Plan out for EC review, in preparation for Nov EC meeting; *update - this will be adjusted based on the rescheduled November EC meeting date and progress of these focus groups*
- October 29<sup>th</sup> and 30<sup>th</sup> – MRG Water Management Coordination Meeting
- November 13<sup>th</sup> – Climate Change in MRG Presentation (@ joint work group meeting)
- November 16<sup>th</sup>, 2012 - Service intends to issue *a partial* draft BO to action agencies; *update – this will most likely be adjusted as above*
- November 29<sup>th</sup> – EC meeting, 9:00am to 4:00pm at Reclamation
- December TBD – EC meeting
- February 2013 – CPUE workshop

**Executive Committee Meeting Attendees  
October 18<sup>th</sup>, 2012, 9:00 am to 2:00 pm**

<i>Representative</i>	<i>Organization</i>	<i>Seat</i>
Brent Rhees	U.S. Bureau of Reclamation	Federal co-chair
Rolf Schmidt-Peterson (A)	NM Interstate Stream Commission	ISC
Wally Murphy (A)	U.S. Fish and Wildlife Service	Service
Steve Farris (P)	NM Attorney General's Office	NMAGO
Subhas Shah (P)	Middle Rio Grande Conservancy District	MRGCD
Mike Hamman (P)	U.S. Bureau of Reclamation	BOR
Janet Jarratt (P)	Assessment Payers of the MRGCD	APA of the MRGCD
Rick Billings (A)	Albuquerque/Bernalillo County Water Utility Authority	ABCWUA
LTC. Gant (P)	U.S. Army Corps of Engineers	USACE
Matthew Wunder (P)	NM Department of Game and Fish	NMDGF
Frank Chaves (P)	Pueblo of Sandia	Sandia
Matt Schmader (P)	City of Albuquerque	COA
Alan Hatch (P)	Pueblo of Santa Ana	Santa Ana
Hilary Brinegar (P)	NM Department of Agriculture	NMDA
 <i>Others</i>		
Yvette McKenna (PM)	U.S. Bureau of Reclamation	
Ali Saenz	U.S. Bureau of Reclamation	
Jim Wilber	U.S. Bureau of Reclamation	
Jennifer Faler	U.S. Bureau of Reclamation	
Josh Mann	U.S. Bureau of Reclamation	
Jericho Lewis	U.S. Bureau of Reclamation	
Chris Shaw	NM Interstate Stream Commission	
Grace Haggerty	NM Interstate Stream Commission	
Ann Moore (A)	NM Attorney General's Office	
Susan Bittick	U.S. Army Corps of Engineers	
Danielle Galloway	U.S. Army Corps of Engineers	
Michelle Mann	U.S. Army Corps of Engineers	
Kris Schafer (A)	U.S. Army Corps of Engineers	
Mick Porter	U.S. Army Corps of Engineers	
Stacey Kopitsch	U.S. Fish and Wildlife Service	
Wally Murphy	U.S. Fish and Wildlife Service	
Lori Robertson	U.S. Fish and Wildlife Service	
Mark Brennan	U.S. Fish and Wildlife Service	
Jason Davis	U.S. Fish and Wildlife Service	
Jen Bachus	U.S. Fish and Wildlife Service	
David Gensler	MRGCD	
Patrick Redmond	for MRGCD	
Rick Carpenter	City of Santa Fe/BBD	
Sarah Cobb	Senator Udall's Office	
Patricia Dominguez	Congressman Heinrich's Office	
Steve Platania	ASIR (contractor)	
Clay Crowley	Attorney for ASIR	
Laura Paskus	KUNM	
Marta Wood	Tetra Tech (Note Taker)	

Mesohabitat Data from Population Monitoring Program

The MRGCD recommends that the Collaborative Program Executive Committee direct Program Management and the Coordinating Committee to set as a very high priority the acquisition of Population Monitoring data by seine haul, including mesohabitat designations, going back at least to 2006, and possibly farther. This data was collected as a part of Program-funded Population Monitoring, performed by ASIR, and should be made available in usable form to Collaborative Program scientific Workgroups. This data is expected to prove vital for the upcoming CPUE Workshop to achieve its intended resolution of monitoring issues, as well as for the design and implementation of RIP research, monitoring and evaluation tasks using an Adaptive Management process.

The MRGCD further requests that the Bureau of Reclamation make complete copies of Contract No. 03-CR-408029 available for review by Collaborative Program signatories (at EC direction, if necessary), in order to understand how the data delivery and access provisions have been drafted and with a view toward refining the contracting process in the future. The MRGCD could obtain these copies through the FOIA process but prefers that this review occur expeditiously and within the Collaborative Program process.

At its March 19, 2007 meeting, the Collaborative Program EC decided that “The Program Management Team will work with Reclamation to facilitate Program access to all available raw data from Program projects” (Meeting Summary 03/19/07, page 4). More recently (April 2012) the CC reported that Reclamation was negotiating with ASIR “to fund the data acquisition [6 Population Monitoring data sets from 1999-2008 requested by the PVA Workgroup] incrementally” and the CC sought “guidance on prioritization” from the EC at the May 15<sup>th</sup> EC meeting (CC Final Summary 04-11-12 at page 5; EC 05-15-12 Final Summary at 6). The PVA Workgroup has been communicating its need for the Population Monitoring by seine haul data for over a year (PVA Final Notes 09-29-11 at page 9: “Results are needed by seine haul for the habitat information. The seine specific data are vital as it is the only idea [sic] to get a measure of precision around the sampling.”).

In the past few weeks, preparations for the upcoming CPUE Workshop have allowed a review of the Population Estimation sampling protocols and reported mesohabitat data for the Population Estimation [not Population Monitoring] Program. Here are some key insights produced by that review:

1. Population Estimation data sets report RGSM catch and mesohabitat by seine haul (there are 7 different designations).
2. Only a few of the rarer mesohabitat types deliver the occasional large numbers of RGSM densities (i.e. numbers per m<sup>2</sup> by seine-haul) of minnow, but those habitats are so rare that when the Population Estimation data is expanded, by habitat availability, to the entire river these rare habitats don't have very large influence on the total population estimate.
3. Evidently the Population Monitoring protocol (similar to the Population Estimation protocol in this respect) selectively samples the rarer habitats more frequently than their actual abundance, so correct interpretation of the population monitoring data requires by-seine-haul information

on mesohabitat, so that the occasional large densities from samples in the rarer habitats can be weighted appropriately.

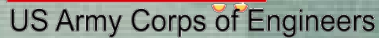
4. Population Estimation data show that the mesohabitat composition of the 20 Population Monitoring sampling sites is extremely variable over space and time.
5. CPUE data analyses performed as part of the PVA effort reveal a high level of “overdispersion” in the minnow densities in the Population Monitoring data by site (a “site” is a 200 m segment of river and includes many seine hauls), probably reflecting differences in the distribution of habitat when viewed at the scale of “sites” and also reflecting the schooling behavior of the minnow. (PVA notes 7/23-7/24, pp 21-22)
6. Preliminary analyses of the Population Estimation data file, which was just made available last month, shows high overdispersion in those data also, even when analyzed by haul (not by “site”), and even when stratified by mesohabitat (which is reported in the Population Estimation file).
7. Some, but not all, of the Population Monitoring data sets also include a field for mesohabitat (16 designations; correlation with 7 PopEst designations is unclear). In some files this is for the “site” not the seine hauls (which is of no use); in only one file (for 2010) there is mesohabitat designation by seine haul (but there are other problems with this file—no age designation of the RGSM in the catch).
8. This indicates that the Population Monitoring by-seine-haul data (i.e. knowing which mesohabitats were sampled by each seine-haul) is necessary for stratifying statistical analysis of minnow time-series data by mesohabitat composition. This in turn is necessary to indicate the importance of habitat in evaluating Population Monitoring results, to suggest the contribution of habitat availability and distribution to minnow species status, and to help refine and improve the efficiency of future Population Monitoring protocols.
9. This also indicates that knowing the mesohabitat composition of the entire river is integral to the statistical analysis that should be used to expand estimates from the sampled sites to an estimate of the total minnow population.
10. Finally this shows that the necessary analyses cannot be done with the ASIR Population Monitoring data files that have been delivered so far.
11. The conclusion is that it is difficult to imagine how the CPUE Workshop—intended to “resolve how the RGSM population monitoring program can provide a reliable, precise, and accurate measure of the status and trend of the species” for the purpose of determining “the best population demographic parameter(s) for gauging species recovery and for measuring sufficient progress for the RIP”—can expect to achieve this resolution while the analyses recommended by points made above (especially point 8) have yet to be undertaken, due to the critical existing data not yet having been made available for analysis.
12. Looking forward, the analyses recommended by points above (especially 8) can play a significant role in the refinement of RIP Sufficient Progress Metrics and the formulation of hypotheses to help “deliberately and explicitly reduce management uncertainties” as envisioned by the Adaptive Management Plan, Version 1.
13. These data sets were produced in the performance of Bureau of Reclamation Contract No. 03-CR-408029.

14. When the Federal Government contracts with private parties, the Federal Acquisition Regulation (FAR) “Rights in Data—General” Clause “provides the federal government with virtually ‘unlimited rights’ in technical data and computer software.” *Ervin & Assoc., Inc. v. United States*, 59 Fed. Cl. 267, 269 (2004)
  - a. “Unlimited rights” is defined in the FAR as “the right of the Government to use, disclose, reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, in any manner and for any purpose, and to have or permit others to do so.” 48 C.F.R. § 52.227–14(a).
  - b. The Court in *Ervin* noted: “In fact, the ‘Rights In Data—General’ Clause ‘does not provide any rights to the contractor, instead, these rights tend to limit rights that a contractor may have in data by requiring the license of the technology to the [G]overnment—effectively, a compulsory license. Indeed, in contrast to a patent or copyright, for which the [G]overnment may demand a license, the data rights regulations specifically require conditions under which a contractor must grant the [G]overnment specific, non-exclusive license rights.”
15. Therefore, review of these contracts should reveal a path forward for gaining access to use of the mesohabitat by-seine-haul data, a process which seems to have stalled out going through the previously recommended channels (April CC Notes, May 15 EC Notes) .

[illegible]

Michael Porter, Ph.D.

October 18, 2012



# One Team ★★★ Destined For Greatness

# Update: Recruitment Analysis

- Purpose: Evaluate spring runoff flows for silvery minnow recruitment (reproduction) through the Middle Rio Grande Valley
- Analysis: focus on recruitment trends (young fish sampled in May-July)
- Question: recruitment determined by ...
  - Spring volume?
  - Spring hydrograph?
  - Inundation area?





# Recruitment Analysis

## Exploratory data analysis

How does silvery minnow recruitment respond to:

Peak flow (cfs)

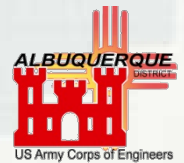
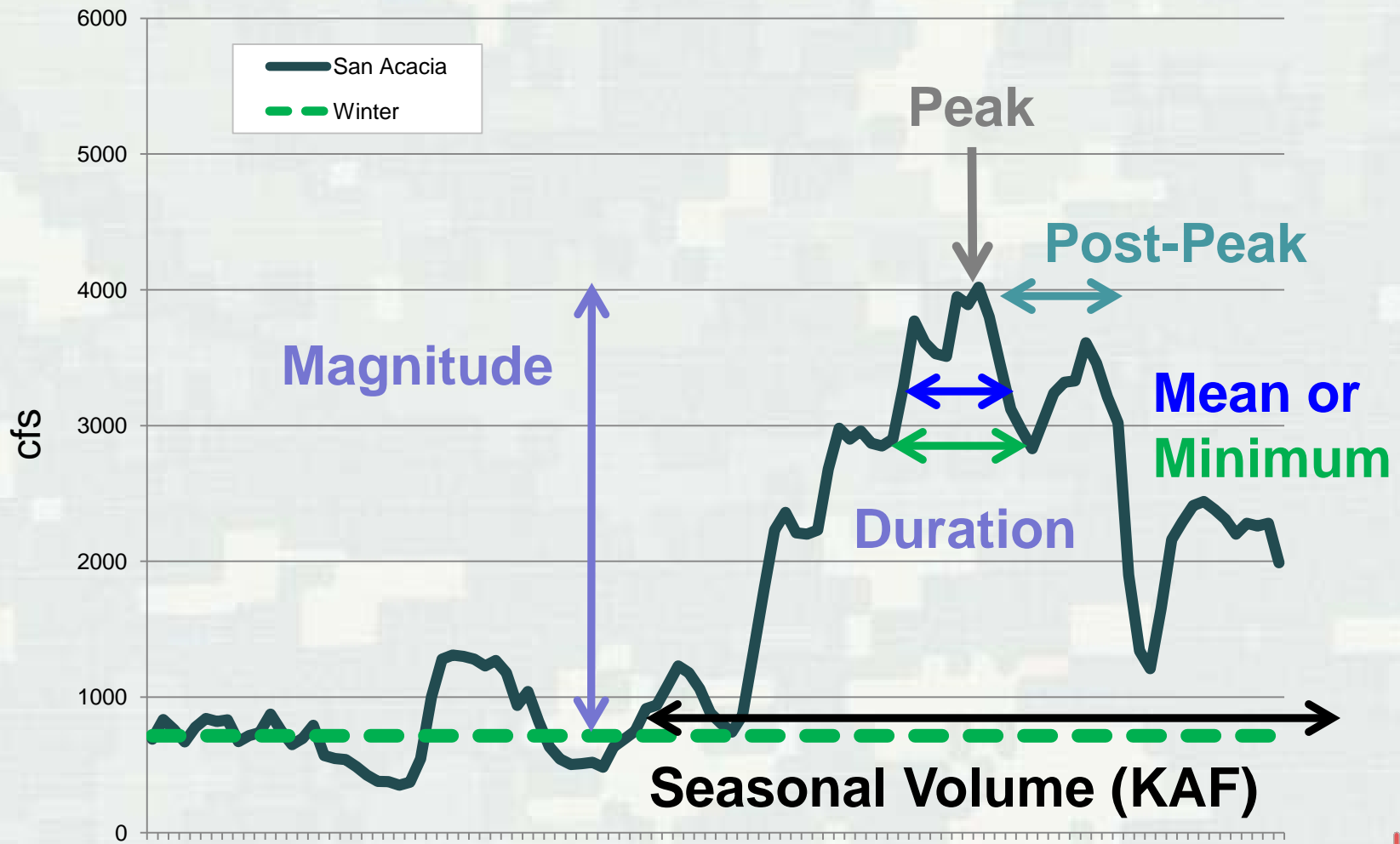
April - June volume (KAF)      5, 7, 9, 11 day mean & minimum cfs

May - July volume (KAF)      15, 20, 30 day minimum cfs

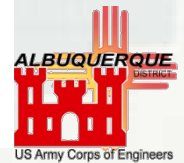
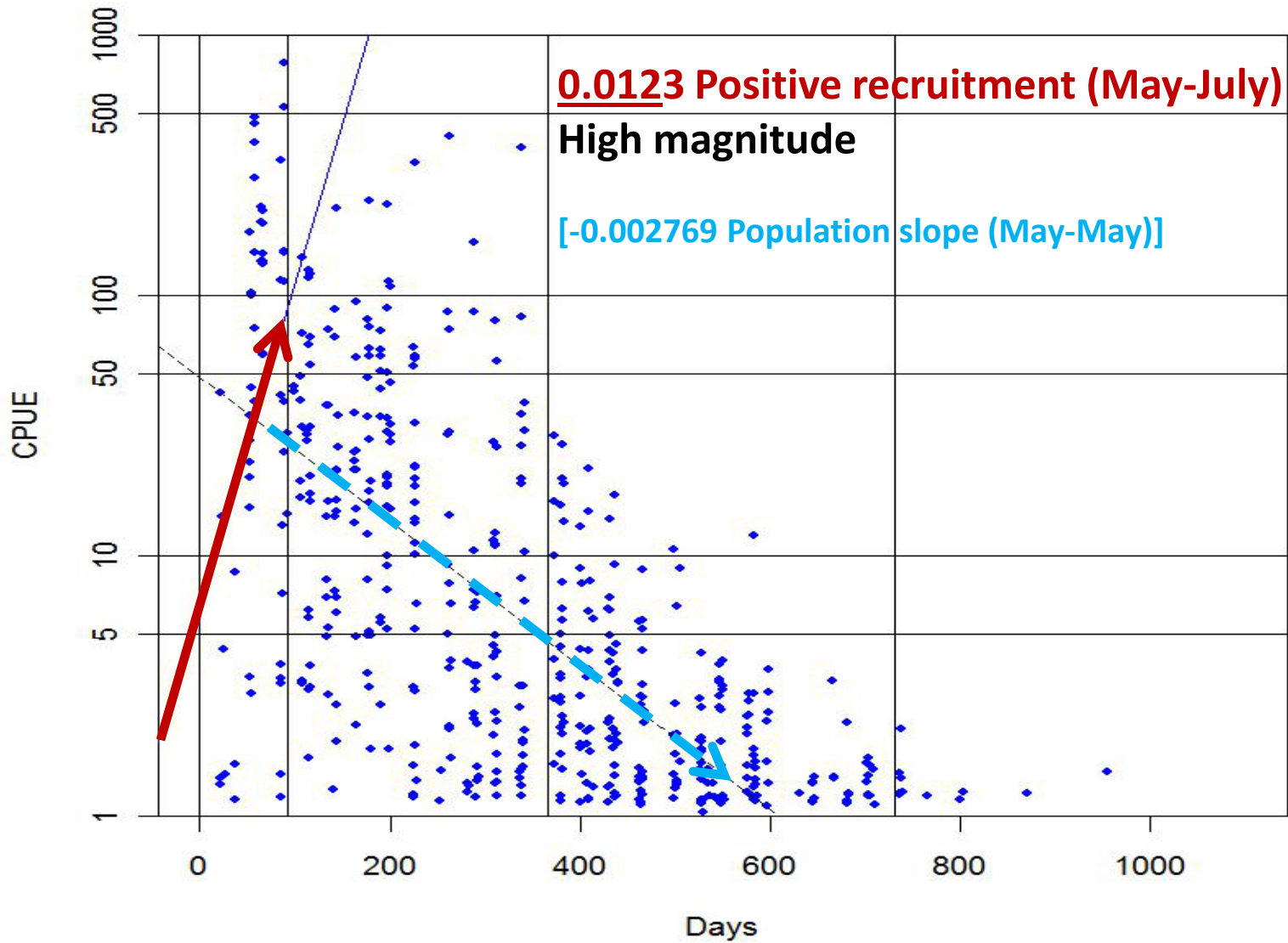
Total Inundated Area (acres)      Days above 1000-6500 cfs



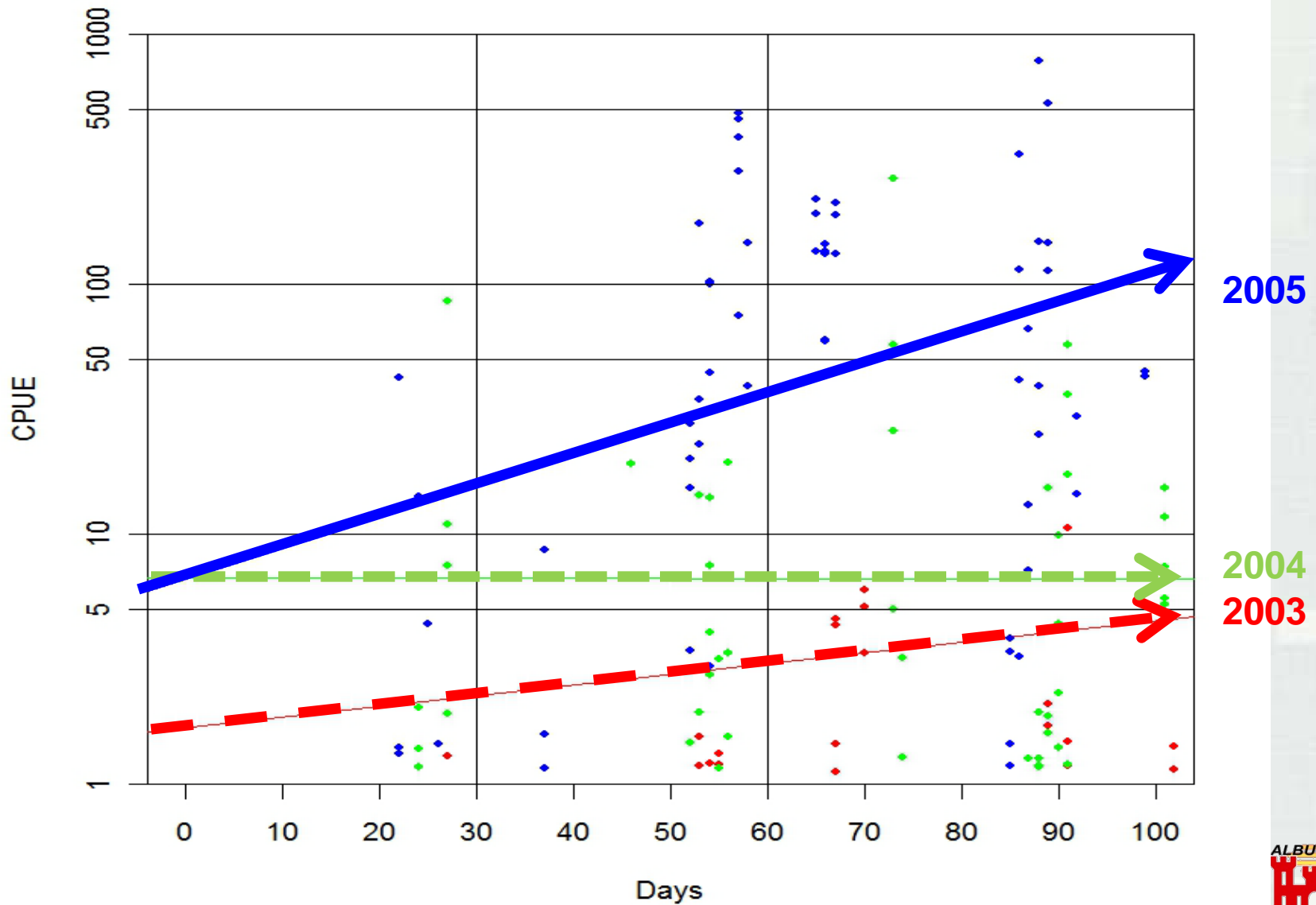


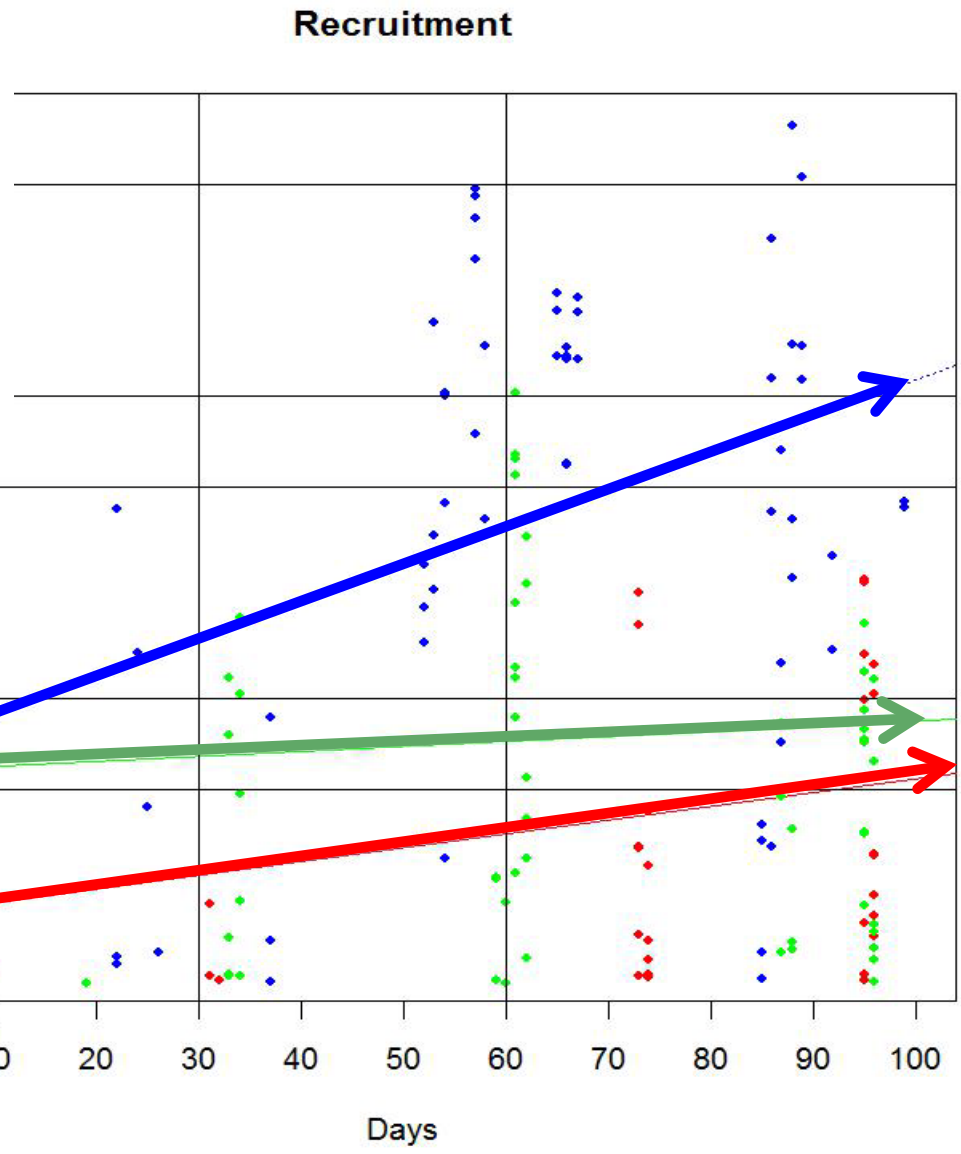
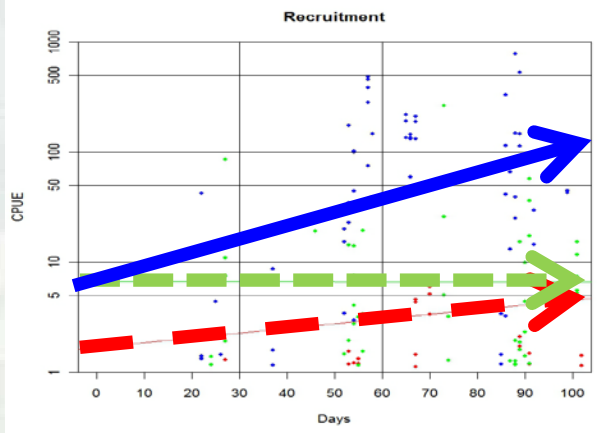


2005



## Recruitment





2005

2010

2011



# SUMMARY

Today focused on recruitment trends in response to the spring hydrograph

Propose monthly transfer of fish data into DBMS

Corps will use detailed analyses to evaluate potential adjustments to the Water Operations

## Next Step

Develop Annual Population Trajectories for analysis



# Thanks to

*Ken Gerow – University of Wyoming*

*for his advice on developing the statistical analyses.*



# Questions?



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