

# NOTES

## **Lower Santa Cruz River Basin Study Project Team Meeting #7 January 19, 2018 9:30 to 11:30 am Pima Association of Governments**

### **Attendees**

<b>Attendee</b>	<b>Organization</b>	<b>Attendee</b>	<b>Organization</b>
Lindsay Bearup	Reclamation	John Kmiec	Town of Marana, SAWUA
Laurie Brown	Reclamation	Mead Mier	PAG
Chris Castro	U. of Arizona	Michael Millikin	Community Water Co. Green Valley
Hsin-I Chang	U. of Arizona	Margaret Snyder	Tucson Water
Kathy Chavez	Pima County/OSC	Selso Villegas	Tohono O'odham Nation
Eve Halper	Reclamation	Kip Volpe	Vail Water
Marie Light	Pima County/DEQ	Wally Wilson	Metro Water District
Melodee Loyer	Tucson Water	Brian Wong	BKW Farms

### **1. Welcome and Introductions**

- a. Kathy Chavez, Pima County, convened the meeting and introductions were made.
- b. There were no changes to the April 17 notes and they were approved

### **2. Basin Study Updates**

- a) Review of Study Tasks and Accomplishments – Eve Halper, Reclamation provided an update of the basin study and progress to date. UA researchers are working on dynamically downscaled climate projections and Reclamation has selected the Sacramento Soil Moisture Accounting Model for the surface hydrology model. Reclamation has updated ADWR's groundwater model with 2015 pumping rates. The Demand Sub Team has developed demand scenarios and reviewed baseline simulations for water demand using the CAP service area model and the environmental sub team is developing a methodology to evaluate impacts to riparian areas. Reclamation staff conducted a field visit of BKW Farms and riparian areas in May 2017. A stakeholder advisors meeting was held April 24, 2017 and the first Public Meeting was held November 30, 2016.

Remaining activities for completion of Step 1 include:

- selection of climate projections for higher and lower risks futures,
  - run climate projections through the surface hydrology model,
  - finalize CAP:SAM details,
  - run demand scenarios in CAP:SAM to obtain future demand by water provider
  - Translate CAP:SAM future demands groundwater pumping by well
  - Select combinations of supply and demand scenarios to be used in the groundwater model
- b) Use of Climate Metrics to Evaluate Dynamically Downscaled Climate Projections – Hsin-I Chang, UA Department of Atmospheric Sciences, reviewed the dynamically downscaled climate products used to for climatology data processing for precipitation

and temperature. Chris Castro emphasized that he and Hsin-I are looking for feedback on the methodological approach on the work they presented.

Marie Light asked whether it made sense to use the period 1950 to 2010 as a reference, since climate change began during these years. The later years may already be incorporating a warming trend. Chris Castro acknowledged that this could be a concern. To address this, the period 1950 to 1980, the earliest 30-year period for which there is good reconstructed data, could be used as reference. Kip Volpe asked if the analysis had been done only for August and December. Hsin-I replied that all months had been analyzed, but, in the interest of time, only August and December were being shown today. These months were selected because they represent summer and winter precipitation patterns.

Chris Castro noted that the analyses of extreme events shown in the presentation provide much more information than the change in the monthly mean precipitation. Hsin-I commented that in general, the WRF-MPI dynamically downscaled climate projection has more days with high temperatures and fewer days with large rainfall events

Marie Light asked if the model resolution was sufficient to represent the high elevation areas where much of the rainfall occurs. If not, would it be possible to shift the cells in order to do so? The spatial resolution of the WRF-MPI dynamically downscaled climate projection is 25 km, which is sufficient to represent high elevations within study area.

There were several questions about slide 6 – what was the source of the difference between the WRF-MPI simulation of precipitation from 1950 – 2010 (black line) and the data from the airport (black diamond). Multiple factors may be contributing to this difference. First, the WRF-MPI value is an average over the study area, while the airport data only represents one point within the area. Secondly, WRF-MPI is known as a “wet model”, that may over-predict precipitation. Chris Castro added that the output of a climate model goes through a process of bias correction before it is input into a hydrologic model, so this difference should not be of great concern.

Brian Wong asked if the three global models will be averaged or if one will be selected. Chris Castro replied they will look at the three models, evaluate their performance and then decide. Chris Castro further explained Reclamation’s contractor, Eylon Shamir, will use the climate projections in a weather generator, with bias-corrected data, then input to the surface hydrology model.

Mead Mier asked if the work shown today represents all the metrics provided by the study partners. Hsin-I replied that these were the top five that had been requested be evaluated. After these are finished, it may be possible to include others, if time allows. The Project Team is in agreement with the proposed methodology and the UA Climate staff will continue developing projections for the remaining climate metrics.

- c) Progress by Reclamation Technical Service Center – Lindsey Bearup, Reclamation reviewed the data inputs to the surface hydrology model and groundwater model. She explained the surface hydrology model and groundwater model workflow that will show the location and magnitude of supply/demand imbalances in the TAMA.

Wally Wilson asked about the pumping file format needed for the groundwater model. It was agreed that a discussion with Reclamation's groundwater modeler will take place. Wally also announced the municipal water demand sub team will meet February 13 to discuss assignment of new housing units to water service areas.

- 3. Basin Study Budget and Time Extension** – Eve Halper reviewed a memorandum that summarize the basin study progress noting the enhanced approach to using dynamically downscaled climate projections and decision to model the impacts to basin-wide natural recharge through the use of a surface water hydrologic model will result in additional time to complete the remaining study tasks. The additional time will also require an increase in the study budget. Reclamation is proposing a new study completion date of September 2020, a 19-month extension. Reclamation also projects a budget increase of \$355,000 to Reclamation's cost share and corresponding increase in the local in-kind contribution. With the Project Team's agreement, Reclamation will prepare a budget and time extension request for the Regional Director's consideration. If the time extension and budget request is approved, the cost-share partners will be asked to sign a basin study amendment to the Memorandum of Agreement. The Project Study Team agreed, in principle to the budget increase and time extension.
- 4. Demand/Supply Draft Matrix** – Kathy Chavez reviewed the demand scenarios which reflect socio-economic factors including growth, location of growth and demand. The supply scenarios are largely driven by climate scenarios: base case, best-case and worse case. She described a draft matrix of demand and supply scenario combinations based on low- to high-risk. Six proposed combinations were described, including a base cost consisting of official baseline values for demand and base case climate. The low risk scenario would include low growth rates, compact growth patterns, no overdraft in Green Valley, warm climate projections and moderate, occasional CAP shortages. The highest-risk scenario reflects a high growth rate series, outward growth pattern, no mining replenishment in Green Valley, a hot climate and deep, frequent CAP shortages. Three additional scenario combinations are proposed. The Basin Study Team may run all six scenarios and there might be that produce similar impacts, thus eliminating duplicative scenarios. We can also group them through a family of futures and identify those that will be used in the groundwater model. The demand/supply matrix will also be presented to the Stakeholder Advisors for comment and input.
- 5. Outreach and Communications** – Kathy Chavez reviewed the following outreach activities:

  - a. Stakeholder Advisors will meet on February 26 at PAG
  - b. The Second Public Meeting will be held on March 12
- 6. Next Meeting Date and Topics** – The next Project Team meeting will be held in late March following the Public Meeting, Proposed topics include review of climate projections, results of the CAP:SAM modeling and review of demand/supply scenario combinations. The Basin co-study managers will be contacting the Project Team once the date is selected.