Agricultural Consumptive Use Estimation in the Upper Colorado River Basin

...aaaannd BIL Funding/DCP Implementation



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COLORADO RIVER WATER USERS ASSOCIATION (CRWUA) CONFERENCE





WHY?

Each water year, UCRC must...

- Quantify consumptive water use in the Upper Division States
- Make findings as to the quantity of flows at Lee Ferry
- Make findings as to the necessity for and extent of curtailment of water use required, if any
- Comity = good, controversy = bad

Also required to...

 Make and transmit annually to the Governors... and the President of the United States of America, with ... a report covering the activities of the Commission the preceding water year.





WHY?

Agricultural Sector Water Use is Tough to Estimate... WHY?

- Upper Basin and Lower Basin are SO DIFFERENT
- UD States do it; Reclamation does it (CU&L), but using different methods
- UCRC still collecting early/provisional data to meet deadlines, but knows this will present a problem if it ever needs to make a finding
- Recipe for <u>Controversy</u> (w/ a Big-C). We need to "remove" it.

In 2011 (ish), Upper Division States, Reclamation, and UCRC begin the Assessing Agricultural Consumptive Use in the UCRB – Phases I, II, and III (CU Study)



PHASE I	 2011 (ish) to 2013 Investigate current methods in use within the UD States and Reclamation Evaluate consistent GIS/climate/weather station data availability Explore Crop Consumptive Use (Coefficient) Models Explore Potential for Remote Sensing Methods (RSMs) and Related Data Processing Procedures What are the Operational Challenges and Potential Solutions?
PHASE II	 2014 to 2016 What is needed to get better data? What are the costs? Extension of Weather Station Network Installation of Eddy Covariance (EC) Towers for RSM Ground-truthing Further Explore Models for a Comparative Analysis (METRIC, SSEBOP, Blaney-Criddle (CU&L-style), Modified Blaney-Criddle, and Penman-Monteith) Proceed with a Comparative Analysis of the Identified Methods

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WHAT?

PHASE III

2017 to 2019

- For three irrigation seasons, evaluate the performance of the four CU estimation methods
- 2017 only had one EC Tower, 2018-2019 had four
- Known error at the in-situ instrumentation + RSM data
- For each year of the CU Study Comparative Analysis
 - Compile best available GIS data for irrigated fields
 - Run methods and compare to in-situ instrumentation
 - High-level, Potential ET, Actual ET, Effective Precipitation, and Consumptive Use from Irrigation
 - Document on-site difficulties and sources of error
 - Swear to do better next year







- Final Re Technic Commis
- On June eeMETF procedu consum Upper E
- Reclama method
- Commis to work current





IISSION

River Basin

water resource development velop their apportionments of ver Compact; and

method was thought to be the

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(Reclamation) currently use lture, but they do not produce mely manner; and

n staff, and Reclamation have) to evaluate various methods in; and

on to the Commission, which

WHEREAS the Workgroup recommends the use of the Automated METRIC (eeMETRIC) method to determine the consumptive use of irrigated agriculture for water modeling and fulfilling the Commission's duties under the 1948 Compact; and

USBR to conduct CU&L Retrospective Review





Continue CU Study WG as the Upper Basin Consumptive Use Program

Lay the foundation for further confidence in CU data AND for DCP Implementation using BIL Funds



- Reclamation will continue to support CU&L effort by maintaining the existing four EC Towers, etc. as the CORE CU Program
- UCRC and the UD States will implement an EXTENDED CU Program, with new EC Towers, weather stations, diversion measurement, re-activated and new streamgages, and other instrumentation that can generate increased confidence in these new approaches.
- Implementation will support DCP-related activities, such as DROA modeling, streamflow forecasting, and components that may support a potential Demand Management Program.



- BIL will also be used to pursue several in situ "fieldscale" water-balance studies to further clarify questions related to DCP activities and investigation.
- UCRC and UD States are currently engaged in preliminary siting/scoping and work plan development for new infrastructure. It is a TON of work but so worth it. Vive la BASS! (Best Available Science, Silly!)
- Intent is to start putting new instrumentation in the ground in the spring/summer of 2023 (if not, we swear we'll do better next year)
- And continue CU Program and DCP implementation support for at least five years, hopefully much longer!



Thanks, and LMK if You Have Questions...





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