Technical Advisory Committee Meeting # 5 (Agricultural Irrigation Water Demand Projection Methodology Meeting)

October 24, 2018, 9:30 AM, Webinar

1. The Agenda includes Meeting Guidelines and Introductions, the Farm and Ranch Irrigation Survey, Other Irrigation Projection Studies, 2017 Survey of Permitted and Registered Withdrawals, Ongoing work to classify irrigated areas, proposed projection method, Open Discussion, and Upcoming meeting schedule. The meeting presentation was about 50 minutes followed by open discussion for a total meeting time of just under 1.5 hours. Participants introduced themselves via the Chat Box on the Webex (information provided is included in the meeting Roster).

2. The purpose of these meetings is to encourage stakeholder input:
   - During the meeting we encourage participation, Webex Chat Box or Open Discussion.
   - Feedback following the meeting:
     Please send any input to: scwatermodels@clemson.edu
     Find meeting materials at: www.scwatermodels.com

Ideally feedback within 30 days gives the study team a chance to include your feedback.

3. Presentation slides contain an overview of what was presented:
   - Scope and Timeline: Reviewed the scope and timeline for the study. Method report is expected in February and the “Pilot Report” is expected next May.
   - Projections are not forecasts.
   - Example Irrigation from a single withdrawal.
   - Current Events.
   - The USDA Farm and Ranch Irrigation Survey, the national standard for irrigation information. (new name Farm Water Use Survey).
     - Harvested Cropland in South Carolina
     - Irrigated acres by crop in South Carolina.
     - Irrigation depth by crop in South Carolina.
     - Irrigation distribution method by crop in South Carolina, by farm
     - Irrigation distribution method by crop in South Carolina, by acres harvested.
   - Previous Studies on Irrigation Projections.
     - 1983 State Water Assessment (SCWRC)
     - Texas methodology
     - North Florida methodology
     - USDA Projections – national level
     - Projecting Water Supply Sustainability – published in Environmental Science and Technology – national level
     - Do climate factors matter to irrigators, Mississippi Delta, Journal of Hydrology, 2017
Center Pivot Irrigation in the Georgia Coastal Plain, 1976 vs. 2013, published in 2017

2017 SC DNR Survey of Permitted and Registered Water Withdrawals – forms mailed out for permitted parties, 159 responses to 327 surveys sent to agricultural irrigators.
  - 47% planned to increase over next 5 years
  - Open ended questions in survey on what factors impact water use –
  - Listing of Technological factors that impact water use
  - Irrigation volume calculated from inches of irrigation applied to number of acres

Ongoing study – Automated Classification of Irrigated Areas – using satellite imagery and automated classification (computer algorithm) to identify irrigated areas. This is done by colors being distinguished from surrounding non-irrigated areas. There is not enough time for manual delineation for the entire state as was done in Georgia study.
  - Objectives
  - Data Source for Irrigation Classification
  - Irrigation Classification Method
  - Example from Georgia test data set – about 70% accuracy from automated algorithm to manual delineation

Proposed Method for Crop Irrigation Water Demand Projections –
  - Simple – assume irrigation withdrawals remain constant at 2014-2017 average
    - Has been applied in SC before on regional studies
  - Complex – estimating total irrigable land, expansion rate, crop portfolio, crop irrigation needs during drought, irrigation efficiency and climate change effects

Future Meeting schedule – November 7\textsuperscript{th} - Gold Course Irrigation

Plan to send out a report on agricultural irrigation to the group that responded to the previous email about this meeting. It will also be posted on the web-page.

4. Open Discussion Notes:
  - Stakeholder – are you all using the reported irrigated acres from farm service agency data set?
    - Alex – That’s the best dataset available
  - Stakeholder – there are some investment groups that put in Pivots and lease to growers that is not always related to economic conditions. What drives what use is the climate and amount of pivots.
  - Alex – can we access that information? My understanding is the farm service agency doesn’t share it
  - Stakeholder – you may be able to get general information, but you need to contact that agency. Other source is the Risk Management Agency who sells insurance may have irrigated acreage information
  - Stakeholder – you can get the data from the farm service agency at a higher level online. You can also FOIA the information.
- **Stakeholder** – looking at the last slide on whether irrigation withdrawals are steady or increase? I would think it would increase. Corn is a big water user and the weather can have an impact. You can do economic simulations on long term prices for average growth. I would be interested to hear what others say on this. The future of agriculture on major row crops, would they stay comparative with Midwest? There is large volatility. Irrigation provides more control – cost is higher in SC and the payoff to irrigation grows as the risk is higher. Ag sciences group from Clemson is willing to help with this modeling.

- **Stakeholder** - has there been any feedback from the pilot hemp growers and is there any feedback on the impact that market may have on irrigation?

- **Alex** – There are 20 growers with 20 acres each this year and double that next year. Hemp is grown for three products – fiber, seed, and oil. The oil is the main interest. Fiber is similar to row crops, but oil is different method. Oil is probably more likely to be irrigated as higher value and smaller acreage. My initial take on it was maybe decrease in water use is other crops are converted to hemp. Although it can grow with less water it is more productive/ minimizes risk to have the option to irrigate. Any thoughts?

- **Stakeholder** – working with hemp growers – all doing it for CBD oil and will all use irrigation. It’s in its infancy now and hard to tell if that market will get oversaturated with other areas participating now. No estimate on irrigation depth, we hope to have that data next year.

- **Stakeholder** – From big picture state process, it seems like this is one area where the regional groups may not have as much input because it is too complicated. There may not be more technical expertise then what you are trying to do at the state level. The River Basin Councils may have to lean on the state level analysis more than the other categories.

- **Stakeholder** - Is there a source for the most current numbers on agricultural water needs (inches/week) by crop? It would be helpful for us as we write permits for agricultural Capacity Use clients

- **Alex** – I know ______ presented this information at a conference last week. I know this information is available in North Carolina and it can be modeled from planting base. Anyone have any sources for crop water demand?

- **Stakeholder** – we have developed an update of an older document, South Carolina Irrigation Guide, which provides some of that information. Assisted by ______ and others. The document is available online. Supplement to National irrigation guide, specific to SC. I can send you that link.

- **Stakeholder** – I have a website where you can calculate the water use by crop. If there is interest in a specific crop not in the tool let me know and I will include it. Data source is FAO 56.

- **Alex** – shared the link in chat: https://etcman.shinyapps.io/CropWaterUse/

- **Stakeholder** – have you reached out to any of the irrigation equipment vendors?

- **Alex** – I have not reached out to any vendors or investment groups for irrigation that were mentioned earlier on the call. If anyone has any tips for contacts to investigate please share.

- **Stakeholder** – I know the irrigation vendors

- **Stakeholder** - W.P. Law they are in Greenville, Greer and Charleston

- **Stakeholder** – We are a seasonal user, we don’t use water everyday. Bottom line is it is expensive to use water, so we only use it when we need to. I believe we are not using water as much, as shown in the projections, mostly due to technology: equipment, GPS,
soil monitors... etc. I believe that has factored into less usage. Some farms, if they are willing to show their numbers, they have increased acres and reduced water use. What crop you are planting has a lot to do with it. It’s not as easy to change crops as it sounds as you have to have different equipment for different crops. It is a complicated industry that is difficult to understand but everyone is affected by it. I plan to follow up on some of the questions asked today and hopefully provide some contacts. Some of the things that are pointed out and are good points to make – talking about Risk Management and that type of thing – some of it is effected by Farm Bills.

- **Stakeholder** – I was a sod farmer and know a little bit about that business, but nothing about row crop. When is the peak use of water in the growing process?
- **Stakeholder** – for traditional row crops it is going to be May and June. For corn it is April through August and then starts winding down. Vegetables are grown into the later months, into the winter time. Depends on the crops, but typically it is the spring and summer. Weather is a variable that greatly plays into this.
- **Stakeholder** – there was a good point made, relative to irrigated acres, River Basin Councils will give you local input on the growth and expansion of farms. That could help verify/ give some truth to projections. Put something out there in terms of projections and let the River Basin Councils give input on the accuracy of those projections.
- **Stakeholder** - I am hoping we can get the agricultural community on the River Basin Councils.
- **Stakeholder** - I know the irrigation vendors as they relate to golf and will invite them for the next meeting in November