

UNL Faculty Respond to Advisory Panel State Research Priorities

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After two recent meetings, University of Nebraska water faculty have submitted 10 brief research proposals aimed at addressing top state water research priorities set by UNL's Water Resources Advisory Panel.

The 10-member Water Resources Advisory Panel (WRAP) is comprised of water resources decision-makers from across Nebraska that advise UNL on state water issues. The panel requested a water faculty response to a list of research priorities it created at an earlier meeting by cataloging and paring-down a broader survey of state water research needs.

UNL faculty had two opportunities to meet and respond to WRAP's water research priorities list, said panel organizer and moderator Jessica Harder of the UNL Water Center.

More than 40 attended WRAP's Sept. 22 Hardin Hall forum to get an initial look at the priorities list and begin developing input on WRAP's research priorities list.

"Specifically, WRAP members wanted water faculty to answer three questions: 1) Have these priorities already been addressed by the University 2) Are these researchable questions framed in the right way 3) Are there adequate resources at UNL to address these priorities and is anyone addressing them," Harder explained.

During the half-day forum, facilitated by Water Resources Research Initiative deputy program manager Lorrie Benson, faculty took each of these questions in turn and collaborated to begin crafting answers.

First, faculty present at the forum developed a list of ongoing, upcoming and past UNL research projects addressing the research priorities, then they divided into smaller groups surrounding the four major research priorities in order to utilize their expertise to discuss whether the panel's list needed reframing to create researchable questions and to reword these questions where needed.

Finally, from their small groups, faculty assessed UNL's ability to tackle these individual research questions.

A second faculty gathering on Oct. 3, during a WRRRI retreat at Lincoln's Wilderness Ridge, built on the work of the earlier meeting and resulted in creating 10 short proposals for the panel.

Four of the proposals address the panel's first priority—water modeling and data gathering to develop a better understanding between surface water and groundwater resources.

Two each are aimed at the other three broad priorities categories: Impacts on the water budget, determining best management activities/tools to reduce consumptive use of water and provide the best economic environmental and social benefits per acre foot of water consumed, and economic impacts of management activities.

Over 30 faculty and staff were involved in these initial proposals. After the initial proposal list was announced to water faculty, many more faculty members have expressed interest in becoming involved in specific proposals.

The WRAP met with WRI co-leaders Ron Yoder and Kyle Hoagland, and Assistant Vice Chancellor for UNL's Institute of Agriculture and Natural Resources, Alan Moeller on Oct. 11 to briefly examine the faculty proposals and discuss the next step.

Panel members are now forming comments and questions on the proposals, and a future opportunity for WRAP members to meet and discuss these proposals with researchers is being organized.

Water Resources Advisory Panel Priorities:

First Tier Priorities:

1). "By basin" assessment of information needs to develop a better understanding between surface water and groundwater resources.

- A. Need for Geological/Land Use/Water Use surveys to provide basic required data (Especially focusing on glaciated regions where aquifers and their hydrology are affected by the presence of glacial till).
- B. Develop formal ground water models where appropriate.
- C. Model verification and refinement (Gaining better understanding of pumping/recharge on groundwater aquifer and stream flow).

2). Related topics that impact the water budget.

- A. Impact of changes in land use and agricultural practices to increase yield with less water diverted/pumped.
- B. Impact of riparian vegetation on water use and groundwater surface water interaction.
- C. Improve estimates of groundwater recharge through vadose zone studies, improvements to CROPSIM or similar tools to assess potential recharge from irrigation

3). Determine best management activities/tools to reduce consumptive use and provide the best economic, environmental and social benefits per acre-foot of water consumed.

- A. Water transfers/water banking.
- B. Drought-resistant crops/Water-efficient crops.
- C. Deficit irrigation systems/management decisions.
- D. Drought mitigation.
- E. Increased water storage for retiming of flows through both surface and ground water reservoirs.

- F. Drought triggers for management plans (In some cases, a management plan that is triggered by reduced stream flows may make sense – a groundwater impact on streamflow may be acceptable until drought effects are seen).

Second Tier Priorities:

4). Economic impacts of management activities.

- A. Sustainability of biofuel industry.
- B. Social, political and economic implications of retiring irrigated acres through incentive based programs.
- C. Economic impacts of trade-offs between water use for irrigation and other uses (instream flows, recreation).