Summary of Comments
External Stakeholder Listening Session
January 7, 2014

Bob Bettger (submitted written comments—attached at end of summary)
Representing NE Department of Natural Resources

- Big data is big business (Monsanto purchased Climate Corporation).
- Over 23 million acres of grassland has been converted to cropland in the U.S.
- Risk management and planning is important for producers.

Craig Derickson (submitted written comments—attached at end of summary)
State Conservationist, Nebraska Natural Resources Conservation Service

- Not knowing what next Farm Bill will bring. Lots of optimism for continuing support for EQIP (Environmental Quality Incentives Program).
- Integrate NRCS work with NRD work - all on the same page
- Need for training and professional development
- Production ag has changed considerably. What is the future condition we want to get to? What can we do with what we have? What can we do that is best for people and the land?
- Help to expand capacity of what we are already doing in current programs

Duane Woodward (submitted written comments—attached at end of summary)
Hydrogeologist, Central Platte NRD, Grand Island

- Uses a water budget approach
- All of the records need to go into a good database
- Need better ways to collect data (ground water pumping, etc.). Need to look at rainfall, changes in soil and water storage. Work to get daily data.
- Extension - have extension education in CPNRD office
- Get a handle on real differences to irrigation applications

  Question from Steve Oltman: What percent of irrigation wells in Nebraska have water meters? About 10% in Central Platte. Upper Republican has higher percentage. Other tools can be used for decision makers. Need data to calibrate models.

  Question from Frank Kwapnioski: Is ambient water use also a concern? Native or rain-fed areas should also be included.

Jerry Kenny (submitted written comments—attached at end of summary)
Executive Director, Platte River Recovery and Implementation Program (PRRIP)

- Great opportunities for PRRIP efforts to leverage with an AFRI grant application. Many potential opportunities to cooperate and collaborate on adaptive management and ecosystem management; governance; water balance use; targeted species; etc.
- Legal/institutional aspect is important (multi-state, multi-government)
- Efforts that are underway at PRRIP include:
  - River mechanics and sediment transport
  - Geomorphology and vegetation impacts
  - Wet meadow hydrology
  - Species response to habitat
  - Development of water supply for habitat use
  - Water management for environmental purposes

    - Habitat creation and management
    - Outreach and youth oriented, experience-based education
    - Cooperation with Platte Time Lapse project for outreach purposes
    - Water markets and ag economics
    - Note: Christine Reed at UNO works on PRRIP structure and effectiveness through Water for Food
- PRRIP has 10,000 acres of riparian land that could be used as research site for bio/eco/hydro investigations
- PRRIP currently expends $3-5M/year on AMP monitoring and research
- PRRIP has extensive hydrology, geomorphology, topography, and species databases
- A key area of interest is in the area of Water Management Incentive. How to manage water in a manner that will reduce consumptive use and return the saved water to the river. Keeps land in production, but provides water to river for environmental use.

Frank Albrecht
Environmental Services, Nebraska Game & Parks Commission

- Great working relationship - coop Unit - Craig Allen, TJ Fontaine, grad students; Mark Pegg - research on the lower Platte
- North American conservation model (10-15 minute video)
- Natural Resources are so important, should be held in public trust so that everyone can use them (not just the rich) trust doctrine
- Integrated management plans. Making good progress in a lot of areas. Keep water in the streams and rivers. 2.3% of streams are protected for instream flows. Strong public support
- Trends: Renewable energy and impact of wind energy; fragmentation of grasslands--losing grassland to row crops; numbers of wild bird species are down; drought and emergency haying
- Need resources to respond to critical issues and deferred maintenance
- Maintain natural resources to increase quality of life

Scott Josiah (submitted written comments—attached at end of summary)
Director, Nebraska Forest Service

- Eastern red cedar - about 500,000 acres now, expanding greatly each year. What is the impact of Eastern red cedar on the water budget? Use modeling to study? If remove Eastern red cedar, how to restore grasslands? Could Eastern red cedar be used as a source of biomass for energy?
- Emerging economic opportunity - wood we are not using - millions of $s
- How much water do trees use?
- Research issues regarding forest fires.
- What are the environmental services provided by riparian forests?

Mark Brohman
Executive Director, Nebraska Environmental Trust (NET)

- Opportunities to leverage resources
- NET supports research on: surface and groundwater; management of weedy and invasive species; burn units; habit; air quality; soil management; nutrient management; etc.

Lee Orton

- Thinks in terms of the well drillers and the water balance alliance.
- Reiterate importance of research. Translational research needs to occur.
- Education is critical! Need to share information.
- Need more technology transfer workshops. NRCS staff and people who teach farmers/ranchers need to know science and technology. Decision makers need more information and need to know science and technology. Need to educate decision makers today and for the future.
- Need to educate the public about the importance of water
- Help producers in the field apply new technologies and science to reduce their use/application of water.
- The best teachers are the rural producers and the leaders in the field. How do we support them?
- CSD is second to none - a good resource we need to rely on more
- NSIA – future water leaders' academy is in its fourth year.

Ann Bleed

- Need basic geological data! How do streams impact ground water? How does one well affect other wells?
- Descriptive details of underground water are required for modeling studies.
- The "non-sexy", non-cutting-edge research of the Conservation & Survey Division is important.
- Major investment is being made by LPSNRD CSD - putting together basic data - understand broad picture in addition to the very necessary details

Karen Griffin

Geologist

- Basic research data needed to develop good management practices and make sound decisions.

Senator Jerry Johnson (District 23)

- Need to take care of water because it is the best natural resource.
- Water roundtables every Wednesday morning. Lots of information about water. Funding for water will be a challenge this year. It is important to speak to your Senator about water.

Senator Brasch (District 16)

- Funding for maintenance of parks is important. Also need $50-60M to make parks ADA compliant.
- OWH reported that the committee is asking for $50M/year for water, up to $1B total (some disagreement about this from other stakeholders).
- May be checking for uranium in water in Nebraska.

Jim Schepers

- IA state video on nutrient loading and hypoxia in the Gulf of Mexico.
- EPA goal is 45% reduction in nutrient loading by 2016? Iowa also has a goal of 45% reduction in nutrient loading, but Iowa loads way more nutrients than Nebraska. Although no-till, cover crops, and application of fertilizers in Spring are a good start to reduce nutrient loading, more efforts will be needed to have an impact. Livestock and DEQ need to be part of this discussion.

Roric Paulman
Producer from Sutherland; Co-Chair, Water Funding Task Force

- Billion dollar investment in CSO
- Other investments specific to the various watersheds
- We underfund our commitments - all the way down to the producers. What are the priorities?
- Nebraska has 9M irrigated acres (most of any state in the U.S.) and we can't afford $50M/year to advance water issues?
- Folks in the west area are tapped out. They need more resources and assistance.
- How do we make a commitment to water throughout Nebraska? How do we make it happen?
- We have a lot of leaders in the room. How do we get down to business? I will help however we can.

Frank Kwapnioski
H2Options

- A lot of information is available. Need to focus on management and pulling all the data together to maximize use of data.
- Disseminate is also important. How is data available to those who need to use it?

Rick Koelsch
UNL Extension

- Any thoughts about water quality - nitrogen and phosphorus? Emerging contaminants?
  Craig: These issues are solvable, but need to teach producers to manage nutrients and pesticides. Need additional research and emphasis on adult education. Soil health and cover crops are the buzz. More research is needed on soil health and cover crops. Producers in Western Nebraska are not able to grow cover crops because of water consumption (affects subsequent crops) and short growing seasons.

  Senator Brash: There is uranium in Nebraska. Is this good?

  Rourke: If apply fertilizer through a center pivot, where does the nitrogen lie? Use probes to see where water and nitrogen go. Producers don't want to apply more nitrogen than is needed because it is too expensive.

<u>Next Steps</u>:

- Today is a good starting point for this discussion - continue to help our teams understand what we really need to pursue and discover. There is still lots to learn from stakeholders.
- What knowledge is needed to get from point A to B?
- What tools do stakeholders need to be more effective?
- Would you be collaborators/cooperators/partners on teams or serve on Advisory Boards?
- Will need help in engaging key audiences. Who? Multipliers?
- What key investments are being made that can leverage with AFRI grant applications?

Bob Bettger
Priorities for Water Research, Education, and Extension

I would like to quote author Michael Specter from the New Yorker magazine, a profile on the Monsanto purchase of Climate Corporation, titled "Climate By Numbers". The data Monsanto purchased include eight years' worth of soil, moisture, and precipitation records for each of the twenty-nine million farm fields in the US. Big data is big business and it is affecting each and every farmer at the field level scale.

John Deere and Syngenta; and others are offering similar options. www.climate.com

Every state agency and the University will be making decisions on our soil and water resources on much smaller than a state wide scale. Since 2008, over 23 million acres in the United States have been converted from grassland to cropland. In 2012 alone, Nebraska had more than double the next state with over 54,000 acres of grass converted to cropland. Could RUSLE II offer more accurate soil loss rates on a smaller township or watershed scale? Could a Daily Erosion Index more accurately reflect rainfall amounts and intensity? Could yield maps more accurately reflect crop residue on a highly variable soil type and sloped fields? I believe farmers and resource managers would all benefit from more accurate soil loss and nutrient management tools.

New field level weather information and weather derivative products will offer new risk management opportunities for farmers and resource managers. Policy makers would benefit from social and economic analysis of these new risk management tools. In the past, water management decisions and state obligations of our water resources are done thru local implementation plans that have primarily relied on supply management information and strategies. There are Federal programs, state irrigation buyout programs, and local NRD money to retire irrigated land and convert to dryland or grassland; either permanently or temporarily.

In September 2013, the USDA Office of Inspector General issued an audit on Prevented Planting. Either too wet or too dry conditions caused the RMA to pa on 8.3 million acres in 2013. Less than .1% of this land was planted to a late or second crop. www.usda.gov/oig/webdocs/05601-0001-31.pdf

Could these new weather derivatives, supplementing existing Federal crop insurance, offer risk management opportunities for farmers in either drought or flooded situations; without resorting to permanent reduction of cropland? Would these private sector products be cheaper than federal, state, or local tax dollars being spent on supply management? Would it take the subjectivity out of determining a natural cause of loss for the Risk Management Agency?

I believe the UNL policy folks could help determine how these products would integrate into the Nebraska farmers existing decision making process for making cropping, irrigation, and insurance decisions. Will these new tools be compatible with deficit irrigation, conservation compliance, and crop insurance? Will these new products be exempt from means testing of other federal programs?

Duane Woodward
Central Platte NRD Input on UNL Research, Education, and Extension projects for Agricultural Water Quantity and Quality

Water Resources Management in Nebraska based on Water Budget Approach

Research

Un-saturated Zone Water Budget

- Water quantity storage and movement
- Change in water quality
- Modeling and management

Watershed Water Budget

- Crop water use, runoff, and recharge field scale
- Watershed scale

Surface Water Budget

- Runoff
- Based Flow
- Surface water diversion and ET consumption
- Reservoir Storage

Ground Water Budget

- Recharge
- Pumping and ET consumption
- Available storage
- Aquifer Properties

Education

Extension Projects

On farm management that considers Water Budget balance (precipitation, soil, crop ET, irrigation, runoff, and recharge)

Craig Derickson
State Conservationist, NRCS

In summary below are USDA Nebraska Natural Resources Conservation Service (NRCS) and Farm Service Agency (FSA) priorities for research, education, and extension projects related to agricultural water quantity and agricultural water quality in Nebraska and the surrounding region for the IANR and Water for Food Institute listening session to be held January 7, 2014.

USDA-Natural Resources Conservation Service (NRCS) Programs
Environmental Quality Incentives Program (EQIP); Special Initiatives:

- Ogallala Aquifer Initiative (OAI) is designed to reduce the quantity of water removed from the aquifer, improve water quality using conservation practices and enhance the economic viability of OAI-area cropland. This is a true working lands initiative--allowing producers to both conserve ground water and grow agricultural products.
    - In FY12, NRCS contracted with 125 agricultural producers on over 12,000 acres in developing $4.3 million in water-saving practices such as installing more efficient irrigation methods or converting irrigated cropland to dryland.
    - NRCS Contracted with agricultural producers on over 8,000 acres to develop $4.6 million in irrigation water management practices in FY 13.
    - In FY14, 8.1 million is available for funding with a cutoff date of January 17, 2014.
- National Water Quality Initiative helps farmers and ranchers implement conservation systems to reduce nitrogen, phosphorous, sediment and pathogen contributions from agricultural land in specific approved watershed.
    - In 2012, NRCS utilized $1.1 million to assist farmers with their on-farm water quality conservation needs.
    - Over $242,000 was allocated to help farmers and ranchers improve water quality and aquatic habitat in FY13.

Agricultural Water Enhancement Program (AWEP): AWEP is a voluntary conservation initiative that provides financial and technical assistance to agricultural producers to implement agricultural water enhancement activities on agricultural land to conserve surface and ground water and improve water quality.

- Beginning in FY10, NRCS worked with local Natural Resource Districts in central and southwest Nebraska to utilize approximately $5 million in funding to accomplish water conservation activities.
- In FY11, NRCS received nearly $5 million in funds to continue the projects with local NRDs and other sponsors.
- In FY12, Nebraska NRCS had 57 contracts covering 6,033 acres and delivering over $1.6 million in conservation assistance.
- Over $3.4 million in water quality and quantity conservation assistance was applied to 15,000 acres in FY13.

USDA-Farm Service Agency (FSA) Program:
Conservation Reserve Enhancement Program (CREP)
The Platte-Republican Resources Area CREP continues to provide the benefits intended from its inception. The most recently completed annual computations of surface water and groundwater savings indicate the reduction of consumptive use of water is greater than 44,000 acre-feet. This reduction of water consumption is making a significant contribution to the goals of this program and those of the

state and local water management partners where reduction in stream flow depletions is necessary. The improvements to streamflow are particularly important now that we have gone into drought. Enhanced stream flow has water quality benefits too. The reduction in use of millions of pounds of herbicide and fertilizer continues to improve water quality. The wildlife surveys demonstrate that the ground cover that is planted under this program is successfully providing good habitat for numerous species. An added benefit is the annual savings of over 8 million kilowatt-hours and over 700,000 gallons of fossil fuel. This provides additional environmental benefits. Significantly, the booming farm economy has only reduced program enrollment by less than two percent. Economic forecasts predicted the current agricultural economic bubble will significantly moderate in the next 2-4 years. We may have seen the beginning of this moderation already. Increases to the cash rental rate payment basis, stress from the drought and moderation of commodity markets should provide for increased participation in the near future. Educational and promotional opportunities will be utilized to ensure the program is recognized as a useful tool in conservation management.

Eric Zach
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I attended the Water Listening Session at UNL on Tuesday and had a project idea for your AFRI grant. We here at the Nebraska Game and Parks Commission have been working recently with Brent Crafton from Abengoa regarding their plans to convert one or both ethanol plants in Nebraska to sorghum. We're mainly dealing in the wildlife/environmental side of things, but I'm pretty excited about the potential for this project to positively affect a multitude of areas. I'd love to talk to you more sometime about how this could become part of the AFRI grant submission.

If this sounds like something that you'd be interested in talking over give me a call or shoot me an email. Additionally, a group of our conservation partners are meeting with Abengoa January 22nd in Grand Island to discuss the wildlife implications of the project and how we might partner together. You or another representative would be welcome to come.

Scott Josiah
Director, Nebraska Forest Service

1) Research topic: Water used by trees, both riparian and upland forests, is not well quantified, especially water use by upland eastern Redcedar. Cedar is expanding at a rate of 38,000 new acres of forest every year, with likely substantial impacts on water/runoff budgets on a landscape/watershed scale. Research is needed to determine these water use impacts by eastern redcedar, and to inform the relevance and effectiveness of any proposed actions on a landscape scale to reduce water use. The NFS can provide up to date forest inventory and geospatial data and analysis services, technical assistance for forest management and utilization, landowner contacts, and outreach education to our unique audiences statewide. The NFS has nearly 50 professionals across the state who excel in this work, with close relationships on the ground with landowners, communities, conservation and community organizations, 14,000 volunteer firefighters, and wood utilization businesses.

Also, communities use substantial amounts of water to maintain public and private landscapes in parks, cemeteries, public spaces and private yards. The NFS, in partnership with the Nebraska Statewide arboretum, is heavily involved with working with communities to establish waterwise landscapes across the state, and to train people in their design and installation. We also have substantial institutional and technical capacity in the development and use of green infrastructure to capture runoff in communities for use in biological systems reducing hard infrastructure and watering costs.

2) Research Topic: Over 800,000 acres of native riparian forests line Nebraska's rivers, providing substantial ecosystem services that enhance water quality, among many other environmental, economic and social benefits. Riparian forest effectiveness as a buffer or filter can improved by management to better enhance water quality, but research is needed to identify the best approaches to doing so. The effectiveness and impacts of Nebraska's native riparian forests on water quality, as well as their ecosystem services have not been quantified, but should be to guide vegetation management activities on a landscape scale.

Also, the projected expansion of using Nebraska forests for woody biomass applications (e.g., the Abengoa ethanol plant), where much of the wood will come from riparian forests, will have substantial impacts on the structure, density, buffer effectiveness on filtering surface runoff and potentially even the continued existence of these vital forest buffers. Research is needed on the impacts of expanded use of these forest for the production of biomass

Finally, emerald ash borer, an introduced insect that is devastating native ash trees across the US, is now found in CO, KS, IA and MO. 54 million ash trees are at grave risk to EAB in Nebraska, most of which are found in Nebraska's riparian forests (given that ash as a species is one third of the total number of trees found in NE riparian forests). What will be the impact of the loss of these trees on water quality and quantity? What will be the ecological impacts on the riparian forest community? Ash is also heavily used in windbreaks – the loss of which to EAB will severely impact soil protection over large areas from wind erosion - negatively affecting water quality through siltation, transport of nutrients (especially phosphorous), etc.

3) Similar to 2. How effective are our riparian forest buffers in removing these chemicals of emerging concern?

We would be glad to partner to assist as we can in helping to answer these and other tree and forest related questions.

Nebraska Farm Bureau
Water Research, Education and Extension Priorities
January 9, 2014

1. Water management strategies farmers can adopt to reduce the consumptive use of water while maintaining productivity and economic viability such as equipment technologies, planting strategies, real-time data gathering (i.e. real-time data on evapotranspiration, soil evaporation, and water use efficiency) and other tools to more efficiently use water.

2. Multi-year strategies farmers can employ to conserve water, maximize limited water supplies and maintain economic viability including but not limited to cropping strategies, residue management, tillage practices, irrigation scheduling, etc.

3. Local and statewide economic implications and tradeoffs of various means of reducing water use within a given area.

4. Interaction and interplay between irrigation and water conservation strategies and impacts to water quality. Are there strategies and practices farmers can adopt to address both quantity and quality issues?

5. Range and pasture management strategies and decision alternatives for ranchers to consider during times of drought to maintain pasture health yet maximize production.

6. Joint efforts with Dept. of Natural Resources, natural resources districts, and irrigation districts in analysis and assessment of the availability of ground and surface water resources—i.e. data gathering and cataloging; hydrology; groundwater recharge; the connection and interaction between ground and surface water; and ground and surface water modeling.

7. Multi-year, conjunctive management strategies for hydrologically connected ground and surface water to protect and maximize water supplies within a river basin over time.

8. Assessment of best management practices, herbicide management alternatives, and soil conservation practices farmers can adopt to mitigate impacts on water quality.

From: Board, Sorghum [mailto:Sorghum.board@nebraska.gov] **Sent:** Tuesday, January 14, 2014 2:40 PM **To:** Jill Brown **Cc:** Jeff Noel; Jesse MuCurry (jessem@sorghumcheckoff.com); Bradley Goering (bsgcgoering@gmail.com); Sorghum Board; John Dolnicek 0 (jbmdolnicek@gtmc.net); John Dvoracek (dvoracek@cornhusker.net); John Dvoracek (jldvoracek@hotmail.com); Kevin Janicek (djanicek@esu15.org); Larry Dedic (willowcreek8@ymail.com); Lynn Belitz (lebelitz@aol.com); mbaker@mccooknet.com; Rosie & Duane Sugden **Subject:** Water Listening Session - January 7, 2014

Jill:

We appreciated getting Dr. Green's invitation to participate in the water listening session. Unfortunately, I was unable to attend as I'd been summoned for jury duty. While I was not seated as a juror, the selection process took several hours and prevented me from attending the session.

I've visited with Dr. Clutter and he's graciously provided me with a copy of the slides and power point presentations that were shared with the group. I've gleaned them and feel that sorghum's water use efficiency aligns well with the stated goals. With that in mind I am writing to relay our hope that we might be able to be more involved in the process as it moves forward.

While I understand that the RFP has not yet been released, I agree it's a good thing to be talking, thinking, and laying a strategy for when the time comes.

With the persistent drought the past couple of years, ever increasing restrictions on water availability for irrigation, growing interest in sorghum as a feedstock for bioenergy, and sorghum's versatility and reputation as a resourceful and water-sipping crop, we'd like to make a pitch now for research efforts on sorghum production under limited irrigation. This research effort would fit very well, also under the goals and mission of the Water for Food Conference's global outreach.

There has been considerable work done at UNL on corn – irrigation management, water optimization, etc. As we in sorghum work to re-establish acres in Nebraska, there is a need for research (and accompanying economics) on sorghum production under limited irrigation to achieve extreme yields.

As the various research teams are assembled, we'd implore that consideration be given to incorporating sorghum in the cropping mix when proposals are drafted.

Jill, we appreciate you receiving our comments. Please let me know if there are questions. We look forward to working with "all concerned" as this initiative moves forward.

bjk

Barbara Kliment
Executive Director
Nebraska Grain Sorghum Board
Nebraska Grain Sorghum Producers Association

External stakeholder input from Nebraska Game and Parks Commission regarding 7 January AFRI Water Grant Applications. (The Blue Sheet-Frank Albrecht).

In regard to: USDA, NIFA # 4. Renewable energy, natural resources, and environment. Stakeholder Comment-The USFWS Biological Opinion for the central Platte River states this reach is short 417,000 acre-feet of water. During the first 13 year increment, the states of CO, WY, and NE and political subdivisions there of such as NRDs and the CNPPID) are attempting to provide 130,000 to 150,000 acre-feet of water to the river. They have a plan and it appears they may reach it during the first increment. However, during subsequent increments, somewhere between 267,000 – 287,000 acre-feet of water must be found and delivered to the central Platte to meet the BO. Finding water to grow food for people is important, but sustaining a healthy Platte River so more ecosystem goods and services continue to be provided is also important. Its that public trust aspect which the State of Nebraska has that must also be satisfied along the way.
To the degree that efficiencies can be found all around and at the same time not lose the important pieces of the ecosystem puzzle is what is important to our stakeholders and the whole state for that matter. Research and/or education efforts, which help all citizens grow more with less would be very beneficial.

Karen Griffin (Olsson Associates), on behalf of herself and Steve Oltmans.

We recommend exploring groundwater policy and conducting policy analysis as part of the project; in particular, policies to sustainably manage groundwater and surface water as one resource. Nebraska, through the NE Dept. of Natural Resources and the state's Natural Resources Districts, have implemented a number of integrated management policies. Measuring and evaluating impacts are part of the integrated management process. How can this USDA AFRI project inform this effort? Are there policy alternatives (e.g., alternatives to groundwater allocations) that Nebraskans should consider?