

**Republican River Basin-Wide Plan
Stakeholder Advisory Meeting Minutes
August 18, 2015 | Community Center; Cambridge, Nebraska**

Stakeholder Advisory Committee members in attendance were:

| | | |
|----------------|-----------------|---------------------|
| Jared Baker | Jim Kent | John Rundel |
| Kurt Bernhardt | Bradly Knuth | Richard Siel |
| Mike Delka | Jerry Kuenning | Daniel Smith |
| Brad Edgerton | Kent Lorens | Shad Stamm |
| Troy Fletcher | Jeff Loschen | Glenn Taubenheim |
| Josh Friesen | Gale Lush | Aaron Thompson |
| Dick Helms | Timothy McCoy | Ted Tietjen |
| Robin Hinrichs | Cedric McDaniel | Marcia Trompke |
| Bill Hoyt | Dan Nelsen | Jerda Garey Vickers |
| Michael Kahrs | Dave Oxford | Tom Vickers |
| Max Kaiser | Roric Paulman | Todd Watson |

Plan Development Team members in attendance were:

| | | |
|---------------|-----------------|---------------|
| Patti Banks | Karen Griffin | Jack Russell |
| Emily Bausch | Nate Jenkins | Jim Schneider |
| Mike Clements | Phyllis Johnson | John Thorburn |
| Scott Dicke | Sylvia Johnson | Ray Winz |
| Jeff Fassett | Melissa Mosier | Amy Zoller |

Individuals from the community present during the meeting included:

| | | |
|-------------|--------------------|---------------|
| Dale Cramer | Duane Vordersterse | Jay Schilling |
| Craig Scott | | |

Note: See Attachment A for Written Comments Submitted since the last meeting.

NOTICE OF THE MEETING

Notice of the meeting was published on the Nebraska Department of Natural Resources (NDNR) website (dnr.nebraska.gov), the project website (dnr.nebraska.gov/RRBWP/) and Holdrege Daily Citizen, on Monday, August 17, 2015.

INFORMATIONAL MATERIALS

The following informational materials were distributed via stakeholder notebook:

- NDNR Presentation June 16, 2015 (from the previous meeting)
- June 16, 2015 Meeting minutes
- August 18, 2015 Meeting Agenda
- Republican River Basin Compact and Water Legislation Timeline
- NDNR Education Session Presentation dated August 18, 2015 (morning session)
- Republican River Basin-Wide Management Plan Working Session presentation (afternoon session)

WELCOME AND INTRODUCTION

Jeff Fassett, new Director of NDNR, welcomed everyone to the Stakeholder Advisory Committee Meeting for the Republican River Basin-Wide Plan (RRBWP).

The Stakeholders, RRBWP development team, including members of the Lower, Middle, Upper Republican and Tri-Basin Natural Resources Districts (NRDs) and the NDNR and consultant team members introduced themselves. Karen Griffin reviewed materials provided for the Stakeholder notebooks (see list above).

UPDATE ON THE THREE STATES DISCUSSION

Jim Schneider with the NDNR gave an update on the three states discussion. He noted that the discussions continue and are very positive.

EDUCATION SESSION – Follow-up to June 16 SAC meeting and GMP vs IMPs vs BWP

Based on questions that were posed at the last SAC meeting, Jim Schneider kicked off the educational session by discussing interbasin transfers. Some of the major points that he made include:

- Interbasin transfers are when water is diverted water from one river basin (basin of origin) to another. Interbasin transfers are more common in other states.
- Nebraska Revised Statute § 46-289 refers to the interbasin transfer process. To divert water you must have a permit issued by NDNR, and pay the ten dollar application fee. There is an evaluation and approval process conducted by NDNR to determine if the transfer is in the public interest. The economic, environmental and other benefits are evaluated. The application shall be deemed in the public interest if the overall benefits to the state and the applicant's basin are greater than or equal to the adverse impacts to the state and the basin of origin. Interstate compact compliance is one of the beneficial uses interbasin transfers can be approved for.

Questions posed by the Stakeholders and Public are paraphrased here:

- Could the State of Nebraska apply for a permit?
- How does this work for augmentation projects?
- Is a transfer to the Republican Basin from the South Platte in Colorado feasible?
- Do you think a permit would be granted for a transfer of excess flows from the Platte to the Republican?
- What if numerous applications are made for the same excess flow?
- What is the size of a canal that would be needed and can it be done?

Jim Schneider then went through a series of slides illustrating responses to some of the questions on correlations posed at the last meeting. He also talked about the following subjects:

- Causes of reduced streamflow supply
- Effects of Nebraska groundwater pumping on streamflow

- The differences between groundwater management plans, integrated management plans and basin-wide plans

Questions posed by the Stakeholders and Public are paraphrased here:

- Is Harlan County Reservoir the best location to measure what is occurring with the water supply in the basin?
- What is the baseline for comparison of runoff and streamflow? How far back in time would that baseline have occurred?
- In order to determine if the basin supply is sustainable, does water imported from outside of the basin need to be removed from the analysis?
- Would the correlation analyses be more useful if it was limited to smaller subbasins?
- Is there a more significant impact from groundwater pumping in the western portion of the basin?
- What is the impact of other conservation measures on streamflow?
- When did basin demand exceed basin supply? If the basin was fully appropriated before official determination by the NDNR, how can it get to below fully appropriated without the authority to regulate existing users?

Jim Schneider started a discussion on the effects of groundwater pumping on aquifers and streamflow, and he will continue this discussion at the next meeting.

Lunch Break - At noon there was an hour lunch break.

WORKING SESSION:

The stakeholders were divided into small groups for the afternoon group discussion. The groups were divided up to have diversity among the user types. The groups were asked two separate sets of questions. Each of the groups reported back on their collective responses. The responses are summarized below.

Section #1 – What is your perception of the state of the basin? What additional information do you need?

Perception:

- *The Republican River Basin is over-appropriated*
- *Positive – great strides have been made*
- *Viability may be in decline and we must move toward sustainability*
- *Groundwater declines are leveling out*
- *Making progress and better than 10 years ago*
- *Economy is good now but may go into downturn*
- *Compact compliance – still struggling with this*
- *Inequitable within the basin and across the state*
- *Farmers were good managers of the water*
- *Drought mitigation was not managed well – planning for planting difficult based on forecasting*

- *Still have challenges but moving in the right direction*
- *Improved rules and regulations needed*
- *It appears that the basin has stopped playing the blame game*
- *Need better predictability and need to reduce tension between groundwater/surface water*
- *NE will be in compliance with compact but with heavy burden on surface water*

Informational Needs for Plan Development:

WATER SCIENCE

- Groundwater hydrographs and the benefits of recharge: when, where and how. Include discussion of predevelopment as it relates to today. Same discussion for surface water and include history of water delivery and pumping rates.
- Effects on streamflow when pumping is curtailed (10/2, 10/5, 10/50)
- Platte River System instream flows (PRRIP). Identify historic and possible future water availability.
- Explain how forecasting is done and what does it take to make predictions earlier and for a longer term.

LEGAL ASPECTS

- Legal relationships among stakeholders
- Selling of water rights within the basin; value of water.
- Water transfers currently in IMPs in the Republican River Basin
- Funding through LB1098 status and the potential for state participation in programs

AGRICULTURAL BMPs

- Water conservation technology
- Crop management
- Historical practices and their application today; impacts on streamflow and groundwater

Section #2 – What do you want the Basin Plan to accomplish? Short Term Goals? Middle Term Goals? Long Term Goals?

| Short Term (0-5 yrs) | Mid-Term (5-20 yrs) | Long-Term (30 yrs) |
|--|--|--|
| <ul style="list-style-type: none"> • BMPs - State of the Practice & what works best in our context | <ul style="list-style-type: none"> • Implement BMP incentive/cost share program, include buyout feasibility study | <ul style="list-style-type: none"> • Buyouts to get back to fully appropriated status |
| <ul style="list-style-type: none"> • Determine Basin Transfer feasibility | <ul style="list-style-type: none"> • Make application | <ul style="list-style-type: none"> • Implement |
| <ul style="list-style-type: none"> • Determine base line measures of economic vitality | <ul style="list-style-type: none"> • Maintain tax base necessary to support schools, public services, etc. | <ul style="list-style-type: none"> • Same as mid-term |
| <ul style="list-style-type: none"> • Monitor aquifer levels for effectiveness of existing regulatory measures | <ul style="list-style-type: none"> • Adjust regulatory measures and monitor effectiveness | <ul style="list-style-type: none"> • Adjust regulatory measures and monitor effectiveness |

| Short Term (0-5 yrs) | Mid-Term (5-20 yrs) | Long-Term (30 yrs) |
|---|---|--|
| <ul style="list-style-type: none"> • Develop stable forecasting system – not to drought but to averages, monitor effectiveness | <ul style="list-style-type: none"> • Adjust system and monitor effectiveness | <ul style="list-style-type: none"> • Adjust system and monitor effectiveness |
| <ul style="list-style-type: none"> • Define equity and measures to attain it. | <ul style="list-style-type: none"> • Implement measures and monitor, adjust measures as necessary | <ul style="list-style-type: none"> • Monitor and adjust measures as necessary |
| <ul style="list-style-type: none"> • Identify water supply re-timing strategy | <ul style="list-style-type: none"> • Implement strategy | |
| | <ul style="list-style-type: none"> • Attain stable water supply for all users – recreation, wildlife, agriculture urban development... | |
| <ul style="list-style-type: none"> • Define Sustainability | | |
| <ul style="list-style-type: none"> • Educate Legislators on NRD initiatives | <ul style="list-style-type: none"> • Educate Legislators on NRD initiatives | <ul style="list-style-type: none"> • Educate Legislators on NRD initiatives |
| <ul style="list-style-type: none"> • Compliance with RRCA | <ul style="list-style-type: none"> • Compliance with RRCA | <ul style="list-style-type: none"> • Compliance with RRCA |

Demographic Information:

After the working session Karen Griffin answered the question from the previous stakeholder meeting about basin demographics. Based on the 2010 US Census, the median age for the Republican River basin is 45.6 years, the population is 53,382 (with a <-1% trend change between 2000 and 2010), and the median household income is \$44,166. This information was presented as a reference for potential comparison in the future.

PUBLIC COMMENTS

The public attending the meeting was invited to provide comments. No individuals provided comments to the group.

NEXT MEETING

On behalf of the entire basin-wide plan development team, including the four NRDs and NDNR, Jim Schneider, Karen Griffin thanked the stakeholders for attending and participating in this process. The next meeting will be held at the Cambridge Community Center from 10:00 am to 3:00 pm on October 20th, 2015. The meetings are scheduled to occur on the third Tuesday every other month at the same location. Future meetings are scheduled for October 20 and December 15. Meeting agendas, presentations, and meeting minutes will be available on the project website (dnr.nebraska.gov/rrbwp). Stakeholders are asked to provide any further input to Karen Griffin and/or Patti Banks. One written comment from a Stakeholder was received and is included as Attachment A, and any comments to the information can be discussed at the next meeting.

Attachment A

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To: Olsson Associates
Karen Griffin

From: Dale Helms

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Pages: 3

RE: August 18th Meeting at Cambridge

I will be unable to attend the meeting as I have a Company crop insurance continuing education meeting that I must attend for continuing education credits.

Would you please share the enclosed materials at this meeting or a future meeting.

1. UW researcher discovers groundwater modeling breakthrough 84 years in the making.

2. The Supreme Court's raisin program ruling "Many government programs (state, federal, and local) regulating land and other real property rights (like water rights) have been under vigorous legal challenge for over three decades. Those challenges will continue and the groups making those challenges are very encouraged by the Home decision."

Thanks,

Dale Helms

UW researcher discovers groundwater modeling breakthrough 84 years in the making

A University of Wyoming professor has made a discovery that answers a nearly 100-year-old question about water movement, with implications for agriculture, hydrology, climate science and other fields. After decades of effort, Fred Ogden, UW's Cline Chair of Engineering, Environment and Natural Resources in the Department of Civil and Architectural Engineering and Haub School of Environment and Natural Resources, and a team of collaborators published their findings in the journal *Water Resources Research* this spring.

The paper, titled "A new general 1-D vadose zone flow solution method," presents an equation to replace a difficult and unreliable formula that's stymied hydrologic

modelers since 1931. "I honestly never thought I would be involved in a discovery in my field," Ogden said.

He anticipates this finding will greatly improve the reliability and functionality for hundreds of important water models used by everyone from irrigators and city planners to climate scientists and botanists around the country and the world, as well as trigger a new surge in data collection.

In 1931, Lorenzo Richards developed a beautiful, if numerically complex, equation to calculate how much water makes it into soil over time as rainfall hits the ground surface and filters down toward the water table. That equation, known as the Richards equation and often

shortened to RE, has been the only rigorous way to calculate the movement of water in the vadose zone—that is, the unsaturated soil between the water table and the ground surface where most plant roots grow.

Calculating the movement of water in the vadose zone is critical to everything from estimating return flows and aquifer recharge to better managing irrigation and predicting floods. But RE is extremely difficult to solve and occasionally unsolvable. So, while some high-powered computer models can handle it over small geographic areas, simpler models or those covering large regions must use approximations that compromise accuracy.

For decades, hydrologists and other scientists have pursued a better way to estimate vadose zone water. Cornell University environmental and ecology professor Jean-Yves Parlange and Australian soil physicist John Robert Philip battled one another in the literature, proposing new equations and disproving each other—from the 1950s until Philip's untimely death in a traffic accident in 1999. Princeton Environmental Engineering and Water Resources director Michael Celia published a partial solution in 1990 that is not reliable in all circumstances.

Ogden first worked on the

problem in 1994 as a postdoctoral researcher. He teamed with Iranian hydrology engineer Bahram Saghafi, who was finishing a Ph.D. at Colorado State University, to publish an equation that estimates water "suction" in the vadose zone.

In the early 2000s, Ogden advised a Ph.D. candidate named Cary Talbot, a researcher with the U.S. Army Corps of Engineers, on a project seeking a solution to the RE. The two developed a new way to represent vadose zone water.

In more recent years, the search continued, and a major National Science Foundation research grant in 2011 enabled Ogden to bring additional experts to the quest and use UW's supercomputing power to test prospective solutions.

Then, late last fall, just before the large American Geophysical Union annual meeting, Ogden and his research team discovered a novel solution, an elegant new equation he thought would equal the RE in accuracy while greatly reducing the computing power needed to run it. He tested this solution with precipitation data from his field site in Panama.

"We ran eight months of Panama data with 263 centimeters of rain through our equation and Hydrus," Ogden said.

Hydrus is an existing super-

computer model that uses RE. The results his model generated had only 7 millimeters, or two-tenths of 1 percent, difference from the results of the Hydrus model that employs Celia's solution of the RE.

"They were almost identical. That's when I knew," he said. "I felt like the guy who discovered the gold nugget in the American River in California."

What's next for the new equation? First, it is the centerpiece of Ogden's ADHydro model, a massive, supercomputer-powered model that's first simulating the water supply effects of different climate and management scenarios throughout the entire upper Colorado River Basin. From there, Ogden hopes other models will incorporate it, too.

"I think, for rigorous models, it's going to become the standard," he said. "With help from mathematicians and computer scientists, it will just get faster and better."

Furthermore, new pushes for data collection often follow technological advances, Ogden explains. He hopes this discovery will bring soil science back into relevance for water managers and lead to new soil data collection.

"We now have a reliable way to couple groundwater to surface through the soil that people have been looking for since 1931," Ogden said.

The Supreme Court's raisin program ruling



POLICY REPORT

BY DAVID AIKEN

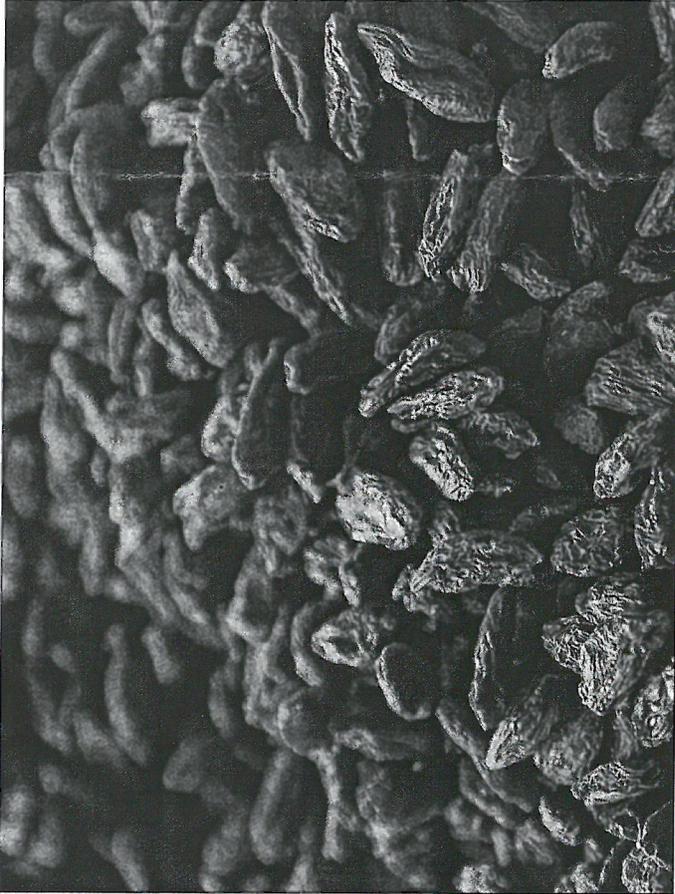
ON June 22, the U.S. Supreme Court in *Horne v. USDA* ruled that a raisin program set-aside requirement was an unconstitutional seizure of private property that required government payment for the seized property. Here are some questions and answers on the case:

■ *How did the raisin set-aside requirement work?* Under the federal raisin marketing order program, a grower Raisin Administrative Committee established annual "reserve requirements," that is, set-aside requirements for raisin handlers. Essentially, the Raisin Committee would establish how much of each year's crop (if any) would be set aside for sales at below-market prices in international markets or to the U.S. school lunch program. Any revenues above costs (if any) from marketing the set-aside raisins would be refunded back to the raisin growers.

■ *What was the purpose of the raisin set-aside program?* To increase and stabilize the market price of raisins.

■ *What happened in this case?* In the 2002-03 and 2003-04 crop years, the raisin set-asides were 47% and 30% respectively. Marvin Horne, a California raisin grower, refused to turn over the set-aside raisins in 2003 and 2004. He was fined the market value of the raisins, \$483,843.53, plus a \$200,000 civil penalty for keeping the set-aside raisins instead of turning them over to USDA.

■ *How did the Supreme Court rule?* The court ruled 8-1 that the raisin set-aside requirement amounted to an uncompensated government seizure of private property (the set-aside raisins), which cannot be performed constitu-



and spearmint oil produced in five states.

■ *Does this ruling mean that all USDA supply-management programs are legally suspect?* It depends on how the particular supply-management program is structured and operated. If the program requires a certain percentage of the program commodity to be held off the market and USDA takes physical possession of and legal title to the set-aside commodity, that would be the raisin case all over again. If program managers can devise a way to reduce supply without requiring commodities to be physically and legally taken into possession by USDA, those programs might survive a court attack. The important point is that the remaining government agricultural supply control programs are not automatically invalidated by the raisin program decision.

■ *Does this case mean that paying income taxes to the federal government is a confiscation of my personal property (that is, my money)?* No: The federal income tax is specifically authorized by the 16th Amendment to the U.S. Constitution. So the federal income tax is not unconstitutional — the explicit authority to impose the income tax is part of the Constitution. But no doubt someone will use the raisin program case as a legal argument not to pay federal income taxes — it just won't work.

■ *Are there broader implications of the Horne v. USDA decision?* Many government programs (state, federal and local) regulating land and other real property rights (like water rights) have been under vigorous legal challenge for over three decades. Those challenges will continue, and the groups making those challenges are very encouraged by the Horne decision. Beyond that, we will have to wait and see what happens in future lawsuits.

Aiken is a professor and water and agriculture law specialist at the University of Nebraska-Lincoln.

full payment for the raisins.

■ *Does this ruling end the raisin program?* Not necessarily. It does mean that the raisin set-aside requirement will not be part of the raisin marketing order program any longer unless the program is significantly reconfigured in some highly creative way. In media accounts, a member of the Raisin Administrative Committee indicated that the committee had not used the raisin set-aside for the last five years, suggesting that the loss of the raisin set-aside would not cripple the program. Whether the raisin program can retain sufficient grower support to continue into the future remains to be seen.

■ *What other USDA programs operate similarly to the raisin program?* USDA has identified six additional programs that include a commodity set-aside requirement similar to the raisin program: California almonds, dates, dried prunes and walnuts, plus tart cherries grown in seven states

tionally without government payment for that private property. The court further ruled 5-4 that USDA was required to refund the \$683,843.53 it had collected from Horne. Three justices thought that amount should be reduced by the amount the raisin program had increased the market value of Horne's set-aside raisins. Dissenting Justice Sotomayor concluded that the raisin set-aside requirement was constitutional.

■ *Why did the court rule this way?* The important issue to the court majority was that the USDA took actual physical possession and legal title to the set-aside raisins. The raisin producer merely had a promise that he or she might get some money back, depending on what the raisins could be sold for internationally. The court majority concluded this potential partial recovery was not enough to keep the raisin set-aside requirement from being a government seizure of private property without

DWR took possession of the surface water and sent it to Kansas