

MEMO



DATE: February 6, 2017
TO: Missouri RAC Members and Advisors
FROM: Margaret Fast
RE: February 14, 2017 Meeting

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The next meeting of the Missouri Regional Advisory Committee will be held on **Tuesday, February 14, 2017 at 9:00 a.m. in the USD 409 Community Room, 626 Commercial, Atchison, Kansas.**

Now that the Action Plans have all been approved by the Kansas Water Authority, we're moving into a focus on implementing. Carl wants to challenge you to be ready to discuss priorities for implementation for 2017. For instance, the Action Plan on priority goal #2, surface water quality, has several action steps on collection of additional data. What ideas do you have about assessing what other groups from the state with similar topography can provide? I have attached the approved plans for your convenience.

At the meeting we will provide two reports on items in the Action Plans. Dr. Peltier, University of Kansas, will discuss some research underway on tile outlet terrace systems. The KWO will present a short update provided by KGS on the status of the groundwater study. The progress report is included with the meeting materials.

In addition, representatives from the Kansas City District, Corps of Engineers will be present to discuss items of interest related to the Missouri River.

Enclosed please find the following meeting materials:

- Agenda
- September 22 Meeting Notes
- Action Plans
- Progress Report from Kansas Geological Survey

If you have any questions or need additional information prior to the meeting, feel free to contact me at Margaret.fast@kwo.ks.gov or give me a call at 785/296-0865.

Meeting Agenda
Missouri Regional Advisory Committee
February 14, 2017, 9:00 a.m.
USD 409 Meeting Room
626 Commercial
Atchison, Kansas

1. Welcome/Introductions
2. Public Comments*
3. RAC Business -
 - a. Review of September 22 Meeting Notes
 - b. KWA report from January 25th Meeting
 - c. Discussion of Chair, Vice Chair Position and Terms
4. **Action Plan Item** - Tile outlet terrace systems – what we know and what we’re doing – Ted Peltier, University of Kansas
5. **Action Plan Item** - Update on KGS Phase 1 Groundwater study – KWO
6. Overview of Draft Missouri River Recover Plan and Environmental Impact Statement – KC District COE
7. Update on Missouri River Bed Degradation Study – KC District COE
8. Plan for 2017 RAC activities – Implementing the Action Plans – Carl
9. Agency Reports
10. Other issues
11. Next Meetings:
 - a. RAC meeting
 - b. KWA – May 17-18, 2017, Garden City

*These reports are limited to 3-5 minutes.



Missouri Regional Advisory Committee Meeting Notes

Missouri Regional Advisory Committee Meeting
September 22, 2016, 9:00 am
USD 409 Meeting Room
Atchison, Kansas

Members Attendance:

Name	City	Category	Term	Present
Carl Johnson (Chair)	Leavenworth, KS	Conservation/Environment (cc)	2019	Yes
John Bishop	Atchison, KS	Recreation	2019	Yes
Neil Coufal	Troy, KS	At Large Public (cc)	2017	Yes
Stephen Glaser	Atchison, KS	Industry/Commerce (cc)	2019	Yes
Jeffrey Grossenbacher	Bern, KS	Agriculture (cc)	2019	No
Carol Hughes	Seneca, KS	WRAPs	2017	No
Alan Kelley	White Cloud, KS	Iowa Tribe of Kansas and NB	2019	Yes
Joel Mahnken	Leavenworth, KS	Public Water Supply (cc)	2017	No
Brett Neibling	Highland, KS	Agriculture 2	2019	Yes
Darcy Nightingale	Hiawatha, KS	Agriculture Industry	2017	Yes
Bill Shroyer	Sabetha, KS	Public Water Supply 2	2019	No
Luke Terry	Robinson, KS	Fish and Wildlife	2017	Yes
Michelle Wirth	Kansas City, KS	Public Water Supply 3	2017	Yes

Others in attendance:

Name	Town	Representing
Alan Larson	Atchison	Atchison Co Conservation District
Chris Griffin	Troy	DP Co Conservation District
Judy Wegener-Stevens	Troy	DP Co Conservation District
Barb Oltjen	Robinson	Wolf River Watershed 66 and State Association of Ks Watersheds
Monty Breneman	Salina	Natural Resources Conservation Service
Bruce Wells	Salina	Natural Resources Conservation Service
Travis Daneke	Topeka	KDHE
Brett Bunger	Topeka	KDA-DWR
Tyler Warner	Valley Falls	Ks Dept. of Wildlife, Parks and Tourism
Jake Geiger	Robinson	Self
Kirk Tjelmeland	Topeka	Kansas Water Office
Margaret Fast	Topeka	KWO

Welcome and Introductions:

Carl asked those in attendance to introduce themselves.

Review of July 14 Meeting Notes:

The notes were accepted as sent.

Public Comments:

There were none.

Membership: Carl Johnson, Chair, Leavenworth, KS; John Bishop, Atchison, KS; Neil Coufal, Troy, KS; Stephen Glaser, Atchison, KS; Jeffery Grossenbacher, Bern, KS; Carol Hughes, Seneca, KS; Alan Kelley, White Cloud, KS; Joel Mahnken, Leavenworth, KS; Brett Neibling, Highland, KS; Darcy Nightingale, Hiawatha, KS; Bill Shroyer, Sabetha, KS; Luke Terry, Robinson, KS; Michelle Wirth, Kansas City, KS
KWO Planner: Margaret Fast, 785-296-3185; margaret.fast@kwo.ks.gov

Long Term Vision for the Future of Water in Kansas Education and Public Outreach Supplement Update

Dana Ladner, KDA updated the committee on the process of developing a multi phased education proposal as outlined in the Vision. A PowerPoint used in the presentation and the supplement are posted on the KWO website vision page.

Comments during the discussion are as follows:

- Since water is so political and driven by economics, how do we assure that promotion of awareness is science based? The working group has worked with those familiar with state science and social science standards and there will be a vetting process.
- There were questions about funding needs for the recommendations and whether this is interconnected with the BRFTF.
- Professional development will be added.
- This seems too massive of an undertaking.
- There was some discussion of what science standards are now.
- In the listing of partners, Kansas Rural Water Association wasn't mentioned and should be.
- In response to questions, Dana indicated that north Texas water authority has a good program that had been reviewed by the team, as well as Colorado water authority, among others.
- Focusing on synergies across entities and organizations for funding, capitalizing on the overlaps, should be a goal of the efforts
- Blue Ribbon Funding task force has been made aware of the funding needs for year 1-3 of the outreach effort
- The Corps and NRCS have been involved.
- The Education team wants input from the RACs
 - Support on implementation, matching partners
 - Identify top 3 initiatives for this region
- Operator training for water and wastewater treatment is needed
- Community colleges should be involved as should the tribal colleges
- KDA did a work force needs study and that is also being evaluated

At the end of the discussion, the committee took action to send the following input to the Vision Education team for consideration:

- Assure there is a more local focus on review of and capitalization on funding synergies across all fields and entities' education efforts that are underway.
- Funding for Training on for PWS operator training
- Local Community colleges in the MO Region be included in the Plan
- Moved by Michele; John seconded; motion approved unanimously.

Report from September 1 Kansas Water Authority meeting – Carl Johnson

Carl reported that the Action Plan on the Ground Water goals was approved by the KWA. He also reported on a presentation on the Water Transfer Act that was presented at the meeting. One interesting comment is that the Chief engineer has a duty to put water to beneficial use. The public owns the water.

Final Action: Surface Water Quality Goal Action Plan Development

GOAL: To ensure a reliable surface water supply in the future, best management practices will be implemented so surface water quality in identified drainages is maintained or improved using goals and milestones as identified in the Missouri Watershed Restoration and Protection Area 9 - Element Plan.



Missouri Regional Advisory Committee Meeting Notes

The final draft action plan was included in the mailing materials. A couple of changes had been made since the last review. The plan was approved as modified.

Next Meeting

RAC Meeting: TBD, likely after the first of the year or upon call of the chair.

KWA Meetings:

October 19 - Milford Lake Conference Center

December 15 - Wichita

Governor's Conference on the Future of Water in Kansas, Manhattan, November 14-15

Membership: Carl Johnson, Chair, Leavenworth, KS; John Bishop, Atchison, KS; Neil Coufal, Troy, KS; Stephen Glaser, Atchison, KS; Jeffery Grossenbacher, Bern, KS; Carol Hughes, Seneca, KS; Alan Kelley, White Cloud, KS; Joel Mahnken, Leavenworth, KS; Brett Neibling, Highland, KS; Darcy Nightingale, Hiawatha, KS; Bill Shroyer, Sabetha, KS; Luke Terry, Robinson, KS; Michelle Wirth, Kansas City, KS
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Missouri Regional Advisory Committee Priority Goal #1 & #3 Action Plan

Preamble

Groundwater quality and groundwater quantity are closely related and the approaches to understanding each are similar. For that reason, the 2 goals and the overall guiding principle are recognized in this action plan.

Regional Goals as adopted by the Kansas Water Authority, August 2015

Guiding Principle:

Over the next 50 years, there needs to be an adequate, sustainable and affordable quality water supply in the Missouri Region, while protecting Tribal water rights and sacred and cultural sites. All government agencies, local through state, shall vigorously uphold and enforce all water conservation and management rules and regulations throughout the state.

Priority Goal #1: Since groundwater quality is not well known, compile existing and collect additional data over the next 5 years to establish a baseline. Within 3 years after the baseline is established, a plan to implement best management practices will be developed to maintain and improve existing conditions. Monitoring and reevaluation of groundwater quality conditions and should continue at 5 year intervals.

Priority Goal #3: Collect additional information to improve safe yield estimate of groundwater and tributary streams within 3 years. Place a moratorium on additional permits until safe yield is identified. Once determined, only issue permits that do not exceed that yield. Safe yield should then be continuously monitored.

Action Steps

- ❖ **Evaluate what is known about groundwater quantity and quality in glacial, alluvial and bedrock aquifers in the Missouri Region**
 - ◇ Any and all available information about groundwater quantity and quality will be collected and compiled.
 - ◇ Digital database from the collected historical and online existing data would be constructed.
 - ◇ Digital maps of updated bedrock surface topography, saturated aquifer thickness, pre-glacial drainage ways, water use, and groundwater quality from digital databases would be prepared
 - ◇ An assessment report would be prepared that includes:
 - ◇ A determination of groundwater in storage and groundwater quality conditions in the glacial, alluvial and bedrock aquifers in the area.
 - ◇ A determination of the greatest needs for collection of additional data.
 - ◇ Recommendations on the need for, and number and location of wells to allow for well level and quality monitoring on a continuing basis.
 - ◇ This phase would be conducted by the KGS for at a cost of \$50,000. The work would take 12 months, beginning August 2016.
- ❖ **Collection of additional data and re-evaluation of groundwater information**
 - ◇ Based on needs as determined in the evaluation phase, obtain a scope of work on collection of additional data that would improve the characterization of the glacial, alluvial and bedrock aquifers. Main expected field activities would include: drilling, hydraulic testing, and groundwater sampling and analysis.
 - ◇ Enter new data into databases developed in the evaluation phase.



Missouri Regional Advisory Committee Priority Goal #1 & #3 Action Plan

- ◇ Re-evaluate groundwater recharge estimates at a more detailed scale than the currently available potential annual recharge estimates based on soils.
- ◇ Combine existing and new data to establish safe groundwater yields and a groundwater quality baseline.
- ◇ On the basis of future climate and water usage conditions, establish a plan to periodically update safe yield estimates of groundwater resources.
- ◇ This phase would be a minimum of 18 months, as determined in the evaluation phase. Cost would be determined in Phase 1.
- ❖ **Maintain and Improve groundwater quality conditions**
 - ◇ Evaluate groundwater quality protection practices based on needs as determined in the assessment.
 - ◇ Within 3 years after the baseline is established, a plan to implement best management practices will be developed to maintain and improve existing conditions.
- ❖ **Ongoing monitoring and evaluation**
 - ◇ Expand groundwater level monitoring wells as determined during Assessment phase.
 - ◇ Monitoring and reevaluation of groundwater quality conditions should continue at 5 year intervals.



Missouri Regional Advisory Committee Priority Goal #2 Action Plan

Priority Goal #2: To ensure a reliable surface water supply in the future, best management practices will be implemented so surface water quality in identified drainages is maintained or improved using goals and milestones as identified in the Missouri Watershed Restoration and Protection Area 9 Element Plan.

Guiding Principle:

Over the next 50 years, there needs to be an adequate, sustainable and affordable quality water supply in the Missouri Region, while protecting Tribal water rights and sacred and cultural sites. All government agencies, local through state, shall vigorously uphold and enforce all water conservation and management rules and regulations throughout the state.

Action Steps

❖ Collection of Additional Data

- ◇ Collect data on a voluntary basis to evaluate the benefits of tile outlet terrace systems within the Missouri Region. Prior to proposing any design changes to outlets of tile terraces in the Missouri Region, conduct research on cropland field input amounts (rates, dates applied, how it was applied, etc.) and collect water samples to evaluate the water runoff into the streams in the region. Collect data working with interested local landowners with assistance of area conservation districts, Kansas Department of Health and Environment (KDHE), Natural Resources Conservation Service (NRCS) and other existing agencies. Collection sites will be: tile terrace runoff, waterway runoff, land with no conservation work or no conservation tillage, and land with no conservation work but using no-till.
- ◇ Collect data on the benefits of capturing and reusing water on a producer's property.
- ◇ Gather existing information on the impact of extreme events (droughts and floods) on water quality and availability of water resources into the future in the Missouri Region.
- ◇ Assess what other interest groups, agencies and individuals locally and from states with similar topography and precipitation (Iowa, South Dakota, Nebraska, and Missouri,) can provide on alternative projects that could contribute to water quality in the Missouri Region.

❖ Implementation

- ◇ Support and encourage implementation of the best management practices (BMPs) in the adopted 9-Element Plan. Those BMPs are: No-till, cover crops, grassed and forested buffers, convert steep slopes, sediment basins, pasture management, nutrient management, livestock waste management, alternative watering supplies, streambank stabilization, onsite wastewater system repair, urban lawn management, pet waste management. The Plan should be updated every 5-years.
- ◇ Focus on finding local volunteers that are willing to adopt and promote new practices, including streambank stabilization.
- ◇ Ensure the value of maintenance of BMPs is understood to allow BMPs to have the desired long term effects, through education and outreach.
- ◇ Recognize the value of protection of water quality through education and outreach.
- ◇ Prevent sedimentation by using existing cost - share programs through the Kansas Department of Agriculture, Division of Conservation (DOC); KDHE; and NRCS, to fund conservation practices in the Missouri Region.
- ◇ Continue to use the NRCS for technical assistance on implementation practices suited to the unique topography of the Missouri Region.
- ◇ Prioritize the existing ranking systems from agencies, to secure funding for protecting water quality and water supply in the Missouri Region.
- ◇ Raise awareness about water quality and the importance of proper urban lawn application.



Missouri Regional Advisory Committee Priority Goal #2 Action Plan

❖ **Monitoring**

- ◇ Determine if additional monitoring sites are needed to better characterize and prioritize project priorities in the Region.

❖ **Funding Needs**

- ◇ To ensure water quality is maintained and improved, the state should fully fund the Kansas Water Plan for implementation of best management practices through programs of the DOC, KDHE and others as needed.
- ◇ Ensure continued and improved coordination with the NRCS to access and make the best use of funding for priority projects for water quality protection in the Region.
- ◇ Assess possible involvement of other agencies, businesses and interest groups to determine interest and possible funding of water quality projects in the Region.
- ◇ Continue to ensure that funding from the Clean Drinking Water Fee Fund for technical assistance for small public water supply systems is maintained at least at the current level.
- ◇ Include funding for streambank stabilization projects as identified in the WRAPS 9 Element Plan.
- ◇ Fully fund the 9-Element Plan implementation (approximately \$140,000/year).
- ◇ Develop a funding strategy within the next year for additional data collection and implementation as identified above in a phased manner in conjunction with DOC, NRCS, and KDHE and others as appropriate. Funding needs will then be reviewed on an annual basis and brought to the KWA.

ADDRESSING GROUNDWATER GOALS OF THE MISSOURI REGIONAL PLANNING AREA

Kansas Water Office Contract #16-125

Progress report for Kansas Water Office

by

Jordi Batlle-Aguilar

Jim Butler

Donald Whittemore

-Kansas Geological Survey-

January 2017

Scope of Work

The scope of work of the project is intended to fulfill the data and research portions of two of the main goals of the Missouri Regional Planning Area (Missouri RPA), namely, goal 1) “Since groundwater quality is not well known, compile existing and collect additional data over the next 5 years to establish a baseline”; and goal 3) “Collect additional information to improve safe yield estimate of groundwater and tributary streams within 3 years”.

The scope of work for the present project #16-125 is summarized in five items as follows:

- Item no. 1. Extract data about the glacial, alluvial and bedrock aquifers in the region from online databases: Water Well Completion Records (WWC5) and Water Well Levels (WIZARD) online databases of the KGS; water use from the Water Information Management and Analysis System (WIMAS) online database of the DWR-KDA served by the KGS; Groundwater Levels and Water Quality online databases of the USGS.
- Item no. 2. Obtain non-digital historical data on drilling logs (including available test-hole data), preglacial drainageways, bedrock surface topography, saturated thickness of Pleistocene deposits, and groundwater quality in the area. These data will be assembled from publications and other available sources on groundwater hydrogeology and groundwater quality for counties in the Missouri Regional Planning Area.
- Item no. 3. Construct digital databases from collected existing data (available historical reports and online databases).
- Item no. 4. Prepare digital maps of updated bedrock surface topography, saturated aquifer thickness, preglacial drainageways, water use, and groundwater quality from digital databases.
- Item no. 5. Prepare a report assessing groundwater in storage, general sustainability, and groundwater quality conditions, and determine the greatest needs for collection of additional data, and recommendations for locations of long term monitoring sites.

The present progress report, the first of a series of three, covers items no. 1 and 2.

Study Area

The study area is the Missouri Regional Planning Area in northeast Kansas. It includes one county in full (Doniphan –DP) and six counties partially (Marshall –MS, Nemaha –NM, Brown –BR, Atchison –AT, Leavenworth –LV and Wyandotte –WY).

Missouri Regional Planning Area

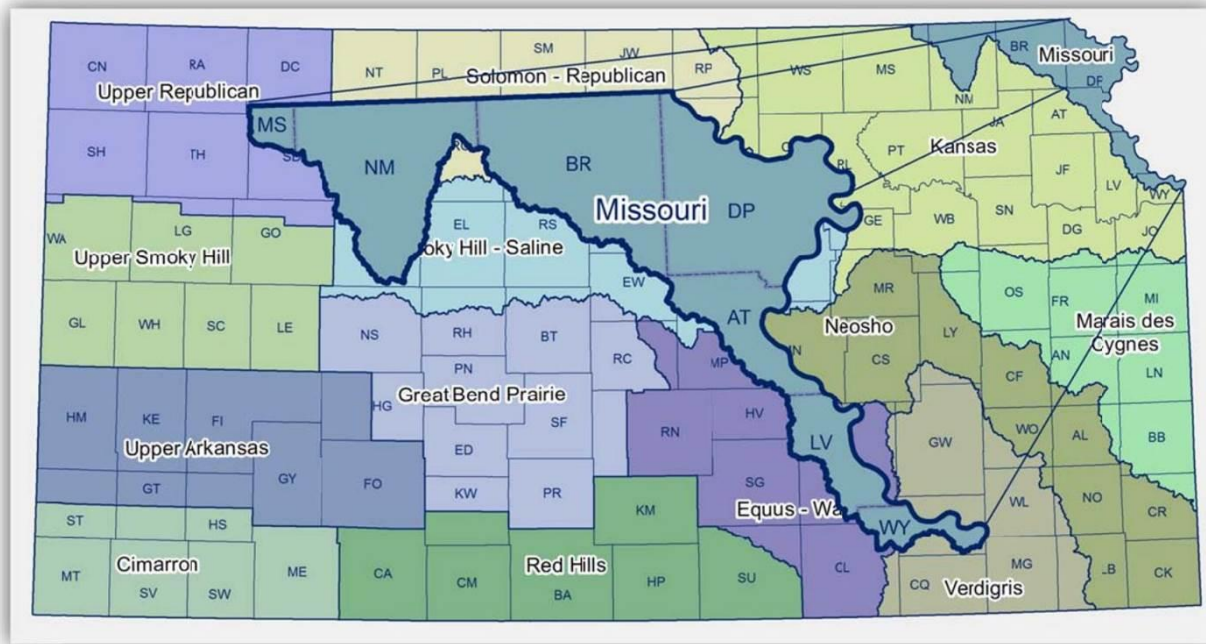


Figure 1. Location of the Missouri Regional Planning Area with its seven counties (from west to east: Marshall – MS, Nemaha –NM, Brown –BR, Doniphan –DP, Atchison –AT, Leavenworth –LV, Wyandotte –WY).

Data from the WWC5 database

The WWC5 database was filtered for the seven counties included in the study, with a total of 10,843 wells on file. The distribution of wells per county is very unequal (Table 1). For example, only 461 wells are located in Doniphan County, but as many as 4,445 wells are on file for Wyandotte County. However, not all wells are relevant for the present study, as many of them are outside the Missouri RPA. We coupled the information from the WWC5 database with ArcGIS® to select those wells that are inside the Missouri RPA, and among them, the ones that have drilling log data readily available. The percentage of wells with readily available drilling log data in the Missouri RPA varies from 17% in Marshall County, to 72% in Doniphan County.

Information about depth to bedrock and aquifer thickness has been obtained from those wells with readily available drilling log data in the WWC5. However, it is important to note that about 55% of the wells in the Missouri RPA do not have readily accessible drilling log data in an electronic form in the WWC5. That percentage is large, and not considering those wells would

affect the final results of the project. Because of that, we are now in the process of transforming the drilling log information into an electronically accessible form for those wells inside the Missouri RPA. This information, that is expected to be available in the following weeks, will reduce the uncertainty on maps of depth to bedrock and aquifer thickness that will be performed in following stages of the project.

Table 1. Summary of available wells in the Water Well Completion Records (WWC5) database.

	Wells in county	Wells in the MRPA	% wells in MRPA	MRPA wells with available log data	% wells in MRPA with log	MRPA wells without log	% MRPA wells without log
Marshall	875	6	0.7	1	16.7	5	83.3
Nemaha	883	428	48.5	241	56.3	187	43.7
Brown	999	719	72.0	464	64.5	255	35.5
Doniphan	461	457	99.1	330	72.2	127	27.8
Atchison	677	400	59.1	154	38.5	246	61.5
Leavenworth	2503	858	34.3	330	38.5	528	61.5
Wyandotte	4445	1942	43.7	491	25.3	1451	74.7

Additional data to complement WWC5

In order to complement the WWC5 database, KGS established contact with Brad Vincent of Ground Water Associates, Inc. (GWA), in November 2016 to obtain test-hole data from projects including drilling performed by GWA for cities and rural water districts in the area. Data from test-holes are not included in the WWC5 database because they are not completed wells, only test-holes as their name indicates. Nonetheless, these data can be as important as the data in the WWC5 database when it comes to preparing maps of depth to bedrock and aquifer thickness because they not only add for additional sites, but can represent locations with different lithology (often less permeable material than for completed wells). Unfortunately the drilling data corresponding to these test-holes belongs to cities and rural areas for which GWA worked, so Brad cannot release the data. Brad agreed to provide KGS with the contact information for the cities and rural water districts for which he worked in the study area. Once KGS has the contact information on the owners, a release data form will be sent to them so that the KGS can obtain information related to the geology of these test-holes from GWA.

Future steps

The following steps will be taken during the next stage of the project:

- Include available drilling logs into the WWC5 database and use them to build digital maps using ArcGIS®;
- Obtain contact information about cities and rural water districts that own test-hole data, request data release forms, request drilling log data for those supplying forms, and incorporate the test-hole log data in our files for digital mapping;

- Obtain water levels from the Water Well Levels Database WIZARD and bedrock elevation data available at the KGS in order to calculate and prepare maps of the saturated thickness of Pleistocene aquifers;
- Prepare preliminary maps using ArcGIS[®] to identify those areas where uncertainty is large and more information is needed, and to detect errors.