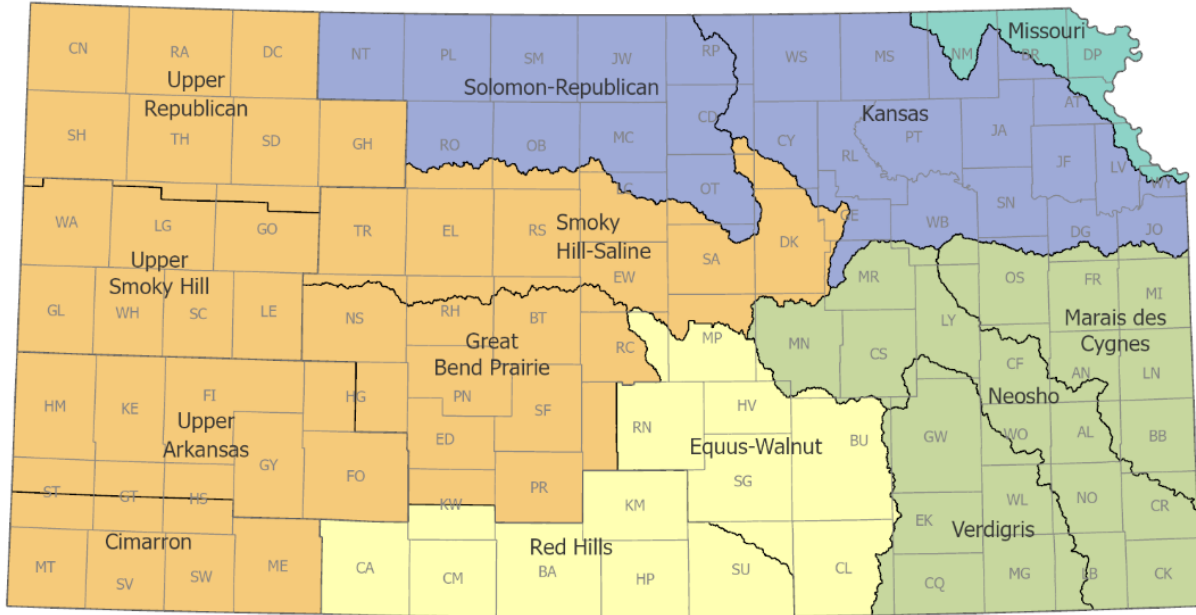


Regional Planning Area Goals and Action Plans



Cimarron RAC pages.....	2-4	Red Hills RAC pages.....	31-32
Equus-Walnut RAC pages.....	5-7	Smoky Hill-Saline RAC pages.....	33-35
Great Bend Prairie RAC pages....	8-11	Solomon-Republican RAC pages....	36-37
Kansas RAC pages.....	12-18	Upper Arkansas RAC pages.....	38-39
Marais des Cygnes RAC pages...	19-20	Upper Republican RAC pages.....	40-41
Missouri RAC pages.....	21-27	Upper Smoky Hill RAC pages.....	42-43
Neosho RAC pages	28-30	Verdigris RAC page.....	44

Cimarron RAC Goals and Action Plans

Priority Goal #1: Reduce the rate of decline of the Ogallala Aquifer in the region through voluntary, incentive-based conservation as assessed every five years.

Priority Goal #2: Extend the usable lifetime of the Ogallala Aquifer in the region through technology adoption (irrigation, industrial, municipal, etc.), new crop varieties and conservation for all uses and for many generations.

Goals 1 and 2 seek to reduce water use in the region therefore the following actions apply to both Goals. Goals 3 and 4 are strategies to address Goals 1 and 2.

Action Steps:

- I. Define and quantify the regional aquifer decline, establishing a baseline for comparison.
- II. Promote steps/programs to ensure water quality. (Mention this mainly for the Chloride area in the east part of region and also from past concerns of injection wells leaks and oil/gas drilling in the west)
- III. Monitor/promote/protect water coming into or protect water leaving the area (kind of goes in with the talks in past of meeting with water users from neighboring states and also the RACs past support for the monitoring well in Morton county that was denied)
- IV. Work with partners, including KDA and NRCS, to develop baseline of water saving technologies in use and voluntary incentive based conservation occurring and a method to track participation. Consider using the annual water reporting system, producer surveys and other means to identify water saving efforts if needed.
- V. Secure funding, including statutory SGF transfer to SWPF, to support water conservation programs and evaluation of technologies, crop varieties and water management to save water.
- VI. Provide water users with information on available tools and programs, including but not limited to; LEMAS, WCAs, Multi-Year Flex Accounts, Water Banks, Irrigation Scheduling, RCPP-Soil Probe program through GMDs, K-State Extension tools, K-State Research/farms and additional tools and programs as made available.
- VII. Change producer perception from a “use it or lose it” mentality.
- VIII. Use demonstration projects to educate producers to economically reduce water used. (Water technology farms, LEMAS, WCAs, K-State Research and Extension farm projects and other water management and water efficiency projects can provide valuable

examples and information to producers to encourage their participation in water saving efforts.)

- IX. GMD3 and DWR work with producers to establish LEMAs and WCAs.
- X. Build a network of agencies, organizations, researchers, industry and producers to disseminate credible, accurate information on water use, conservation and technology, programs and tools to reduce water use.
 - a. Utilize K-State and others to develop technologies and crop varieties to enhance water savings methodologies and deliver information.
 - b. Work with producer and farm groups to reach other producers.
 - c. Include municipal and industrial users in outreach.
- XI. Evaluate the effectiveness of technologies and crop varieties to develop voluntary incentives and tools to economically reduce water usage.
 - a. Support water technology farms (WTF) in the region for evaluation of technologies and management methods to reduce the current level of water use with a goal of at least one WTF in a water stressed area and one in a non-stressed area.
 - b. Develop mobile drip irrigation (MDI) statistics so funds could become available for technology upgrades through state and federal programs.
 - c. Work with federal partners to make additional water saving technologies eligible for federal programs.
 - d. Disseminate scientific and economic information on technology efficiencies and crop varieties as well as other relevant information from pilot studies, research and water technology farms.
- XII. Use positive press releases to spread the word as WCAs are developed.
- XIII. Public water suppliers and industrial users should consider alternative uses of non-potable water and existing water supplies before developing any new water supplies.
- XIV. Public water suppliers should consider water rate structures to promote water conservation.

Priority Goal #3: Encourage all water users to conserve and make the best beneficial use of water.

Action Steps:

- I. Increase adoption of water conservation through education by those who are currently using the technology and adaption of a Master Water Manager program
- II. Identify existing conservation success stories and share with area producers, industry or municipalities as applicable.
- III. Initiate demonstration projects with willing producers in the region (technologies, crop varieties and management techniques) to reduce water use.
- IV. Develop format/program to allow water users to document current water savings, if not in an approved program.
- V. Work with municipalities to educate customers on beneficial water use.

Priority Goal #4: As measured through increase in adoption by 50% as assessed each five years, promote the adoption of irrigation efficient technology and invest in university research to evaluate the effectiveness of such technology and crop varieties to develop voluntary incentives and tools to economically reduce water usage. Recommended strategy to achieve Goal - Increase adoption through education by those who are currently using the technology.

Action Steps:

- I. Educate water users on new technologies through local papers, extension, meetings of producer groups, irrigation organizations, conservation districts, GMD3 and other means.
- II. Develop and disseminate results from the use of water saving tools by those who have adopted technology and management tools to economically reduce water usage.
- III. Use local demonstrations of technology/demo farms in region to share techniques.
- IV. Provide Water Conservation Area (WCA) information, including dissemination with water use reports.
- V. Develop widespread awareness of EQIP, CRP, RCPP, CIG and other program availability and increase participation.
- VI. Encourage improvement of municipal conservation plans, municipal rate structures and other means to encourage water use reductions.

Equus-Walnut RAC Goals and Action Plans

Priority Goal #1: Promote sustainable balance of groundwater withdrawals with annual recharge in the Equus Beds Aquifer. Ensure safe yield and recharge rate calculations in the Equus Beds Aquifer are accurate through a district wide, integrated groundwater and surface water model.

Action Plans:

- I. Maintain the Groundwater Management District #2 model developed by the Kansas Geological Survey 2020 (GMD 2 model).
- II. Utilize GMD 2 model results to support refinement of aquifer recharge rates.
- III. Encourage application of the revised recharge rates to support safe yield calculations within GMD 2 model boundaries.
- IV. Support utilizing GMD 2 model results to identify areas of over-appropriation within the Equus-Walnut planning region.
- V. Promote an integrated approach to the management of all water resources, by non-domestic users within the Equus-Walnut planning region, especially in over-appropriated areas.
- VI. Continue to encourage communication and collaboration between all responsible agencies and organizations tasked to accomplish these actions.

Priority Goal #2: Encourage the development and use of comprehensive water supply plans by major water users in the region. Plans should account for long-term supply and demand, vulnerabilities within a water supply system, and potential for improved water efficiency.

Action Plans:

- I. Continue to support The Kansas Water Office (KWO) Assessment and Evaluation's technical assistance grant for water conservation planning while promoting additional planning assistance programs.
- II. Coordinate with the Kansas Department of Health & Environment (KDHE) -Bureau of Water and Kansas Department of Agriculture - Division of Water Resources (DWR) on a database of all public water suppliers within the Equus-Walnut Regional Advisory

Committee (RAC) that includes contact information and chief responsible staff person and chief governance person for each supplier.

- III. The KWO will develop a survey document to ascertain the current state, practice, and plans of each public water supplier as to their long-term water supply plan, including their consideration of non-potable water and existing water supplies.
- IV. If deemed appropriate, the results of this survey document will be made available to each public water supplier within the Equus-Walnut Planning Region.
- V. The RAC will work with the KWO to prepare a report to the Kansas Water Authority (KWA) that conveys the results of the survey and identifies any further actions that may be necessary in pursuit of the goal.
- VI. Promote a regulatory framework for the use of graywater.
- VII. The Equus-Walnut RAC, through the KWO and others, will promote water resource conservation strategies within the region by speaking with major water users, sharing success stories and organizing informational webinars, conference presentations, and other educational opportunities.

Priority Goal #3: Implement watershed protection measures to improve the reliability and health of surface water resources in the region.

Action Plans:

- I. Utilize targeting strategies of Watershed Restoration and Protection Strategy (WRAPS) and KWO to identify appropriate locations for (best management practice) BMP programs or other watershed projects.
- II. Identify ways to leverage funds for BMP implementation through public and private entities.
- III. Support watershed education and BMP demonstration activities.

Priority Goal #4: Allocate necessary resources to accurately locate, characterize, prioritize and remediate contamination sites within the Equus-Beds Aquifer.

Action Plans:

- I. Maintain an inventory of contamination sites within the Equus Beds Aquifer.

- II. Identify and fill data gaps associated with inventoried contamination sites. This could include lack of definition regarding vertical or horizontal extent of contamination, concentration of contaminants or the source of contamination of an identified site.
- III. Install additional monitoring wells and piezometers as necessary to collect data where needs are identified.
- IV. Complete pilot studies as required to facilitate groundwater remediation feasibility.
- V. Develop a process to test and promote new treatment technologies that address contaminated groundwater sites within the Region and State.

Priority Goal #5: Increase efforts to establish sustainable, water-conserving agricultural production practices.

Action Plans:

- I. Preserve water resources and coordinate programs to develop less water-intensive crops.
- II. Coordinate public/private research for the development of viable drought tolerant crops.
- III. Identify and support markets for less water-intensive crops.
- IV. Support federal and state programs that evaluate new irrigation technologies.
- V. Promote federal and state programs that offer incentives for operators to implement irrigation efficiency improvements.
- VI. Support agriculture workshops and field days that demonstrate water-conserving practices.

Great Bend Prairie RAC Goals and Action Plans

Priority Goal #1: Achieve water use sustainability within the Great Bend Prairie Regional Planning Area that includes a reasonable raising or lowering of the water table based on average weather conditions.

Action Steps:

Short-term Actions

- I. Identify existing voluntary conservation programs and determine if new incentivized conservation programs are needed to compliment current programs.
- II. Work with the appropriate agencies to ensure that cost-shares are current and economically competitive.
- III. Hold stakeholder meetings in conjunction with the appropriate agencies to inform the public about the various programs available.

Long-term Actions

- I. Utilize the KDAMOD* to determine rate of withdrawal from the aquifer from all uses (irrigation, industrial, evapotranspiration, municipal, etc.) versus the rate of recharge to the aquifer from all sources (precipitation, streambank, infiltration, etc.) for the GBP RAC area.
- II. Compile the model data into presentation materials for area stakeholder groups/agencies to identify appropriate management units for further analysis with BBGMDMOD*. This data will analyze the rate of depletion spatially across the area to assist with prioritization of projects and funding.
- III. Coordinate with state agencies & GMD#5 to assess and implement appropriate management controls to bring areas of concern into balance. “

* The Big Bend Groundwater Management District high-resolution hydrologic model (BBGMDMOD) was initially created with seven layers, each representing a geologic formation below the ground surface allowing for analysis of water movement between the layers. KDA–DWR unified the seven layers of the BBGMDMOD to create the KDAMOD for quick water quantity assessments for the region. Both variants are based on the same datasets. BBGMDMOD can track water quality between the geologic formations.

Priority Goal #2: Developed for Municipalities and Rural Water Districts. Maintain annual training funds of 15% from Clean Water Drinking Fee and increase technical training support to Public Water Supply (PWS) systems to enhance new technology and increase water efficiently and effectively, thus reducing water loss. Utilize available

municipal/residential/commercial “LAWN” irrigation training programs provided by the Irrigation Association.

Actions Steps:

- I. Work with state agencies, cities, rural water districts, and public water suppliers to ensure that the Clean Water Drinking Fee is being appropriately carried out.
- II. Continue to provide a minimum of 15% and increase more (up to 30%) of Clean Drinking Water Fee for technical assistance by the Kansas Rural Water Association for Public Water Suppliers.
- III. Work with Irrigation Associations to develop free training opportunities for LAWN irrigators and landscapers.

Priority Goal #3: Enhance the monitoring of poor quality water to stop and minimize further contamination of fresh water sources. Areas of concern include regions which have salt water disposal lines, disposal wells, high nitrate levels, and areas with high salt sources.

Action Steps:

- I. Establish a program if a problem is observed to ensure the problem does not get worse.
- II. Start using mapping techniques and disposal line maintenance and replacement to ensure this goal is met.
- III. Evaluate extent of KDHE surface water monitoring network in petroleum producing areas and areas with high salt sources within Great Bend Prairie Regional Planning Area.
 - a. Work with KDHE to modify surface water monitoring network if evaluation finds that necessary.
- IV. Develop inventory of current active and legacy salt water disposal lines in Great Bend Prairie Regional Planning Area.
- V. Continue programs to evaluate current extent of salt water disposal well inventory.
- VI. Evaluate effectiveness of current spill and escape notification requirements.
 - a. Work with KCC to modify current spill and escape notification requirements if evaluation finds that necessary.
- VII. For all Sensitive Groundwater Areas in the Great Bend Prairie Regional Planning Area:
 - a. Check the integrity of active and known legacy disposal systems.
 - b. Investigate the integrity of plugged abandoned wells suspected of leaking.
 - c. Continued programs to conduct Mechanical Integrity Tests on all injection or disposal wells.
 - d. Develop a routine groundwater quality program to help determine extent and sources of contamination.

- VIII. Educate public in Great Bend Prairie Regional Planning Area about causes and trends of salinity and nitrate issues.

Priority Goal #4: Initiate research and development of alternative feed sources and less water-intensive crops. Technology transfer from this research would have benefits in areas of Kansas where water is not available for production. Multiple research programs such as plant breeding and livestock feeding should be pursued.

Action Steps:

- I. Achieve large scale feeding trials by 2025.
- II. Coordinate with the Kansas Department of Agriculture (KDA) to improved adoptability of feed wheat, along with other alternative crops, through marketing, commodity segregation, research and education as stated within the Vision for the Future of Water Supply in Kansas.
- III. Create a program to be able to roll out small- and large-scale feeding trials
- IV. Find several feedlots to help roll out program
- V. Utilize membership of stakeholder groups to solicit interest
- VI. Coordinate with KDA to implement demonstration plots for yield evaluation.
- VII. Coordinate with KDA to develop markets for feed wheat and other alternative crops for use feed sources.

Priority Goal #5: Work towards sustainability of watersheds so that flood control capacity is maintained while maintaining streamflow to meet downstream water needs. Progress towards sustainability would be to have 50% of the drainage area within watershed districts controlled by watershed structures by 2065. Best available information/data will be evaluated every 10 years to track progress towards meeting this goal.

Action Steps:

- I. Determine percent controlled by watershed structures within watershed districts in Great Bend Prairie Regional Planning Area.
- II. Work with landowners to promote watershed dams and the important role they have in the community and environment.
- III. Work with watershed boards and community leaders.
- IV. Determine groundwater recharge potential of watershed structures through modeling efforts.

- V. Work with watershed districts to determine costs (needs inventory) associated with building additional structures leading up to 50% of drainage area within districts controlled by structures.
- VI. Evaluate the potential of a Multipurpose Small Lake through KDA-DOC in the Great Bend Prairie Regional Planning Area.

Kansas RAC Goals and Action Plans

PREAMBLE: We recommend that KWO foster a collaborative partnership approach to water resource issues across Kansas by utilizing the following key principles:

- ❖ Partnerships - Every federal, state and local agency will work together in partnership for the benefit of water resources. This will require these organizations to work cooperatively in order to coordinate programs, funding and technical resources to achieve shared water resource goals.
- ❖ Action is Grassroots – Actions to achieve water resource goals should initiate from and be carried out at the Grassroots level (i.e. locally). Property owners in targeted regions must play an integral part of the process and their input informs the prioritization of projects for watersheds. “Action is Grassroots” means that all projects are voluntary, and that local landowners continue to work through existing systems to coordinate, encourage, and commit to high priority projects. Mechanisms that allow for bottom-up decision-making will be central to action in the Kansas Region as local landowners utilize their knowledge of the region to determine what projects are best and workable for the area.
- ❖ Watershed Based – All projects and associated funding are prioritized based on the needs in the watershed rather than on political boundaries.
- ❖ Prioritization Based on Data – All projects and associated funding are prioritized through a science-based system within the watershed that emphasizes targeting for the greatest impact.
- ❖ Outreach – Critical projects within a watershed are identified, and outreach is conducted to encourage and support participation by key (high priority in the watershed based on science-based analysis) property owners in the watershed.

Priority Goal #1: Increase water storage capacity and availability in federal reservoirs to secure an adequate water supply and to maintain water quality in the region.

Action Steps:

- I. Increase water storage availability in federal reservoirs to supplement instream flow needs of the Kansas River.
 - a. Complete necessary background work to support a request to reallocate storage from water supply to water quality in Milford and Perry reservoirs. Move a sufficient amount of storage from water supply to water quality in support of Kansas River quality flow targets.

- b. Determine amount of additional annual costs for calling into service the remaining water supply storage not needed to meet instream purposes and request full funding. When funding is secured, call into service storage not to be included within reallocation request.
- II. By 2025, evaluate the ability to raise the conservation pool in each federal reservoir.
- III. The Kansas RAC recommends the Kansas Water Office pursue Forecast Informed Reservoir Operation and, as articulated in the “Basin Restoration Approach: Kansas Lower Republican,” the Kansas RAC advises the KWO to improve coordination with the USACE on reservoir releases, management plans, and future actions to address resiliency to flood and drought conditions, water quality, and quantity issues.
- IV. The Kansas Water Office shall gather data to determine steps to maintain consistent storage levels at specific reservoirs. As a long-term goal, KWO should incorporate existing studies and information to study the possibility of future dredging and other measures by the State of Kansas on a more consistent basis to maintain storage.

Priority Goal #2: In order to ensure water supply needs are met throughout the entire region, review regional demands for water and evaluate water supply options for areas of need.

Action Steps:

- I. The KWO will compile existing information and complete additional evaluation necessary to determine areas of water supply need.
- II. Explore additional storage possibilities for construction of multipurpose small lakes so that new water sources can be brought online to alleviate specific regional issues.
- III. Working with KDA-DOC, NRCS and local watershed districts, identify existing watershed structures that are in need of restoration and have potential to be made larger and provide supplemental water supply.
- IV, Working with KDA-DOC, NRCS and local watershed districts, identify watershed dam and multipurpose small lake sites that were not constructed, but could be built to provide supplemental water supply.
- V. KWO shall develop criteria to determine whether these sites should be expanded or built based on a broad range of issues including demonstrated need, return on investment, suitability of site for long-term use, taking into account potential for HABs and sedimentation, and other legal and logistical issues.

- VI. Seek partnership and funding opportunities for proposed projects that meet the established criteria.
- VII. Support the KWO and DWR in their efforts to ensure all municipalities and rural water districts have updated water conservation plans that meet the 2007 Municipal Water Conservation Plan Guidelines.

Priority Goal #3: Reduce the cumulative sediment rate of federal reservoirs and other water supply lakes in the Kansas region to ensure adequate water supply for the region for the next 40 years.

Achieve individual reduction goals set by the Kansas Water Office for each lake as set forth by the nine-element watershed plan for each within 40 years.

All goals and action plans in the Kansas Regional Planning Area will follow the FIVE WATERSHED PRINCIPLES.

Action Steps:

- I. Establish a complete list of major reservoirs and water supply lakes in the Kansas RAC Region. This List is referred to as Appendix A and will be attached to Priority Goal #3.
- II. The Kansas Water Office shall set individual sediment reduction goals for each major reservoir and water supply lake. These goals will be included in Appendix A and updated as new information becomes available.
- III. The sediment reduction goals for reservoirs and lakes will be achieved using Best Management Practices (BMPs) implemented in the watersheds of these reservoirs and lakes in the Region. It is estimated that BMP implementation funding of a minimum of \$5M annually will be required to achieve the targeted watershed goals within 40 years.
- IV. Reduce sediment load from out-of-state sources by working with neighboring states and supporting their efforts to implement BMPs.
- V. By 2024, all state and federal lands surrounding each federal reservoir and water supply lake in the Kansas RAC Region must implement BMPs such as no-till, soil health practices, or buffers at levels to support achievement of sediment reduction at each reservoir or lake.
- VI. The Kansas Water Office, in coordination with other state agencies, shall ensure individual WRAPS plans and Conservation Districts' goals for the Kansas RAC Region include the concept of reservoir sustainability with the goal of maintaining storage capacity in Kansas Region reservoirs.

- VII. Pursue innovative sediment management alternatives, such as water injection dredging technology.
- VIII. The Kansas RAC will have representation on the Natural Resources Conservation Services (NRCS) Kansas Technical Committee to help ensure that reservoir sustainability and Kansas water supply issues are addressed in NRCS goal setting and programs.
- IX. Establish programs with local universities to leverage relevant expertise and student resources that will address the sedimentation reduction goal.
- X. Obtain technical assistance and advisors (TA) at a level sufficient to meet the BMP implementation goals in the Region. It is estimated that additional TA funding of at least \$350,000 annually would be necessary.
- XI. NRCS and local conservation districts, in coordination with other state agencies, should prioritize the completion of voluntary Comprehensive Conservation Plans for all land in the Kansas RAC Region and encourage landowners to develop such plans. These Plans will be designed to address natural resource concerns on cropland, in riparian zones, on pastureland, livestock feeding area and others on a whole land or farm unit basis rather than on an individual crop field or a single resource concern basis. Information generated from these comprehensive plans will be used to aid in identifying BMP needs and prioritization of sub-watersheds in the basin, as well as assist with funding and implementation decisions. Eligibility for BMP cost share programs should be prioritized for lands that have Comprehensive Conservation Plans.
- XII. The KWO shall take the lead to create a partnership list of all BMP implementation programs available to the public from Federal and State agencies, natural resource organizations and other groups. This list will be created and shared via a website hosted by KWO as well as in a 1-page flyer (or multiple page booklet as needed) that will be made available to the public. This information will be updated in real time on the KWO website and quarterly on the flyer by KWO staff and distributed widely to all agencies and partners for use and distribution. This document will be a key means to inform the public about all available cost share and technical assistance available for BMP implementation.

Priority Goal #4: Improve water quality throughout the Kansas region through the utilization of natural solutions with a goal of sustainably meeting the needs of natural and human communities in the watershed.

Action Steps:

- I. KWO will provide an annual report to the RAC regarding natural solutions that have been implemented, which will include an assessment of their effectiveness to date.
- II. Identify and request natural solutions be incorporated for all appropriate applications.
 - a. Examples of natural solutions include:
 - i. Prescribed burns (reduces atmospheric carbon output by preventing larger fires later with smaller fires now, and encourages climate-adapted native vegetation);
 - ii. Hardwood reforestation in riparian areas (reduces erosion, reduces surface runoff; lowers water temperature);
 - iii. Reduced impact logging (leave hollow trees standing, minimize clear cutting, maintain age diversity in forest stand, preserve highest quality trees);
 - iv. Using soil health/regenerative agriculture practices on cropland (no soil disturbance, diversity of species, living root in the soil at all times, keeping soil covered, allow livestock impact) and rangeland (short periods of intense grazing, leaving more than 50% of plant biomass ungrazed, long periods of rest);
 - v. Wetlands and flood plains (pollution and erosion filtering, mitigation of pollutants, flood damage buffering);
 - vi. For all of the above, see Proceedings of the Natural Academy of Sciences of the United States of America, "Natural Climate Solutions," October 31, 2017, 114 (44) 11645-11650.
- III. Pursue pilot projects for identified natural solutions.
- IV. Request that each funded project within the Kansas region have stated objectives to further this goal, such as maintaining and restoring stream flows and water quality for healthy aquatic and riparian communities, protecting receiving waters from pollution, protecting the quality of water supplies to meet human needs within the watershed, reducing flood risk to human communities and encouraging natural flood processes, and increasing resilience to climate change.

Priority Goal #5: Continue to reduce the duration and frequency of Harmful Algal Blooms (HABs) in the watershed.

The reduction of HABs in the Milford Lake watershed is a top priority for the Kansas Regional Planning Area.

Action Steps:

- I. The Kansas RAC shall recommend to the Kansas Water Authority that a minimum of \$3 million per year shall be allocated towards HAB mitigation in the Kansas Regional Planning Area with a minimum of \$1.5 million to be directed to BMP implementation in the Milford Lake Watershed.
- II. By 2024, all state and federal lands surrounding each federal reservoir and water supply lake in the Kansas RAC Region must implement BMPs such as no-till, soil health practices, or buffers at levels to support achievement of harmful algal bloom (HAB) reduction at each reservoir or lake.
- III. The Kansas Water Office, in coordination with other state agencies, shall ensure individual WRAPS plans and Conservation Districts' goals for the Kansas RAC Region include the concept of minimizing nutrient inflow to lakes to reduce the potential for HABs with a focus on best management practices such as no-till, soil health and nutrient management practices, or buffer.
- IV. Encourage stakeholders to engage in collaborative efforts that result in the reduction of nutrient loading in federal reservoirs (example, Milford RCPP).
- V. The Kansas RAC recommends that the Kansas Water Office include management for HABs as part of the lake level management plan to mitigate HABs in reservoirs, as well as downstream impacts.
- VI. Support ongoing research for identification and remediation of the causes, prevention and treatment of HABs, including potential in-lake technologies.
- VII. Establish programs with local universities to leverage relevant expertise and student resources that will address the HAB reduction goal.
- VIII. NRCS and local conservation districts, in coordination with other state agencies, should prioritize the completion of voluntary Comprehensive Conservation Plans for all land in the Kansas RAC Region and encourage landowners to develop such plans. These Plans will be designed to address natural resource concerns on cropland, in riparian zones, on

pastureland, livestock feeding area and others on a whole land or farm unit basis rather than on an individual crop field or a single resource concern basis. Information generated from these comprehensive plans will be used to aid in identifying BMP needs and prioritization of sub-watersheds in the basin, as well as assist with funding and implementation decisions. Eligibility for BMP cost share programs should be prioritized for lands that have Comprehensive Conservation Plans.

- IX. Encourage KDHE to continue providing funding to support roughfish removal.
- X. Obtain technical assistance and advisors (TA) at a level sufficient to meet the HAB reduction goals in the Region.

Marais des Cygnes RAC Goals and Action Plans

Priority Goal #1: Reduce cumulative sediment loads entering Melvern Lake, Pomona Lake, and Hillsdale Lake by 10 percent every 10 years to extend the life of existing infrastructure.

Action Steps:

- I. A collaboration between the Regional Advisory Committee (RAC), local producers, local WRAPS groups, local conservation districts, regional public Water Suppliers (PWS), the Kansas Water Office (KWO), the Kansas Department of Health and Environment (KDH&E), and the Kansas Department of Agriculture-Division of Conservation (KDA-DOC) will secure funding and work to treat priority cropland, with no-till practices, cover crops, and other sedimentation and nutrient reduction farming practices by 2030 in the Marais des Cygnes Region above Melvern Lake, Pomona Lake, and Hillsdale Lake.
- II. This collaboration will provide education and share information concerning water and soil conservation and nutrient and sedimentation reduction, and demonstration farms will be established in the region above these three reservoirs.
- III. Encourage state and federal entities to participate in best management practices above federal reservoirs on state and federal lands and create a demonstration farm.
- IV. The KWO will create a baseline sedimentation rate and review the sedimentation rate changes of these three reservoirs by conducting bathymetric surveys every 5 years to monitor the sedimentation rate and the progress and benefit of sedimentation reduction practices. The KWO will work to secure funding for this program.
- V. The KWO will evaluate possible technologies that may be feasible to remove sediment from the reservoirs.

Priority Goal #2: Ensure water supply storage in the Marais des Cygnes Region is able to supply for 110% of the projected demands through the year 2050.

Action Steps:

- I. The KWO will refine population and demand growth projections to ensure accurate projections are being utilized.
- II. The KWO will evaluate the need and feasibility of creating an interconnection with municipalities within an adjacent region to be a backup water supply source.
- III. The RAC and the KWO will work with the Kansas Rural Water Association (KRWA) through their technical assistance contract to identify PWS that may not be sufficient to meet projected demands.

- IV. The collaboration referenced in the Action Steps for Goal 1 will provide education and share information concerning water and soil conservation and water consumption reduction for the Marais des Cygnes Region.
- V. The KWO will evaluate possible technologies that may be feasible to remove sediment from the reservoirs if there becomes a need to in order to maintain and protect water supply.

Priority Goal #3: Continually work to prevent the spread of Aquatic Nuisance Species (ANS), including Zebra and Quagga mussels, into Kansas Lakes that are not currently infested, by working with the agencies focused on ANS.

Action Steps:

- I. The KWO and the RAC will work to prevent the spread of ANS into Kansas Lakes that are not currently infested, by working with the Kansas Department of Wildlife, Parks, and Tourism (KDWP&T) and the US Army Corps of Engineers (USACE) to install three Watercraft Inspection and Decontamination stations near the federal reservoirs within the Marais des Cygnes Region.
- II. The RAC will work with the KDWP&T and USACE on an ongoing basis to provide education for lake users concerning the spread of ANS and how to prevent it.
- III. The RAC will encourage funding for the ANS Program through the State Water Plan Fund (SWPF).

Missouri RAC Goals and Action Plans

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.

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 #2: Collect additional information to improve safe yield estimate of groundwater and tributary streams within 3 years. Safe yield should be continuously monitored.

Action steps below apply to both goals #1 and #2.

Action Steps:

- I. Evaluate what is known about groundwater quantity and quality in glacial, alluvial and bedrock aquifers in the Missouri Region
 - a. Any and all available information about groundwater quality and quantity will be collected and compiled.
 - b. Digital database from the collected historical and online existing data would be constructed.

- c. 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
- d. An assessment report would be prepared that includes:
 - i. A determination of groundwater in storage and groundwater quality conditions in the glacial, alluvial and bedrock aquifers in the area.
 - ii. A determination of the greatest needs for collection of additional data.
 - iii. Recommendations on the need for, and number and location of wells to allow for well level and quality monitoring on a continuing basis.

II. Collection of additional data and re-evaluation of groundwater information

- a. 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.
- b. Enter new data into databases developed in the evaluation phase.
- c. Re-evaluate groundwater recharge estimates at a more detailed scale than the currently available potential annual recharge estimates based on soils.
- d. Combine existing and new data to establish safe groundwater yields and a groundwater quality baseline.
- e. On the basis of future climate and water usage conditions, establish a plan to periodically update safe yield estimates of groundwater resources.
- f. The Phase II 5-year study that is being conducted by the KGS which started in March of 2018 and will conclude in 2024 with an anticipated cost of \$121,700.

III. Maintain and Improve groundwater quality conditions

- a. Evaluate groundwater quality protection practices based on needs as determined in the assessment.
- b. Within 3 years after the baseline is established, a plan to implement best management practices will be developed to maintain and improve existing conditions.

IV. **Ongoing monitoring and evaluation**

- a. Expand groundwater level monitoring wells as determined during Assessment phase.
- b. Monitoring and reevaluation of groundwater quality conditions should continue at 5-year intervals.

Priority Goal #3: 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.

Action Steps:

I. Collection of Additional Data

- a. 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 outlet terrace runoff, grass waterway runoff, land with no conservation work or no conservation tillage, and land with no conservation work but using no-till.
- b. Collect data on the benefits of capturing and reusing water on a producer's property.
- c. 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.
- d. 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.

- e. Encourage communication in the Missouri River Region through a developed communication network.

II. Implementation

- a. 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.
- b. Focus on finding local volunteers that are willing to adopt and promote new practices, including streambank stabilization.
- c. Ensure the value of maintenance of BMPs is understood to allow BMPs to have the desired long-term effects, through education and outreach.
- d. Recognize the value of protection of water quality through education and outreach.
- e. 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.
- f. Continue to use the NRCS for technical assistance on implementation practices suited to the unique topography of the Missouri Region.
- g. Prioritize the existing ranking systems from agencies, to secure funding for protecting water quality and water supply in the Missouri Region.
- h. Raise awareness about water quality and the importance of proper urban lawn application.

III. Monitoring

- a. Determine if additional monitoring sites are needed to better characterize and prioritize project priorities in the Region.
- b. Increase TMDL monitoring to every three years.

IV. Funding Needs

- a. 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.
- b. 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.
- c. Assess possible involvement of other agencies, businesses and interest groups to determine interest and possible funding of water quality projects in the Region.
- d. 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.
- e. Include funding for streambank stabilization projects as identified in the WRAPS 9 Element Plan.
- f. Fully fund the 9-Element Plan implementation (approximately \$140,000/year).
- g. 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.

Priority Goal #4: The State of Kansas should implement a strategy that includes funding and materials to deliver a comprehensive education and outreach program by 2023; to understand the basics of the water cycle, know basic water conservation principles and understand that actions impact water quality and water quantity. A component of the comprehensive program should include enhancing information and outreach on research, technology and management practices using social media and public information outlets.

Action Steps:

- I. The RAC will establish an Education Subcommittee to coordinate education efforts.
- II. Water technology farms and Partnership for Agricultural Conservation and Excellence (PACE) farms should be supported and utilized as part of the education program.
- III. Utilize partners that have education programs already developed to support water education initiatives. This includes but is not limited to schools, water providers, FFA, KACEE, Kansas Farm Bureau, Kansas Corn Commission, Kansas Soybean Commission, Kansas Tribes, Conservation Districts, and Envirothon.

- IV. The RAC and the Kansas Water Office work together to reach out to other private and public entities to aid in funding the development of educational programming and outreach
- V. The Kansas Water Office should reach out to American Royal.
- VI. Prepare video and other printed information on the activities of the KWA and Missouri RAC for presentation to community organizations, school and other interested groups.
- VII. Provide presentations on Kansas Water issues to interested agencies, organizations and schools.
- VIII. Funding Needs:
 - a. A line item for education should be included in the budget.

Priority Goal #5: Provide insight to the Kansas Water Authority (KWA) on the Missouri river by keeping fully aware of management issues and problems concerning this largely untapped water resource. Over the next 3-5 years secure information from various agencies and groups in the region that provide financial, technical, and planning strategies for flooding issues.

Action Steps:

- I. Request semi-annual updates from the United States Army Corp of Engineers (USACE) to secure information on the Public Assistance to States (PAS) agreement between USACE and the states of Iowa, Missouri and Nebraska on Missouri River management as it affects Kansas.
- II. Request state agencies keep the Missouri RAC informed of activities, permits or other actions taking place in the region and submit final results of any projects or demonstrations occurring.
- III. Allow the Missouri River subcommittee time to update the Missouri RAC on pertinent Missouri River information at each RAC meeting:
 - a. System-wide related meetings or events
- IV. Lobby to hold a Missouri River Recovery Implementation Committee (MRRIC) meeting in Atchison or Leavenworth Kansas by 2025, promoting the importance of the River.
- V. Request updates as needed from the Farm Service Agency (FSA) and Natural Resources Conservation Service (NRCS) on flood recovery programs and progress.
- VI. Request updates from authorities on watershed dams in the Missouri River Region that will affect the Missouri River.

- VII. Remain engaged with the recently formed Missouri River stakeholder group which is part of the PAS study and continue to solicit public comments on River management.
 - a. Establish a page on the Kansas Water Office website with information and valuable links for the Missouri River system.

Neosho RAC Goals and Action Plans

Priority Goal #1: Prolong the water supply storage in John Redmond Reservoir to the year 2065 by reducing the sedimentation rate by an average of 300 acre-feet per year.

Action Steps:

- I. Stabilize all streambank hotspots, as defined by the Kansas Water Office (KWO), by 2030 in the Cottonwood-Neosho Region above John Redmond Reservoir. The Streambank Team (KDHE, KDA-DOC, and KWO) will secure funding for the stabilization of the streambanks each year to complete reaches in order as they proceed from the reservoir.
- II. The Streambank Team will evaluate streambank sites after the years with major flooding in the Region.
- III. A collaboration between the Regional Advisory Committee (RAC), local producers, local WRAPS groups, local conservation districts, regional public water suppliers (PWS), the KWO, the Kansas Department of Health and Environment (KDHE), and the Kansas Department of Agriculture-Division of Conservation (KDA-DOC) will secure funding and work to treat 80% of priority cropland with no-till practices, cover crops, buffer strips, soil health management principles, and other sedimentation and nutrient reduction farming practices by 2030 in the Cottonwood-Neosho Region above John Redmond Reservoir, Marion Reservoir, and Council Grove Reservoir. To provide education and share information concerning water and soil conservation and nutrient and sedimentation reduction, demonstration farms will be established in the region above these three reservoirs using this collaboration.
- IV. The KWO will review the sedimentation rate of these three reservoirs by conducting bathymetric surveys every five years to monitor the sedimentation rate and the progress and benefit of sedimentation reduction practices. The KWO will secure funding for this program.
- V. The KWO will evaluate the feasibility of possible technologies to remove sediment from the reservoirs in order to maintain and protect water supply.

Priority Goal #2: Reduce vulnerability to drought to ensure water supply available from storage and other sources exceeds projected demand by at least 10% through the year 2050 for the entire Region.

Action Steps:

- I. The KWO will evaluate operational efficiencies and potential additional storage and sources, including upstream and downstream options, by 2025.

- II. The KWO will continually work with the U.S. Army Corps of Engineers (USACE) on refining reservoir operations and developing Drought Contingency Plans.
- III. The KWO will evaluate costs associated with conservation pool rises and the benefits of increased supply, soliciting the USACE's advice when needed. Based on the evaluation, a reallocation study may be implemented.
- IV. The KWO will use Forecast Informed Reservoir Operations (FIRO) forecasting to control storage to increase water supply and reduce flooding by looking at climate variability and creating long-term forecasting.

Priority Goal #3: Reduce overall nutrient loading, frequency of Harmful Algal Blooms (HAB), and potential for Aquatic Nuisance Species (ANS) to improve water quality within the Region by 2035.

Action Steps:

- I. The RAC will work with the KDHE to identify the highest loading areas and investigate what practices would be best implemented to reduce nutrient loading.
- II. The KWO will work with KDHE to investigate and demonstrate in-lake treatment options to reduce the frequency and duration of HAB and assess the effectiveness of in-lake treatment options at minimizing the impact of HAB.
- III. Implement best management practices (BMP) above Marion Reservoir to reduce nutrients before they enter the Reservoir as mentioned in Goal 1 Action Steps, thereby reducing HAB frequency to no more than every three years.
- IV. The RAC will work with the regional PWS and the Grand River Dam Authority to investigate nutrient crediting options for the entire Neosho Region (including areas in Oklahoma) to reduce nutrient loading from nonpoint sources.
- V. The RAC will encourage funding for the ANS Program through the State Water Plan Fund (SWPF). As well, the RAC will encourage the consideration of ANS for interbasin water transfer.

Priority Goal #4: Reduce vulnerability to floods within the Region by 2050 to reduce impacts to water quality and infrastructure.

Action Steps:

- I. The RAC will work with the KWO, The Nature Conservancy (TNC), and USACE to evaluate and research the flooding within the Region to determine possible off-stream storage to utilize during flood events.
- II. The KWO will determine the storage capacity within the floodplain.

- III. The KWO will use Forecast Informed Reservoir Operations (FIRO) forecasting to control storage, to increase water supply, and to reduce flooding by looking at climate variability and long-term forecasting.

Red Hills RAC Goals and Action Plans

Priority Goal #1: Reduce water usage throughout the region. Conservation should be voluntary and encouraged to use incentive-based policies and programs.

Action Plans:

- I. Identify data needed to determine if and where water (streamflow or groundwater levels) downtrends are occurring for focusing water conservation efforts.
- II. Identify reuse potential in the region.
- III. Identify barriers to reuse, such as limiting factors and water quality parameters.
- IV. Develop appropriate policy, programs, data or education to address barriers to reuse.
- V. Add streamflow measurements to assess changes in streamflow and baseflow contributions on Elm Creek and other priority locations, preferably continuous monitoring gages.
- VI. Identify and promote state program to address Red Cedar invasion.
- VII. Utilize education/information dissemination as developed for the Vision and region. Should include information on water resources, stresses, conservation tools and water use.
- VIII. Identify barriers to conservation in this region.
- IX. Work with local, state and federal programs to offer water conservation programs, including cost-share opportunities.
- X. Address water conservation by water use category.

Priority Goal #2: Increase sources of supply through the use of a multipurpose small lake to meet increased demand in specific growth or need areas by 2035.

Action Plans:

- I. Determine level of support for a reservoir providing future water supply, flood control, and recreation.
- II. Gather public input on possible reservoir for recreation and future water supply.

- III. Define project and scope of work for detailed economic impact study to move ahead, if local support is sufficient.
- IV. Initiate Economic Impact Study.
- V. Review Economic Impact Study and formulate future steps.

Priority Goal #3: Work with oil and gas industry to have 10,000 barrels of fresh water per day recycled from oil production for regional use in the Red Hills.

Action Plans:

- I. Develop background/baseline data on the quantity of produced water, water usage and reuse in the region for use in education and development of appropriate actions.
- II. Work with industry to recycle/reuse flow back and production waters.
- III. Promote the produced water treatment project and other treatment technologies.
- IV. Share results of Kansas pilot treatment project and other treatment projects.
- V. Identify sites for treated (freshwater) water storage for oil and gas industry access for fracking.
- VI. Work with industry to use the lowest quality waters possible.
- VII. Work with industry to reduce produced water underground injection quantities.

Smoky Hill-Saline RAC Goals and Action Plans

Priority Goal #1: Increase available water supply, water supply storage, and interconnectivity among public water supplies within the Smoky Hill – Saline Planning Region to ensure the water supplies available exceeds demand by at least 10% by the year 2060.

Action steps:

- I. Support agencies in evaluating the possibility of a permanent conservation pool rise at Kanopolis Reservoir.
- II. Evaluate Kanopolis Reservoir to determine the feasibility of dredging and initiate project if deemed viable.
- III. Determine if there is a need for additional water supply reservoirs within region.
- IV. Explore control of Phreatophyte, “deep rooted plants”, control within riparian areas.
- V. Explore the possibility of direct potable reuse.
- VI. Support agencies in developing and implementing a Certified Irrigator Program.

Priority Goal #2: Support a statewide conservation education program/model which is applicable to all public water supplies which quantifies water conservation efforts on customer usage.

Action Steps:

- I. Develop a youth-based water conservation education program which is tied to school curriculum.
- II. Provide producers with tools and resources needed to make informed management decisions which improve water use efficiency.
- III. Educate all Planning Region stakeholders on the benefits of water conservation, thus working towards sustainable use of the region’s water surface and groundwater resources.
- IV. Work with groups of interest to ensure Smoky Hill-Saline Planning Region stakeholders are educated on the benefits of water conservation.

Priority Goal #3: Reduce sediment and total suspended solids (TSS) concentrations within the lakes and streams within the Smoky Hill – Saline Planning Region.

Action Steps:

- I. Method of attaining goal can include the continued support of best management practice (BMP) implementation for practices which reduce sediment runoff.
- II. Focus BMP implementation within priority areas identified in the Big Creek Middle Smoky Hill River Watersheds 9 Element Watershed Protection Plan.
- III. Complete by 2034 - Final year of 9 Element Watershed Protection Plan is 2034. Provide a reduction of 26% TSS concentrations on the Smoky Hill River at Ellsworth as noted within the 9 Element Watershed Protection Plan.
- IV. Remove sediment-impaired waters from the KDHE TMDL list.
- V. Continued support of locally led and driven efforts, such as the WRAPS program and projects within the region, within watersheds and the BMPs noted for implementation within the 9 Element Watershed Plans.
- VI. Continue to support NRCS programs/initiatives such as RCPP, EQIP, easement programs, WRP, CSTP, etc., which can be utilized to implement sediment-reducing BMPs as well as improve soil health. Identify sources of sediment contributing to TSS/sediment in water bodies (i.e. streambank assessments, etc.).
- VII. Continue to support KDA-DOC programs/initiatives such as the nonpoint source program, watershed program, water resource conservation program and the funding provided to DOC through the State Water Plan fund.
- VIII. BMP implementation above water supply waters to help facilitate settling out of solids before entry into water supply water (i.e. forebays, settling basins). BMP implementation should continue to reduce sedimentation rate of Kanopolis Reservoir as well as other water supply sources.
- IX. Enhance and continue to support information/educational (I&E) efforts focused towards landowners to help reduce sediment runoff on their respective property.
- X. Include consideration of Wilson Reservoir and the upstream watershed of sediment sources which could impact capacity including bathymetric survey analysis to help quantify current capacity of lake.
- XI. Evaluate sediment and nutrient loading originating from watershed above Herington Reservoir which could impact its viability as a public water supply source. Utilize the June 2008 bathymetric surveys on Herington Reservoir and Herington City Lake as baseline characterization of current capacity lost in lakes due to sedimentation.

Priority Goal #4: Increase public water supply water use efficiency for suppliers within the region.

Action Steps:

- I. Method of attaining goal can include the promotion of development of new or updated water conservation program plans for public water supplies within the Smoky Hill – Saline Planning Region.
- II. Implementation of conservation measures which lead to all public water supplies in the Smoky Hill – Saline Planning Region operating in the bottom 1/3rd of Gallons per Capita Per Day (GPCD) when compared to other public water supplies within respective Regions used for GPCD comparison.
- III. Complete by 2025. The results of the efforts will be obtaining the same or increased outputs within participating municipalities while utilizing the same or less amounts of water.
- IV. All public water supplies follow the 2007 Kansas Municipal Water Guidelines and have a recently updated conservation plan.
- V. Public water supplies evaluate the feasibility of water conservation rates.
- VI. Public water supplies develop and promote rebate programs geared towards water conservation efforts for water customers.
- VII. Develop a “tool box” of educational information PWSs could utilize to pass information along to customers.
- VIII. Work through the framework of existing statewide education efforts to develop region-wide outreach campaign promoting water conservation efforts.
- IX. Report GPCD values on an annual basis at RAC meetings.
- X. Develop an independent technical task force to help large water users within public water supply systems to improve water use efficiency.
- XI. Hold annual public water supply “field days” to share current water conservation efforts. Making sure media is involved with promotion of these events.

Solomon-Republican RAC Goals and Action Plans

Priority Goal #1: Maintain and continue to develop a clearinghouse of technical tools, agreements and agency personnel for use alternatives for Solomon-Republican region waters. An example could be the marketing contract for Keith Sebelius Reservoir/Almena Irrigation District that reached agreement to convert irrigation to recreation use.

Action Steps:

- I. Support KDWPT in their effort to renegotiate the Keith Sebelius Reservoir Minimum Pool Agreement with the Almena Irrigation District.
- II. Use the Keith Sebelius contract as a model for negotiations on other BOR Reservoirs (Kirwin, Webster).
- III. Use KBID's knowledge on capturing BOR grants to help improve Webster and Kirwin irrigation efficiency.
- IV. Exhaust all possible funding sources necessary to improve water efficiency.
- V. Work with KDWPT on an economic study to determine the value of keeping as much water in the Western Reservoirs as possible.
- VI. Investigate the benefits of raising the Conservation Pool at both Kirwin and Webster.

Priority Goal #2: Reduce inbound sediment loads, through conservation measures, with a focus on White Rock Creek to Lovewell Reservoir, by 25% every 10 years.

Action Steps:

- I. Use KDHE to evaluate sources of sediment entering Lovewell Reservoir.
- II. Use Kansas and Nebraska data to evaluate suspended solids and nutrients.
- III. Use data to evaluate the effects of the Courtland Canal on Reservoir loading.
- IV. Utilize BMPs in the Lower Republican River Basin to reduce sediment and nutrient loads to Milford Reservoir and encourage landowner participation in programs that support BMP implementation, such as the Milford Regional Conservation Partnership Program (RCPP).

Priority Goal #3: Complete a bathymetric assessment every 10 years on all reservoirs in the Solomon-Republican Region. This goal will be a tool to periodically monitor sediment accumulation and rates. If sediment loads exceed 10%, actions should be initiated to determine the source watersheds and remedies within a twelve-month period from assessment report.

Action Steps:

- I. Work with KWO to complete bathymetric survey of Waconda Reservoir.

Priority Goal #4: Continue initiative that will maintain and annually fund a Kansas Administrative Team to facilitate Republican River Compact (RRC) compliance. An annual report of progress and activities should be prepared and presented to the Solomon-Republican Regional Advisory Committee.

Action Steps:

- I. Quarterly presentation by KWO staff on RRC outcomes.

Priority Goal #5: Complete an annual assessment of streambank and ditch erosion within the Solomon-Republican region.

Action Steps:

- I. Research extent that data is already available.
- II. Identify areas of major streambank and ditch erosion.
- III. Coordinate efforts with local county engineers and public works departments, conservation districts, WRAPS, NRCS, and the KWO.

Upper Arkansas RAC Goals and Action Plans

Priority Goal #1: Establish a diversified, usable water supply by 2030, to motivate a vibrant growing economy with conservation-minded stewardship focused on increasing the life of the aquifer, reestablishing streamflow in the Arkansas River, and accelerating recharge; benefiting: economic prosperity, wildlife, habitat, recreation, and all water users while protecting property rights and providing safe drinking water.

Action Steps:

- I. Develop alternative sources of supply by 2030.
 - a. Collaborate and coordinate with local shareholders, stakeholders, policymakers, organizations, agencies, (i.e. GMD3, KWO, KDA, KDHE, Kansas Dept. of Commerce, and other State agencies) surrounding States, and federal agencies and authorities.
 - b. Research, study, and initiate any changes necessary to current or new statutes, to develop and perfect new or existing water rights to serve as alternative sources of supply.
 - c. Explore multi-state support for an interstate water transfer system.
 - d. Evaluate potential intrastate water transfers.
 - e. Initiate and participate in research to determine the value an alternative source of supply would generate directly and indirectly for local, regional, state, & federal areas and agencies.
 - f. Develop a fact-based education initiative to inform Kansans and our neighbors how we can plan and prepare for tomorrows challenges related to the shortages or excess of water for everyone.
 - g. Support alternative sources of supply.
- II. Educate all water users on the importance of water saving, increased water use efficiencies, and the supporting data (SWLs, SWL change rates, conservation targets, etc.).
 - a. Support the educational efforts through the Kansas Runs on Water Campaign.
 - b. Support educational activities through the Conservation Districts such as (The Ark Water River Festival, Earth Day at The Zoo, Safety Days, Poster contests at the schools, The Bottom Line Conference, and other informational meetings or conferences) put on by the Conservation Districts.

- c. The Water Authority supports these activities by funding the budget line item, Aid to Conservation Districts, to the full matching amount indicated by Kansas law.
- d. Support educational meetings hosted by the K-State Extension, the GMD3, and other agencies or organizations.
- e. Encourage the Kansas Water Authority's continued support and funding for the irrigation technology farms.
- f. Formalize a list to add to a calendar on the Water Authority, Kansas Association of Conservation Districts, GMD3, and K-State Extension web sites to help inform landowners, producers, and the general public of events throughout the year.

III. Promote irrigation conservation.

- a. Support voluntary decreased water consumption in the Upper Arkansas RAC geographic area per the Kansas Geological Survey (KGS) recommendations.
- b. Encourage adoption of water conservation programs such as LEMA's and WCA's.
- c. Support producer incentives through the KDA-DOC, KDHE, KDA-DWR, and other state agencies to reduce usage through proven technologies and best management practices.
 - i. These may include programs such as CREP, Playa Lake restoration, cost-share on reduced irrigation systems, cost-share on soil moisture probes, and other technologies that reduce water usage.
- d. Promote conservation of municipal and industrial water use through incentives and education.
- e. Recognizing distinct differences between domestic, irrigation, stockwater, municipal, industrial, and other types of beneficial use.

Upper Republican RAC Goals and Action Plans

Priority Goal #1: In collaboration with other water agencies, the RAC will assist in developing and recommending a water conservation management plan that provides maximum flexibility while reducing overall actual use throughout the Upper Republican Basin to extend the aquifer life and economic wellbeing. To adopt conservation measures to lessen economic impacts and allow user transition, the Conservation Plan shall address all types of use while considering flexibility tools and overall actual reduction.

Action Steps:

- I. Support GMD 4 LEMA plan.
- II. Look outside the box for other possible funding sources necessary to improve water efficiency.
- III. Find samples of water conservation plans for the Upper Republican RAC to consider.

Priority Goal #2: In collaboration with other water agencies, the RAC will assist in enhancing current efforts on education of all water users for all age groups on sources of supply, water quality, quantity of supply, best management practices, etc. to help stakeholders understand, conserve and extend the life of the aquifer.

Action Steps:

- I. Continue to support KWO, KDA, GMD 4, and other entities in increased education of water technology farms.
- II. Support KDA in education of WCAs.
- III. Work with NRCS to evaluate effectiveness of RCPP program and find efficiencies.
- IV. Participating in events for education of water conservation, that involve water agencies and schools.
- V. Support GMD 4 on the development of an irrigator/education program.

Priority Goal #3: In collaboration with other water agencies, the RAC will encourage the Republican River Compact administration to maintain compliance in the Republican River Basin.

Action Steps:

- I. Ensure KDA continually updates the RAC on the Republican River Compact, especially if any changes occur within the area.

Priority Goal #4: In collaboration with other water agencies, the RAC will actively encourage all water user to increase utilization and adoption of water conservation technologies and practices.

Action Steps:

- I. Support and promote conservation programs that offer incentives such as water savings technology cost-share programs, water technology farms, LEMA's, and increased data collections and disseminations.
- II. Actively assist in seeking annual funding to ensure successful achievement of goal.

Priority Goal #5: In collaboration with other water agencies, the RAC will work to increase awareness about source water protection to improve the long-term water quality in the region.

Action Steps:

- I. Support KDHE to help establish a baseline of potable water quality within the region.

Upper Smoky Hill RAC Goals and Action Plans

Priority Goal #1: Work with agencies to identify areas within the region that have similar aquifer characteristics and establish long-term use levels that will extend the useful life of the aquifer in those areas until 2070.

Action Steps:

- I. Support implementation of the Wichita County LEMA submitted by Groundwater Management District No. 1 (GMD 1).
- II. Support implementation of the Groundwater Recharge and Sustainability Project (GRASP) RCPP that was recently approved.
- III. Continue to support enrollment in the Wichita County WCA.
- IV. Provide recommendations to GMD 1 for additional LEMAs based upon the information developed by KGS for the proposed revision of Goal #1.
- V. Support KDA and other agencies in exploring options on ways to help citizen groups submit conservation proposals for LEMAs and other tools to the Chief Engineer.
- VI. Establish methods for local producers that will identify provisions within USDA farm programs that conflict with Goal #1. This would include crop insurance and loan programs.
- VII. Education:
 - a. Provide education and outreach to crop consultants concerning specific information on water use reductions and technologies available to achieve water conservation related to irrigated crop production.
 - b. Conduct seminars with local agricultural lenders to explain the purpose and implementation of Goal #1.
 - c. Publish an annual report for the region showing annual water use and trends in irrigation use and aquifer levels.

Priority Goal #2: Encourage public water supplies within the planning region to complete studies of municipal water consumption and develop goals and plans for conservation by 2025.

Action Steps:

- I. Assemble information about programs and grants that are available from state agencies and related entities (KWO, KDHE, Kansas Rural Water Association, KWRA) to evaluate water consumption and quality; identify sources of waste; plan and fund infrastructure improvements; and provide incentives to establish landscaping with lower water requirements.
- II. Provide information and education on how rate structures can provide incentives for water conservation.
- III. Education may include presentations to city governing bodies on remaining aquifer life and the process for acquiring water rights and changing beneficial use to municipal use.

Priority Goal #3: Encourage the implementation of water conservation measures at confined animal feeding operations (CAFOs) in the region.**Action Steps:**

- I. Investigate and determine the most effective format for sharing information about water treatment and recycling systems with CAFO owners and managers. Note that this may include field days, online posts and videos, and presentations to companies and producer organizations.
- II. Provide information on existing technology and vendors for water conservation systems: a. Water tank overflow treatment and recycling systems b. Water tanks and fountains that do not require continuous overflow c. Devices that regulate overflows based on water temperature.
- III. Determine the availability of programs and funding for research of technology for wastewater treatment and reuse for livestock consumption. This includes evaluation of livestock health impacts associated with such systems.

Verdigris RAC Goals and Action Plans

Priority Goal #1: Increase drought tolerance in the Verdigris basin by optimizing reservoir releases and maintaining storage capacity.

Action Plans:

- I. Encourage agencies and private entities to work with water users to improve intake and utilization efficiencies.
- II. Evaluate ways to pass accumulated sediment through reservoirs.
- III. Continue to promote the use of sediment-reducing best management practices (BMPs) above water supply reservoirs.
- IV. The Kansas Water Office will continue to find ways to optimize reservoir operations and mitigate the effects of drought.

Priority Goal #2: Protect watershed dam functions.

Action Plans:

- I. This goal has been made into a statewide goal.

Priority Goal #3: Continually work to prevent the spread of Aquatic Nuisance Species (ANS), including Zebra and Quagga mussels, into Kansas Lakes that are not currently infested, by working with the agencies focused on ANS.

Action Plans:

- I. The KWO and the RAC will work to prevent the spread of ANS into Kansas Lakes that are not currently infested, by working with the Kansas Department of Wildlife, Parks, and Tourism (KDWP&T) and the US Army Corps of Engineers (USACE) to install four Watercraft Inspection and Decontamination stations near the federal reservoirs within the Verdigris Region.
- II. The RAC will work with the KDWP&T and USACE on an ongoing basis to provide education for lake users concerning the spread of ANS and how to prevent it.
- III. The RAC will encourage funding for the ANS Program through the State Water Plan Fund (SWPF).

Priority Goal #4: Improve water conservation through a public education campaign, with priority given to youth, to increase awareness and protect water supply for future generations.