

2023 ANNUAL REPORT

TO THE GOVERNOR AND LEGISLATURE

KANSAS WATER AUTHORITY



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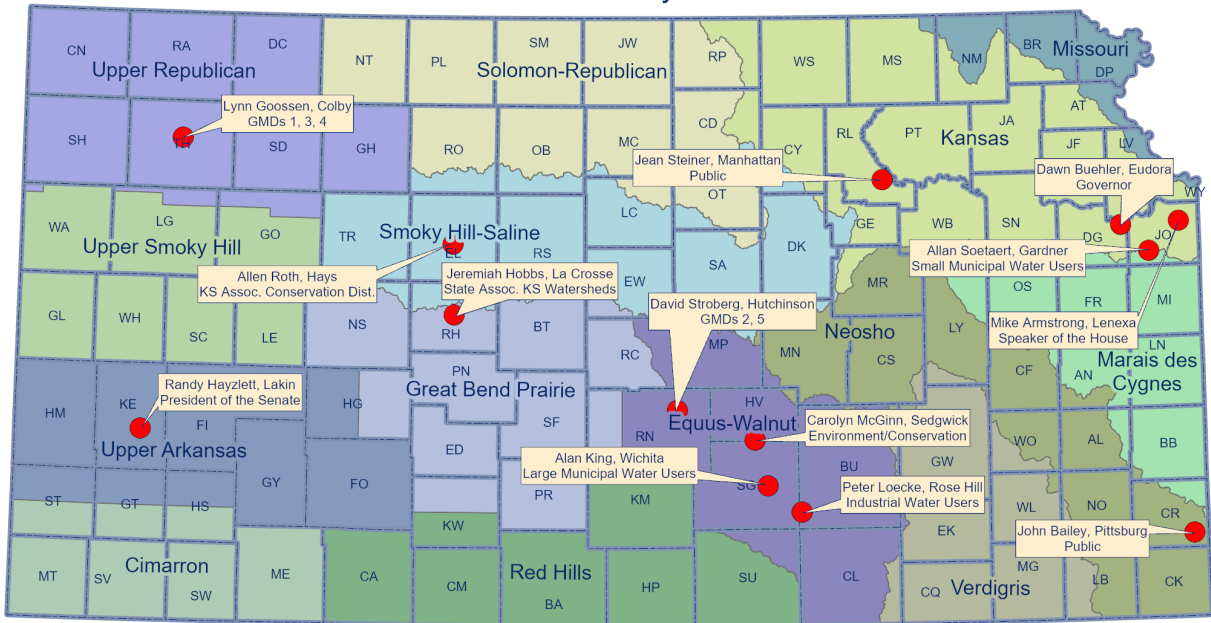
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Kansas Water Authority Members



Kansas Water Office
December 2022

Kansas Water Authority Ex Officio Members

Earl Lewis
Division of Water Resources
KS Dept. of Agriculture

Brad Loveless
KS Dept. of Wildlife & Parks

Mike Beam
KS Dept. of Agriculture

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Sara Baer
KS Biological Survey

Dwight Keen
KS Corporation Commission

Jay Kalbas
KS Geological Survey

Leo Henning
KS Dept. of Health & Environment

About the Kansas Water Authority

The Kansas Water Authority (KWA) consists of 13 voting members who are appointed by the Governor or Legislative Leadership. State agency directors serve as ex-officio members. KWA is statutorily within and part of the Kansas Water Office (KWO). The KWA is responsible for advising the Governor, Legislature and Director of the KWO on water policy issues, approving the Kansas Water Plan and making recommendations for funding and spending the State Water Plan Fund. The KWA also approves federal contracts, administration and regulations proposed by the KWO. The KWA provides the leadership to ensure that water policies and programs address the needs of all Kansans.

Kansas faces water challenges in every corner of the state, many with potentially severe and far-reaching consequences. Comprehensive planning for water management, conservation and development of the state's water resources is more critical than ever before.

-Kansas Water Plan

Letter from the Chair

Governor Laura Kelly and Members of the 2023 Kansas Legislature

On behalf of the Kansas Water Authority (KWA), it is my pleasure to present our 2023 Annual Report to the Governor and Legislature. This report is presented to you in keeping with the responsibilities of the KWA to advise the Governor and Legislature on Kansas water policy matters and to share the priorities identified by the KWA relative to the expenditure of the State Water Plan Fund (SWPF).

I am delighted to report that in 2022, the Kansas Water Plan was completed by the Kansas Water Office and approved by the KWA. This important document will guide the water planning process and the funding priorities in Kansas for years to come. As we begin to implement the plan, we acknowledge the daunting path ahead to

solve long-standing, difficult water resource concerns.

When we look back on 2022, it will most notably be remembered for the significant and sustained drought that has impacted our state. Water is and will remain key to ensuring clean and plentiful water supplies for current and future generations. With our changing climate, forecasts indicate more drought and flooding, creating more uncertainty and the need for more intense planning efforts.

The year also marked our first Water Policy Conversation, hosted by the KWA, to create an open dialogue for a collaborative discussion around water resources. We invited stakeholders from across the state to discuss some of our biggest challenges. This robust meeting helped generate the Water Policy Recommendations in this report.



“With our changing climate, forecasts indicate more drought and flooding, creating more uncertainty and the need for more intense planning efforts.”

an open dialogue for a collaborative discussion around water resources. We invited stakeholders from across the state to discuss some of our biggest challenges. This robust meeting helped generate the Water Policy Recommendations in this report.

In this time of critical challenges and uncertainties, the KWA, KWO, state agencies, and Regional Advisory Committees are ready to implement the State Water Plan. As we move into the new year, we will begin the process of moving our most pressing issues forward.

A secure and adequate funding source is key to fully implementing the State Water Plan. The KWA recognizes and appreciates Governor Kelly's and the 2022 Legislature's demonstrated commitment to make progress on these priorities, through fully restoring the \$6 million State General Fund (SGF) and \$2 million Economic Development Initiatives Fund (EDIF) demand transfers to the SWPF and paying down water-related debt. The KWA continues to urge the Governor and Legislature to annually fund the \$8 million combined statutory SGF and EDIF demand transfers. We know that this is not enough funding alone, as the cost to implement the Kansas Water Plan is estimated to exceed \$69 million per year.

The Kansas Water Authority looks forward to working with you in 2023, highlighting the need across the state for funding that adequately supports the implementation of the Kansas Water Plan. In partnership with the talented professionals at our state water agencies, we stand ready for the challenges ahead.

We look forward to working with you to secure the long-term sustainability of clean Kansas water and a healthy future for our children.

Sincerely,

A handwritten signature in dark ink that reads "D Buehler".

Dawn Buehler, Chair
Kansas Water Authority

KWA Recommendations for State Policy

The Kansas Water Authority is charged with the duty to make recommendations to the Governor and the Legislature regarding the development, management and use of the water resources of the state (K.S.A. 74-2622, 74-2623). In keeping with this mandate, the Kansas Water Authority urges the Kansas Legislature and Governor to recognize and adopt the following recommendations for state policy.

Critical Depletion of the Ogallala Aquifer

1. The policy of planned depletion of the Ogallala Aquifer is no longer in the best interest of the State of Kansas.
2. A formal collaborative process is needed to establish data-driven goals, metrics, and actions to halt the decline of the Ogallala Aquifer while promoting flexible and innovative management within a timeframe that achieves agricultural productivity, thriving economies, and vibrant communities – now and for future generations of Kansans.
3. The collaborative process should engage state agencies, regional advisory committees, local stakeholders, groundwater management districts, and the Kansas Water Authority.

State Appropriations for Leveraging Matching Funds

The KWA urges the Governor and Legislature to fully fund implementation of the programs, projects and recommendations identified in the Kansas Water Plan.

The KWA encourages the Legislature to appropriate state funds which may be used to leverage additional federal, local, or private resources for priority projects. For instance, the Kansas Water Office has requested \$450,000 in additional funding for water quality partnerships to pursue additional partnership opportunities such as Arkansas River Basin or the Milford Lake Watershed to advance efforts to improve the state's water quality. The Kansas Water Office has also requested \$450,000 in additional funding for High Plains Aquifer partnerships with the goal of conserving and extending the High Plains Aquifer. Additional information on these programs can be found on page 10 of this report.

In November 2021, Congress passed the Bipartisan Infrastructure Investment and Jobs Act which includes formula funding through existing state revolving loan programs, as well as competitive grant opportunities. Pursuant to the formula funding, the Act appropriates more than \$50 billion to the EPA to improve drinking water, wastewater, and stormwater infrastructure. Included in this amount is \$5 billion for small or disadvantaged communities to address emerging contaminants in drinking water. Financing for such projects is a priority of the KWA as some Kansas communities experience high levels of uranium and nitrates in their drinking water supplies. Information on this issue can be found on page 19 of this report.

The Act also appropriates to the Bureau of Reclamation \$8.3 billion for investment in water infrastructure and \$2.5 billion for authorized water rights settlement projects. Reclamation's WaterSMART program focuses on cooperation with states, tribes, and local entities as they plan for and implement actions to increase water supply through investment in infrastructure. Planned FY 2023 programs include funding for projects related to water storage, water recycling and reuse, and drought contingency plans.

In August 2022, Congress also passed the Inflation Reduction Act which appropriates approximately \$20 billion to the USDA to support conservation programs within the Natural Resources Conservation Service. This includes additional funding for programs focused on environmental quality, regional conservation, conservation stewardship, agricultural conservation easements, and conservation technical assistance. The USDA notes these programs are oversubscribed and this additional investment will help farmers and ranchers implement conservation practices that reduce greenhouse gas emissions and increase storage of carbon.

The federal act's competitive grant opportunities could tremendously help Kansas communities acquire desperately-needed infrastructure to address water quality and quantity issues. Many communities cannot access these grants because they cannot afford the required cost-share. Communities also lack professional expertise to prepare the grant applications. The KWA supports the Kansas Legislature appropriating financial assistance to such communities to provide the needed cost-share and technical expertise to prepare the applications.

KWA Recommendations for State Policy (cont.)

Environmental Justice

The EPA defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The KWA supports environmental justice as a priority which should be considered in future program and funding recommendations.

Funding Deficiency

The KWA notes that the current revenue of the State Water Plan Fund is not sufficient to meet all current program needs described in the Kansas Water Plan. The fee structure that supports the SWPF has remained virtually unchanged since the fund was established in 1989. The 2017 Blue Ribbon Funding Task Force for Water Resource Management report recommended changes which would have resulted in annual revenue of approximately \$55 million. However, this recommendation was based on the funding needs described in the 2015 Vision for the Future of Water Supply in Kansas report. With the update of the Kansas Water Plan, the KWA supports action that would generate sufficient revenue to meet the program needs described in the Plan. In collaboration with state agencies, the KWA provides an estimate of annual program funding needs below.

		Estimated Annual Cost
Conserve and Extend the High Plains Aquifer		
Data Collection, Research, Modeling	\$	500,000
Irrigation/Water Technology	\$	2,000,000
Water Right Purchase (WaterTAP/CREP)	\$	3,000,000
Secure, Protect, and Restore our Kansas Reservoirs		
Public Water Supply Storage Debt	\$	4,000,000
Streambank Stabilization	\$	5,000,000
Watershed Conservation Practice Implementation	\$	10,000,000
Sediment Management	\$	10,000,000
Improve the State's Water Quality		
Watershed Conservation Practice Implementation	\$	10,000,000
Watershed Restoration and Protection Strategy - Nonpoint Source Pollution	\$	3,180,000
Small Town Water Compliance	\$	2,000,000
Contamination Remediation	\$	2,240,000
Total Maximum Daily Load Program	\$	250,000
Source Water Protection - Land Acquisition	\$	1,000,000
State Revolving Loan Fund Matching Funds	\$	5,000,000
Regional Conservation Partnership Program Matching Funds	\$	5,000,000
Data Collection, Research, Modeling	\$	1,150,000
Reduce our Vulnerability to Extreme Events		
Dam Rehabilitation	\$	3,000,000
Data Collection, Research, Modeling	\$	500,000
Increase Awareness of Kansas Water Resources		
Water Plan Education and Outreach	\$	1,500,000
Total	\$	69,320,000

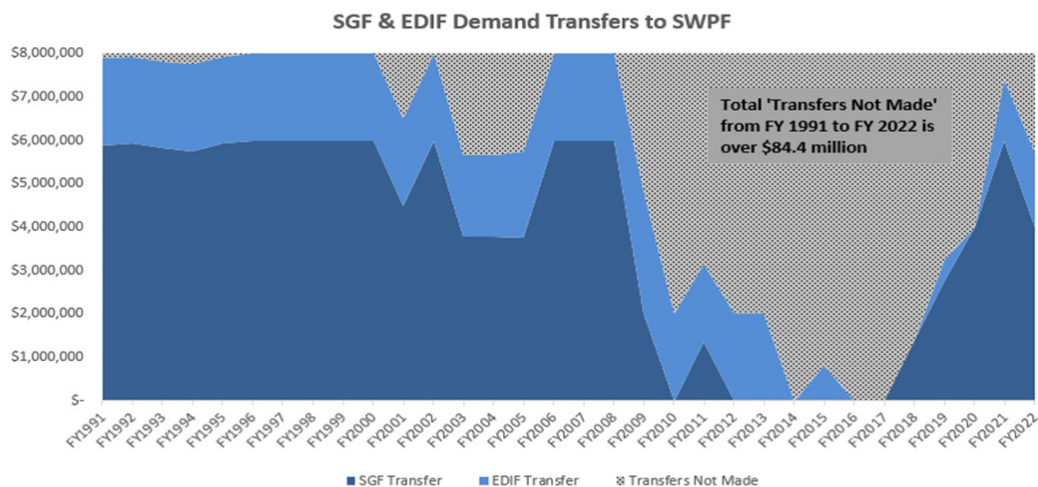
State Water Plan Fund Recommendations

In 1989, the SWPF (K.S.A. 82a-951) was created and is used for establishing and implementing water-related programs or projects identified in the Kansas Water Plan. Revenue for the SWPF is received from fees assessed to municipal, industrial and agricultural water-related users and includes demand transfers (statutory) from the SGF (\$6 million) and EDIF (\$2 million) as shown in the table below.

State Water Plan Fund Revenue Estimate

SWPF Revenue Estimates	FY 2022 Actuals	FY 2023 Estimates	FY 2024 KWA/Agency Recommendations
Beginning Balance	\$ 6,430,532	\$ 10,701,406	\$ 2,466,956
Transfers and Adjustments			
State General Fund Transfer	\$ 4,005,632	\$ 6,000,000	\$ 6,000,000
Economic Development Fund Transfer	\$ 1,719,264	\$ 2,000,000	\$ 2,000,000
Release of Prior Year Encumbrance	\$ 131,225	\$ -	\$ -
Other Service Charges	\$ 45,265	\$ 50,000	\$ 50,000
FY2023 Pay Plan Adjustment		\$ 75,459	
Transfers to SGF - John Redmond Bond	\$ (1,260,426)		
SUBTOTAL--Adjustments	\$ 4,640,960	\$ 8,125,459	\$ 8,050,000
Receipts			
Municipal Water Fees	\$ 3,098,059	\$ 3,167,209	\$ 3,189,304
Clean Drinking Water Fee Fund	\$ 2,830,759	\$ 2,738,890	\$ 2,872,301
Industrial Water Fees	\$ 720,340	\$ 850,000	\$ 850,000
Stock Water Fees	\$ 557,940	\$ 375,000	\$ 439,609
Pesticide Registration Fees	\$ 1,524,100	\$ 1,365,000	\$ 1,488,892
Fertilizer Registration Fees	\$ 4,370,339	\$ 3,829,194	\$ 4,049,921
Pollution Fines and Penalties	\$ 60,841	\$ 200,000	\$ 70,000
Sand Royalties	\$ 13,430	\$ 25,000	\$ 15,000
SUBTOTAL--Receipts	\$ 13,175,807	\$ 12,550,293	\$ 12,975,027
Total Available	\$ 24,247,300	\$ 31,377,158	\$ 23,491,983
Less: Expenditures	\$ 13,545,894	\$ 28,910,202	\$ 22,859,558
Ending Balance	\$ 10,701,406	\$ 2,466,956	\$ 632,425

The fee structure that supports the SWPF has remained virtually unchanged since the fund was established in 1989. Sand Royalty Receipts were added to the funding stream in FY 1996 and the Clean Drinking Water Fee began in FY 2008.



For the first time since 2008, the full \$8 million SGF/EDIF demand transfer to the SWPF was made in FY 2023. The KWA supports continuation of the full \$8 million SGF/EDIF annual demand transfer to the SWPF.

State Water Plan Fund Expenditure Recommendations

Agency/Program	FY 2022 Actuals	FY 2023 Appropriation w/carry forward and pay plan adj	FY 2024 KWA Recommendations
Department of Health and Environment			
Contamination Remediation	\$ 1,020,958	\$ 1,163,792	\$ 1,095,978
Nonpoint Source Program	\$ 224,335	\$ 506,806	\$ 414,893
TMDL Initiatives	\$ 270,426	\$ 459,722	\$ 384,916
Harmful Algae Bloom Pilot	\$ 656,182	\$ 766,429	\$ 150,547
Watershed Restoration/Protection (WRAPS)	\$ 590,000	\$ 1,140,884	\$ 1,000,000
Drinking Water Protection Program	\$ 286,230	\$ 863,770	\$ 800,000
NEW: LEPP			\$ 250,000
NEW: Surface Water Trash Removal			\$ 50,000
SUBTOTAL--KDHE	\$ 3,048,131	\$ 4,901,402	\$ 4,146,334
Department of Agriculture			
Interstate Water Issues	\$ 445,668	\$ 791,882	\$ 514,664
Subbasin Water Resources Management	\$ 460,323	\$ 1,169,439	\$ 650,174
Water Use	\$ 27,387	\$ 216,144	\$ 100,000
Water Resources Cost Share	\$ 1,149,752	\$ 4,023,581	\$ 2,834,714
Nonpoint Source Pollution Asst.	\$ 1,550,065	\$ 2,291,809	\$ 1,863,636
Aid to Conservation Districts	\$ 2,223,373	\$ 2,473,373	\$ 2,502,706
Watershed Dam Construction	\$ 688,285	\$ 550,000	\$ 650,000
Water Quality Buffer Initiative	\$ 1,167	\$ 635,432	\$ -
Riparian and Wetland Program	\$ 43,670	\$ 666,194	\$ 154,024
Water Transition Assistance Program/CREP	\$ 339,680	\$ 979,867	\$ 650,727
Irrigation Technology	\$ 266,070	\$ 408,976	\$ 550,000
Crop and Livestock Research	\$ 250,000	\$ 250,000	\$ 350,000
Soil Health - NEW	\$ -	\$ 100,000	\$ 400,000
Streambank Stabilization	\$ 583,698	\$ 1,084,589	\$ 850,000
Transfer for KRPI			
SUBTOTAL--KDA	\$ 8,029,138	\$ 15,641,284	\$ 12,070,645
Kansas Water Office			
Assessment and Evaluation	\$ 536,457	\$ 1,156,180	\$ 834,078
MOU - Storage Operations & Maintenance	\$ 532,589	\$ 530,464	\$ 736,160
Stream Gaging	\$ 413,580	\$ 423,130	\$ 448,708
Technical Assistance to Water Users	\$ 298,682	\$ 367,709	\$ 425,000
Reservoir and Water Quality Research	\$ 252,553	\$ 583,724	\$ 450,000
Water Quality Partnerships	\$ 24,878	\$ 605,122	\$ 884,176
KS Water Plan Education & Outreach Strategy	\$ 1,865	\$ 472,910	\$ 250,000
High Plains Aquifer Partnerships	\$ 48,598	\$ 326,402	\$ 850,000
Kansas Reservoir Protection Initiative	\$ 359,422	\$ 1,190,578	\$ 1,000,000
Equus Beds Chloride Plume Remediation Project	\$ -	\$ 50,000	\$ 50,000
Flood Response Study	\$ -	\$ 200,000	\$ 200,000
Arbuckle Study	\$ -	\$ 210,000	\$ 150,000
Water Injection Dredging (WID)	\$ -	\$ 2,000,000	\$ -
SUBTOTAL--KWO	\$ 2,468,626	\$ 8,116,217	\$ 6,278,122
Department of Wildlife & Parks			
Aquatic Nuisance Species (ANS) Program	\$ -	\$ 224,457	\$ 224,457
University of Kansas--Geological Survey		\$ 26,841	\$ 140,000
Total State Water Plan Expenditures	\$ 13,545,894	\$ 28,910,201	\$ 22,859,558

Summary of Request for SGF/EDIF Transfer Restoration

After reviewing the agency and RAC requests, the KWA recommended projects for the SGF/EDIF transfers in FY 2024 and the KWA supports continuation of the full \$8 million SGF/EDIF demand transfer to the SWPF.

The table to the right shows the additional SGF/EDIF requests for the indicated programs that are an increase from the FY 2023 Appropriation.

The KWA will continue to focus funding on priority projects that are in the KWP, along with KWA and RAC goals/ action plans consistent with the KWP. Page 6 of this report contains the KWA total SWPF recommendations for FY 2024.

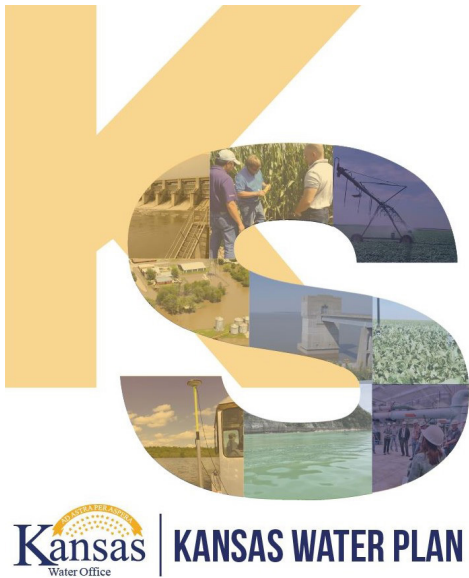
KWA SWPF Recommendations	Agency	Increase from FY 2023 Appropriation
Surface Water Trash Removal (pg. 19)	KDHE	\$ 50,000
LEPP (pg. 20)	KDHE	\$ 250,000
Irrigation Technology (pg. 10)	KDA	\$ 200,000
Water Transition Assistance Program/CREP (pg. 11)	KDA	\$ 100,000
Streambank Stabilization (pg. 13)	KDA	\$ 100,000
Watershed Dam Construction (pg. 14)	KDA	\$ 100,000
Soil Health (pg. 18)	KDA	\$ 300,000
Water Resources Cost Share (pg. 19)	KDA	\$ 136,425
Aid to Conservation Districts (pg. 21)	KDA	\$ 29,333
High Plains Aquifer Partnerships (pg. 10)	KWO	\$ 650,000
Water Quality Partnerships (pg. 17)	KWO	\$ 834,176

Kansas Water Plan 5-Year Update *Incorporation of Vision & Updated RAC Goals and Action Plans*

The Kansas Water Office, in coordination with local, state, federal, and interstate partners, has developed the 5-year update of the Kansas Water Plan (KWP). This update of the KWP was discussed and approved by the KWA at their August 2022 meetings.

The updated KWP includes incorporation of the ‘Long Term Vision for the Future of Water Supply in Kansas’, as well as an appendix of the goals and action plans submitted by the 14 RACs.

The updated KWP includes strategies to address ongoing and emerging water resource issues of the state, including focused efforts on groundwater declines, decreasing reservoir water supply storage lost to sedimentation, statewide water quality issues, and increasing awareness of these water issues across the state.



KWA Performance-Based Budgeting

Kansas Water Plan Budget Guidelines

Recognizing the purpose of the SWPF is to implement the KWP, and the adoption of performance-based budgeting by the state in recent years, the KWA adopted a set of budget guidelines in January 2020. The guidelines, consisting of eight guiding principles, were utilized by the KWA Budget Committee to develop the KWA SWPF budget recommendations for FY 2024 presented within this report.

The KWO has worked with the other agencies to categorize the SWP-funded programs into the major water resource issues they are primarily addressing (see table below) in order to determine priorities and to evaluate measures of success.

With limited resources, the KWA continues efforts to balance the competing needs and requests for the SWPF, and to identify which programs and practices will provide the biggest return on investment. As indicated in the table below, many of the programs address multiple issues. The KWO continues to work with the other agencies to refine the categories and programs.

KWA SWPF Budget Recommendations by Category

Category	Program Name	Agency	FY2024 KWA Total Recommendations
Groundwater Initiatives	Water TAP/CREP	KDA	\$650,727
	Irrigation Technology	KDA	\$550,000
	Crop and Livestock Research	KDA	\$350,000
	High Plains Aquifer Partnerships	KWO	\$850,000
	Kansas Geological Survey	KGS	\$140,000
Groundwater Initiatives & Water Quality	Interstate Water Issues	KDA	\$514,664
	Subbasin Water Resources Management	KDA	\$650,174
	Water Use	KDA	\$100,000
GW Initiatives, WQ & Res. WS & Sed	KS Water Plan Education & Outreach Strategy	KWO	\$250,000
	Assessment and Evaluation	KWO	\$834,078
	Flood Response Study	KWO	\$200,000
Water Quality	Contamination Remediation	KDHE	\$1,095,978
	Nonpoint Source Program	KDHE	\$414,893
	TMDL Initiatives	KDHE	\$384,916
	Harmful Algae Bloom Pilot	KDHE	\$150,547
	Watershed Restoration/Protection	KDHE	\$1,000,000
	Drinking Water Protection Program	KDHE	\$800,000
	LEPP	KDHE	\$250,000
	Surface Water Trash Removal	KDHE	\$50,000
	Nonpoint Source Pollution Asst.	KDA	\$1,863,636
	Soil Health	KDA	\$400,000
	Technical Assistance to Water Users	KWO	\$425,000
	Equus Beds Chloride Plume Remediation Project	KWO	\$50,000
	Water Quality Partnerships	KWO	\$884,176
	Arbuckle Study	KWO	\$150,000
	Aquatic Nuisance Species Program	KDWPT	\$224,457
Water Quality/Res. Water Supply & Sedimentation	Aid to Conservation Districts	KDA	\$2,502,706
	Riparian and Wetland Program	KDA	\$154,024
	Stream Gaging	KWO	\$448,708
	Reservoir and Water Quality Research	KWO	\$450,000
Reservoir Water Supply & Sedimentation	Water Resources Cost Share	KDA	\$2,834,714
	Watershed Dam Construction	KDA	\$650,000
	Streambank Stabilization	KDA	\$850,000
	MOU - Storage Operations & Maintenance	KWO	\$736,160
	Kansas Reservoir Protection Initiative	KWO	\$1,000,000

OGALLALA AQUIFER INITIATIVES

Water Conservation Areas/Local Enhanced Management Areas

Subbasin Water Resources Management (KDA) – FY 2024 Request - \$650,174 (No increase from FY 2023)

Water Use (KDA)- FY 2024 Request - \$100,000 (No increase from FY 2023)

Water Conservation Areas

WCAs are a simple, streamlined and flexible tool that allow any water right owner or group of owners the opportunity to voluntarily develop a management plan to reduce withdrawals in an effort to extend the usable life of the High Plains Aquifer.

WCAs allow flexibilities that are not available to water right owners outside of a WCA.

Flexibilities include elements such as:

- Multi-year water right allocations.
- Moving allocations between enrolled water rights.
- Allowing for new uses of water.



[2022 Initiative Accomplishments]

Water Conservation Areas

53 WCAs with 86,625 total enrolled acres. To date the planned savings is more than 11,900 af/yr.

Local Enhanced Management Areas

39% reductions by the SD-6 LEMA from historical water use. There are currently three approved LEMAs in the state of Kansas and one more in process.

Local Enhanced Management Areas

Sheridan County 6 (SD 6), was the first approved LEMA in Kansas. After initially meeting a water conservation goal of 20%, LEMA participants almost doubled it, reducing withdrawals by 39%. Per KGS, the SD 6 area has nearly doubled the life of its aquifer.

Groundwater Management District (GMD) No. 4 has since developed another LEMA, which regulates nearly their entire district.

The success of GMD No. 4's execution of LEMAs has motivated other GMDs to look towards implementing them into their regions as well.

In 2021, GMD No. 1 implemented its Wichita County LEMA. In 2022, the district initiated the LEMA process to cover the remaining counties. The first hearing for GMD No. 1's Four-County LEMA took place in October 2022. The results of that hearing were favorable, so the second hearing will take place in early 2023. Both GMD No. 1 LEMAs intend to cut water use by 10%-15% from recent levels.



KWO High Plains Aquifer Partnerships - FY 2024 Request \$850,000
(↑ \$650,000 from FY 2023)

Existing water technology efforts have grown into a new comprehensive Water Innovation Systems and Education (WISE) initiative. The program is a public/private partnership program that focuses on fostering the implementation of field practices and technology and management strategies for industrial, agricultural, and municipal water applications with the goals of measurable and scalable ground water conservation, improved water quality, and overall soil and ecological health. The program is an expansion of KWO’s Water Technology Farm and PACE Farm programs and includes the development of a state-wide Master Irrigator and innovation farm cost-share program. Transition to the Partnerships funding line will provide additional state resources to leverage federal, local, and private resources from across Western Kansas with a priority on conserving and extending the Ogallala-High Plains Aquifer. Potential projects include \$300,000 to support Garden City’s water reclamation and reuse project and \$300,000 to support water reclamation projects on dairies and feedyards across Western Kansas in conjunction with local and federal funds.

KDA Irrigation Technology - FY 2024 Request \$550,000 (↑ \$200,000 from FY 2023)

As groundwater declines continue to impact aquifer conditions and surrounding hydrology, producers are becoming more interested in implementing innovative tools to improve irrigation water management.

This funding is used to improve irrigation efficiency and reduce water use by providing cost-share assistance to landowners for irrigation technology.

[2022 Initiative Accomplishments]

Water Technology Initiative Reach

17

total counties provided irrigation technology applications in FY 2022. Applications included a variety of irrigation efficiency practices.

Irrigation Technology

9K+

acres were improved with the FY 2022 funding through irrigation management to date.



The Irrigation Technology program is currently focused on all Kansas Groundwater Management Districts. The program works in conjunction with the Kansas Groundwater Management Districts to increase effectiveness and leverage additional resources to improve technology utilization across high water level decline areas in the High Plains Aquifer.

KDA Water Transition Assistance Program/Conservation Reserve Enhancement Program

FY 2024 Request: \$650,727 (↑ \$100,000 from FY 2023)

The purpose of the Water Transition Assistance Program (WTAP) is to reduce Historic Consumptive Water Use (HCWU) in targeted areas by permanently retiring irrigation water rights with incentive-based cost-share. Priority areas are targeted and approved by the KDA-DOC, with recommendations from GMDs in applicable areas.

WTAP differs from the Conservation Reserve Enhancement Program (CREP) in that:

- The funding mechanism is solely state-driven.
- Partial water rights can be retired.
- Dryland farming is allowed.

As a result of the 2021 enrollment, DOC accepted a bid of \$227,810 to voluntarily dismiss three irrigation water rights authorizing 853 acre-feet per year on 420 acres from 2 wells. 113.9 acre-feet of HCWU has now been permanently retired from the City of Tribune municipal well fields in Greeley and Wichita counties target area.

The CREP is designed to permanently retire water rights in the Upper Arkansas River Basin, a 13-county project area in western and south-central Kansas, while also providing other related benefits such as soil conservation, water quality protection, energy savings, and wildlife habitat enhancement. A landowner is compensated for agreeing to enroll in continuous CRP, permanently retire related irrigation water rights and plant a permanent cover (e.g. prairie grass or wildlife habitat mixture) on the contracted land. So far, 211 irrigation wells and 169 water rights have been voluntarily dismissed in the Ark River project area through enrollment of 23,340 acres with 47,643 acre-feet of annual water appropriations retired.

CREP is a federal and state partnership where 80% of the costs are paid by USDA. Incentives include annual federal rental payment and a state sign-up incentive, and additional cost-share funding for implementation. Enrollment is now officially open in the Rattlesnake Creek sub-basin.

Index Well Network & Modeling

Funded through KWO Assessment and Evaluation Program

The KWO and KGS have a continued partnership to develop, monitor, and expand the High Plains Index Well Network. The overall objective of the index well program is to better understand groundwater conditions on regional and local scales. Index wells are used to calibrate annual water level measurements to aid in aquifer evaluation and management. The network currently consists of 31 index wells, 25 with real-time data access and 6 that are updated quarterly. KWO’s Assessment and Evaluation program continues to provide funding for these efforts, utilized in conjunction with funds from participating GMDs to contract with KGS for groundwater model updates and enhancements.



The KGS completed models for GMD No. 2 and GMD No. 4 in 2020 and 2021, respectively, and is currently working on a model for GMD No. 3.

[2022 Initiative Accomplishments]

Conservation Reserve Enhancement Program

+\$1.6 million

in direct cash contributions as incentive payments on 23,455 enrolled acres, with 47,643 acre-feet of annual water rights permanently retired.

Index Well Network & Modeling

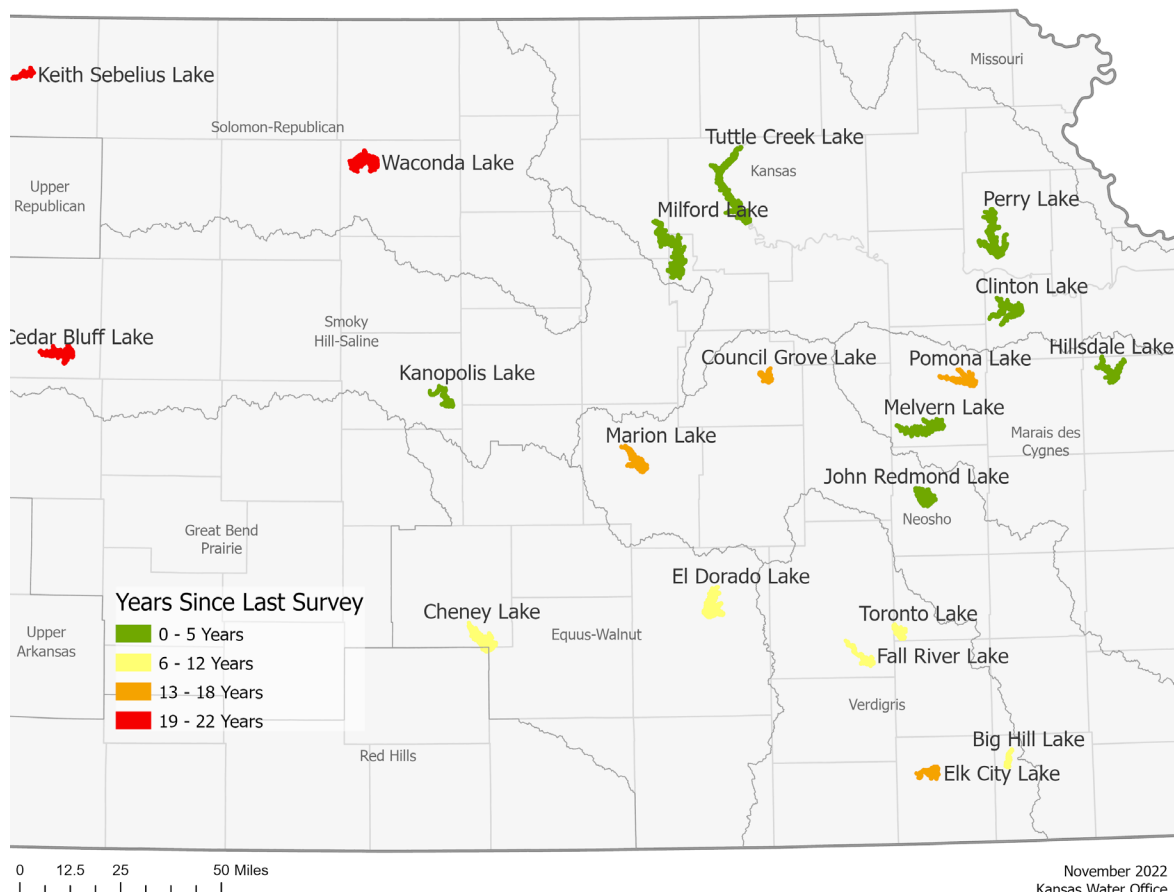
31

Index Well Network & Modeling index wells operational in GMDs No. 1, 2, 3, 4, and 5.

RESERVOIR WATER SUPPLY AND SEDIMENT MANAGEMENT

KWO Bathymetric Survey Program

Funded through KWO Reservoir and Water Quality Research Program



Kansas reservoirs are being filled with sediment, some at a faster rate than others, reducing the amount of water available for water supply, flood control, and recreational benefits to the citizens and industries of the state. The KWO is working to increase data collection and future reservoir volume estimates, while looking into new initiatives to extend the usable lifetimes of our reservoirs.

In 2019, the KWO launched the Bathymetry and Storage Evaluation (BaSE) program to increase the frequency of bathymetric data collection for Kansas water supply reservoirs/lakes. These underwater surveys estimate water depth and topography to determine how much sediment has accumulated on the bottom of the reservoir. The most recent surveys are compared to past surveys to establish an annual rate of siltation.

The BaSE program will allow KWO to work towards completing bathymetric surveys on a five-year rotation on multiple reservoirs, to gain a better understanding of reservoir conditions and sedimentation rates impacting future water supply planning.

[2022 Initiative Accomplishments]

KWO Bathymetric Survey Program

6

surveys were completed in 2022 at Perry Lake, Hillsdale Lake, Bone Creek Lake, Alma City Reservoir, Mill Creek Reservoir, and Lake Fort Scott.

KWO Water Injection Dredging

Sediment filling valuable reservoir storage is a significant problem throughout Kansas. Recent estimates from the KWO indicate that approximately 50% of Tuttle Creek Lake’s original conservation pool storage capacity has been lost due to sedimentation.

In response to this issue, the KWO has been working with the U.S. Army Corps of Engineers (USACE) Kansas City District and the USACE Engineer Research and Development Center (ERDC) to pursue a WID (Water Injection Dredging) demonstration at Tuttle Creek Lake. The project is a collaborative effort, with the State having appropriated a total of \$2 million for the demonstration and USACE receiving \$1.3 million in federal funding in federal fiscal year 2022. Additional federal funding to cover remaining project need (up to an additional \$2.8 million) is anticipated in federal fiscal year 2023, contingent on the budget process.



The proposed demonstration project includes the following major components:

- 1. Construction of a WID prototype.
- 2. Demonstration of the WID prototype at Tuttle Creek Lake at different elevations and flow discharges.
- 3. Monitoring and evaluation of both the operational and environmental results.

The demonstration would evaluate if injecting water into the reservoir bed to resuspend sediment and allowing it to be discharged downstream through the low-level outlet, using WID, is a viable means of sustaining long-term use and water storage at Tuttle Creek Lake and other reservoirs. Current efforts are focused on procurement of the WID equipment and vessel, project coordination and outreach, environmental compliance evaluations, development of pre-, during, and post-demonstration monitoring plans, and development of the implementation plan. The project is planned to be a multi-phase demonstration, occurring in spring, summer, and fall 2024.

KDA Streambank Stabilization
FY 2024 Request \$850,000 (↑ \$100,000 from FY 2023)

Streambank stabilization continues to be a key component in the reduction of sediment entering our water supply reservoirs. The KDHE, KDA- DOC and KWO coordinate efforts, resources and pooled funding to accomplish streambank protection aimed at reducing erosion in priority watersheds.

Streambank Stabilization efforts continue to be concentrated in three priority Kansas watersheds above Federal reservoirs:

- Tuttle Creek Lake
- Perry Lake
- John Redmond Reservoir



[2022 Initiative Accomplishments]

Streambank Stabilization

8 sites under construction or completed this year. These sites were contributing a total 29,450 tons of sediment per year prior to stabilization.

KWO Kansas Reservoir Protection Initiative
FY 2024 Request \$1,000,000 (No increase from FY 2023)

Water storage is being diminished over time due to reservoir sedimentation. Water quality is also being impacted in both streams and reservoirs by nutrient runoff, potentially resulting in harmful algal blooms, taste and odor issues with drinking water, and impacts to recreation in Kansas.

To help address these concerns, watershed conservation practice implementation within priority watersheds above key reservoirs protects water supply storage and improves water quality through the reduction of sediment and nutrient runoff.

Currently, these funds provide financial assistance to landowners in the Fall River, Kanopolis, John Redmond and Tuttle Creek watersheds for sediment-reducing practices through the Kansas Reservoir Protection Initiative (KRPI). This requested level of funding would provide the opportunity to support continued initiative efforts in existing watersheds as well as potential expansion of KRPI to additional watersheds of reservoirs impacted by sedimentation.

Common types of practices to reduce sediment and nutrient runoff include:

- cover crops
- grassed waterways
- buffer strips



KDA Watershed Dam Construction
FY 2024 Request \$650,000
(↑ \$100,000 from FY 2023)

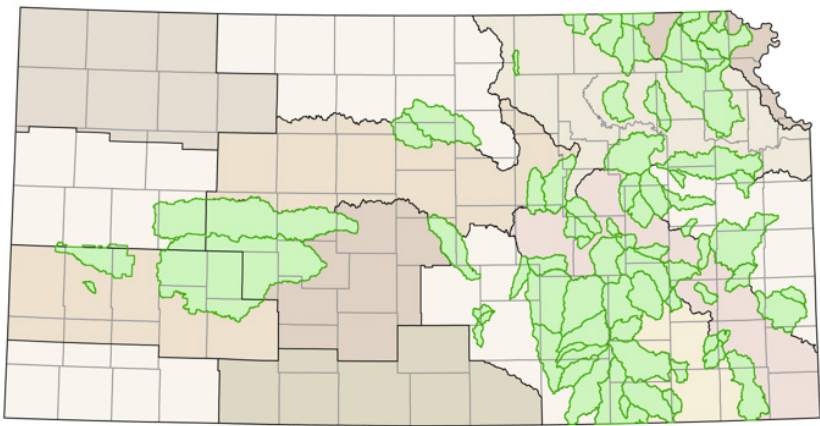
This program provides financial assistance to organized watershed districts, drainage districts, and other special purpose districts for the preservation and protection of the state’s land and water resources.

Watershed dam construction and rehabilitation in Kansas is driven by increasing demands of both flood control and sediment reduction above federal reservoirs that have water supply components.

In past years, there have been few requests for construction of new structures due to restrictive federal mitigation requirements. In 2019, there was one new watershed dam construction for flood control.

For FY 2023, the KDA-DOC received cost-share applications amounting to \$1.1 million for rehabilitation of 11 existing flood control dams. The \$550,000 FY 2023 appropriation for this program covered approximately 43% of the total-cost share requested: one new construction site and rehabilitation of 6 existing flood control structures.

Active Watershed Districts in Kansas



KWO Capital Investment Costs & Comprehensive Capital Development Plan Update

Expense obligations to the United States Army Corps of Engineers

The Kansas Water Office (KWO) administers the State’s Water Marketing, Water Assurance, and Water Supply Access programs which utilize federal reservoirs to help meet water supply needs. The State of Kansas has purchased storage space in fifteen United States Army Corps of Engineers (USACE) reservoirs. Water users, primarily municipal and industrial, must participate in one of the three programs to access water stored in these reservoirs. The obligation of expenses due to the USACE differs between the programs.

Water Assurance Program

The members of an Assurance District are entirely responsible for the Principal and Interest (P&I) costs associated with the purchase of storage space and annual Operations and Maintenance (O&M) costs. Members are municipal and industrial water right holders downstream from reservoirs where the District has purchased storage. Membership is mandatory.

[2022 Initiative Accomplishments]

Reservoir Water Supply

\$80.0 million

was utilized to pay off principal and accumulated interest associated with reservoir storage contracts at Hillsdale Lake, Clinton Lake, and Big Hill Lake. Due to quick allocation of funds and subsequent interest savings, \$3.0 million was used to prepay a portion of the remaining future use debt associated with Perry Lake in FY 2023.

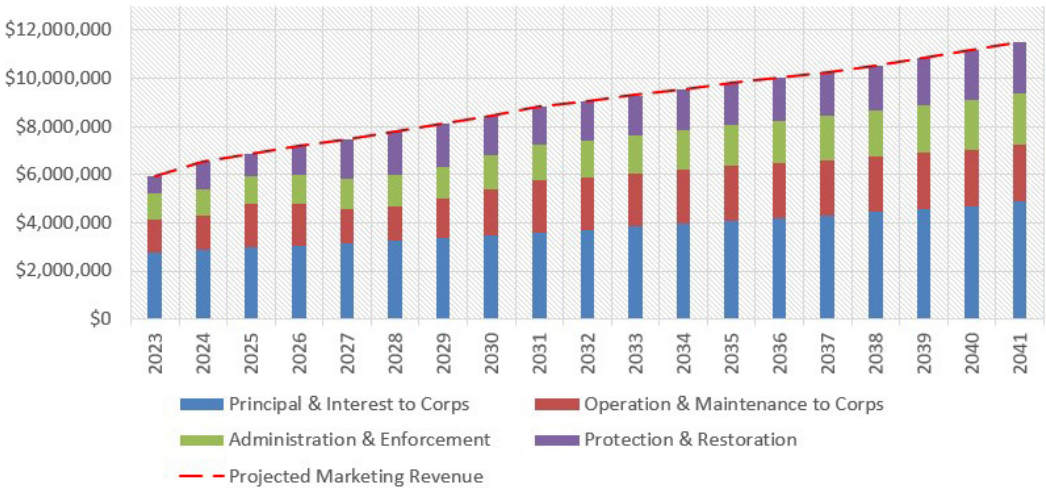
The Water Supply Access Program

The members of an Access District are entirely responsible for the costs associated with P&I and O&M. The members are municipal, industrial, irrigation, and recreational water right holders downstream from reservoirs where the District has purchased storage. Membership is voluntary.

Water Marketing Program

The Water Marketing Program is a wholesale raw water utility. Revenue is generated from the sale of water to municipal and industrial customers, typically through 40-year water purchase contracts. The water is sold at a cost per 1,000 gallons and the rate (\$) is set annually by the Kansas Water Authority. Program expenses are entirely the obligation of rate-paying customers. The chart below displays projected Water Marketing Program revenue and expenditures. The projected revenue reflects an annual rate increase of 4.2% through 2031 and 2.5% through 2041. A portion of the O&M, capped at 1 cent per 1,000 gallons, will continue be allocated to a dedicated O&M reserve fund. This set-aside serves for rate stabilization to compensate for fluctuations in annual O&M costs. Protection and Restoration expenditures, at this point in time, are not fixed costs but a rather revenue stream that may either be allocated to a reserve fund for reservoir storage maintenance (such as sediment management) or used for additional debt paydown. The KWO is updating the Water Marketing Program Capital Development and Storage Maintenance Plan, which will form fiscal policy of revenue generation to meet the needs of the program – including enhancement of reservoir protection and restoration investment. Also noteworthy, in the chart to the right, is the draft debt service plan for the remaining capital costs for Perry and Milford reservoirs.

Projected: Revenue vs Expenditures



KWO Capital Investment Costs & Comprehensive Capital Development Plan Update (cont.)

The Legislature appropriated \$80 million in FY 2022 to pay off principal and accumulated interest associated with reservoir storage contracts at Hillsdale Lake, Clinton Lake, and Big Hill Lake. Due to the quick allocation of funds and subsequent interest savings, the amount needed to pay off this debt decreased to approximately \$77 million. The remaining \$3 million was used to prepay a portion of the remaining future use debt associated with Perry Lake in FY 2023.

There are remaining capital investment costs associated with a portion of the contracted storage in Milford Lake and Perry Lake, a total current capital cost balance of about \$53 million after the initial payment of \$3.0 million in FY 2023. This storage is not currently committed to any of the three programs. The Kansas River Water Assurance District No.1 may purchase a small portion of the storage in Milford and Perry Lakes, but that is not anticipated in the near-term. This debt is a contractual obligation of the State of Kansas. If no further payments are made, the total contractual obligation of Perry Lake at the contract end year will be approximately \$44.2 million. The total contractual obligation for Milford Lake will be \$37.9 million in 2034, creating a combined total of approximately \$82.1 million. Early payoff would result in significant interest savings and make available additional funds for future reservoir protection and restoration projects. The chart below illustrates the potential savings.

[2022 Initiative Accomplishments]

Capital Investment Costs
\$53 million remains in capital investment costs associated with Milford Lake and Perry Lake.

	Contract Interest Rate	Contract Capital Costs Due Date	Balance on Due Date	Current Balance
Milford Lake	2.632%	2034	\$37.9 million	\$27.8 million
Perry Lake	3.046%	2041	\$44.2 million	\$24.9 million
Total			\$82.1 million	\$52.7 million



Tuttle Creek Reservoir

KDHE Harmful Algal Bloom Pilot Project - FY 2024 Request \$150,547 (No increase from FY 2023)

HABs can produce potent toxins that can cause human and animal illness or even death. The HAB mitigation pilot project investigates and demonstrates in-lake treatment options to reduce the frequency and duration of these blooms. The objective is to assess the effectiveness of such treatment options at minimizing the impact of HABs in Kansas public lakes.

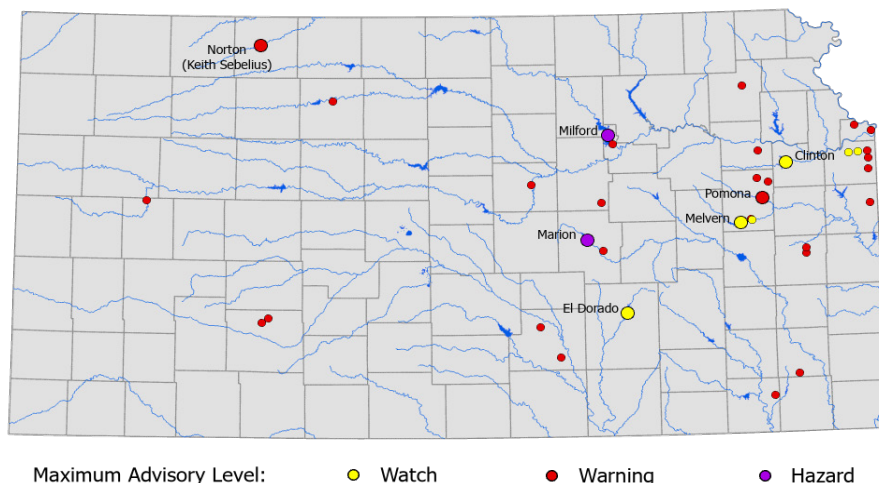
Most of the \$150,000 appropriation is for investigation of algae blooms and evaluation of certain prevention and treatment options, such as nutrient control and peroxide algaecide application. Selection of strategies corresponds to the variety of lakes in the state, with current emphasis on Marion Reservoir and Milford Gathering Pond as model systems. Other public lakes in Kansas may be considered if appropriate to assess the scale of the demonstrations and if transferable to other lakes.

Some of the activities this year included:

- Establishing in-lake sensors, and sampling for modeling nutrient dynamics that foster algal bloom development, in Milford Lake and Marion Reservoir.
- Utilizing satellite imagery to assess the emergence of blooms before they are reported by the public or lake managers.
- Evaluating overwinter treatments to destroy resting cells in the sediments that provide a seed bank for blooms in the following growing season.
- Assessing if manipulation of reservoir pools ahead of the runoff and growing seasons can mitigate the emergency and severity of algal blooms.

The goal is to evaluate the best mitigation practices throughout the United States and develop preferred long-term options for major reservoirs, along with appropriate recommendations for public lakes of varying sizes and scale.

Public Lakes Confirmed with Harmful Blue-Green Algae Blooms (HABs) in 2022



[2022 Initiative Accomplishments]

Harmful Algal Bloom Pilot Project

7

lakes in Kansas have active pilot efforts to treat and eliminate HABs.

In 2022, 37 waterbodies/zones within the state of Kansas had Harmful Algal Bloom (HAB) advisories.

KDA Soil Health - FY 2024 Request \$400,000 (↑ \$300,000 from FY 2023)

Soil Health funding provides resources to the KDA-DOC for soil health-related initiatives across Kansas. FY 2023 accomplishments include sponsorship of "Soil Health U" podcasts that feature innovative farmers and ranchers educating others on the benefits of soil health and regenerative agricultural practices. These funds have also been used as leverage in partnership with the NFWF/ADM Midwest Cover Crop Initiative that in turn accounted for 100,000 of cover crops being planted in Kansas. Seventeen local conservation districts were provided grants for workshops that gave farmers and ranchers an on-the-ground look at soil health practices.

KDHE Drinking Water Protection Program - FY 2024 Request \$800,000 (No increase from FY 2023)

The Drinking Water Protection Program (DWPP) has two components.

- Ensure all Kansas communities have a clean, healthy, affordable drinking water source by planning and implementing strategies to prevent and mitigate contamination.
- Analyze the impacts of naturally-occurring minerals on water used for human consumption from private water wells in some Kansas regions.

There are currently nine communities actively participating in the DWPP program. The investigation needs of each Public Water Supply (PWS) vary depending on current monitoring capability and assessment needs. KDHE contracts with technical service providers to investigate the source water area. The average cost of an investigation ranges from \$20,000 to \$120,000. Investigation results will determine strategies and plans unique to the PWS needs. The average cost of completing a study ranges from \$100,000 to \$150,000 with the program. The DWPP continues to assess regional impacts of naturally-occurring minerals, concentrating work in northwest Kansas during FY 2022.



KDHE Contamination Remediation - FY 2024 Request \$1,095,978 (No increase from FY 2023)

The Orphan Sites Program (OSP) in KDHE's Bureau of Environmental Remediation uses money from the SWPF for the assessment and remediation of contaminated sites where the responsible party is unknown or unable to undertake the necessary cleanup action. The purpose of this program is to protect human health while protecting the environment from the effects of hazardous chemicals or pollutants to soil, sediment, groundwater, surface water, or other natural resources of the state. Sites which pose the most serious threat to the public and the environment are remediated. There are currently 134 orphaned sites in the program.

KDA Water Resources Cost-Share FY 2024 Request \$2,834,714 (↑ \$136,425 from FY 2023)

This program is administered by KDA-DOC and provides financial assistance to landowners for the establishment of conservation practices in the form of cost-share contracts. The primary goals are to prevent soil erosion and reduce sedimentation, nutrients, pesticides, and fecal coliform bacteria in targeted public water supply reservoirs, as well as increase irrigation efficiency through irrigation technology initiatives.

Some of the most common practices are terraces and waterways, ponds, pasture and rangeland planting, filter strips, cross fencing, water wells and pumping plants. Irrigation technology such as automated soil moisture probes, mobile drip irrigation systems and remote monitoring systems are offered through special initiatives implemented by the DOC.

The funding appropriated in FY 2023 and requested in FY 2024 will continue to be utilized to implement practices aimed at reducing sedimentation and protecting and restoring water quality, in conjunction with the additional funds requested as part of the Irrigation Technology Initiative aimed at water conservation.

KDHE Surface Water Trash Removal - FY 2024 Request \$50,000 (New from FY 2023)

This new FY 2024 SWPF budget request by the KWA would provide enhanced state support for stakeholder-driven events, programs, and education to address trash impairments to Kansas streams. Trash is the most publicly apparent impairment to Kansas streams. Environmental advocates and non-governmental organizations (NGOs) have sponsored a number of stream clean-ups over the years and are looking for enhanced state support and participation in these efforts, as well as public education. Additionally, much trash is delivered to rivers through runoff from urban areas. Practices installed and managed by local public works departments with state assistance could reduce those loadings. This request is a pilot effort to assess the effectiveness of these approaches in improving river aesthetics.

KWO Equus Beds Chloride Plume Remediation Project

FY 2024 Request \$50,000 (No increase from FY 2023)

Groundwater in the Burrton area of western Harvey County continues to be impacted by elevated chloride concentrations, primarily caused by historic oil field operations in the region dating back to the 1930s. The plume of high chloride groundwater is expanding and migrating southeast in the Equus Beds Aquifer, threatening to impact a larger area of the aquifer which is used for municipal, industrial and agricultural water supplies.

There was collaboration with KDHE on framework development for a pilot treatment project within the Equus Beds Aquifer to remediate the plume. Burns & McDonnell presented a final report in 2020 to demonstrate the most cost-effective way to utilize contaminated groundwater in the region, while protecting existing freshwater resources. The report identified extremely expensive options. Local engagement is taking place to find next steps utilizing the report recommendations.

Planning is being finalized to install additional monitoring wells in 2023 by the KCC; these wells will be maintained by GMD No. 2.

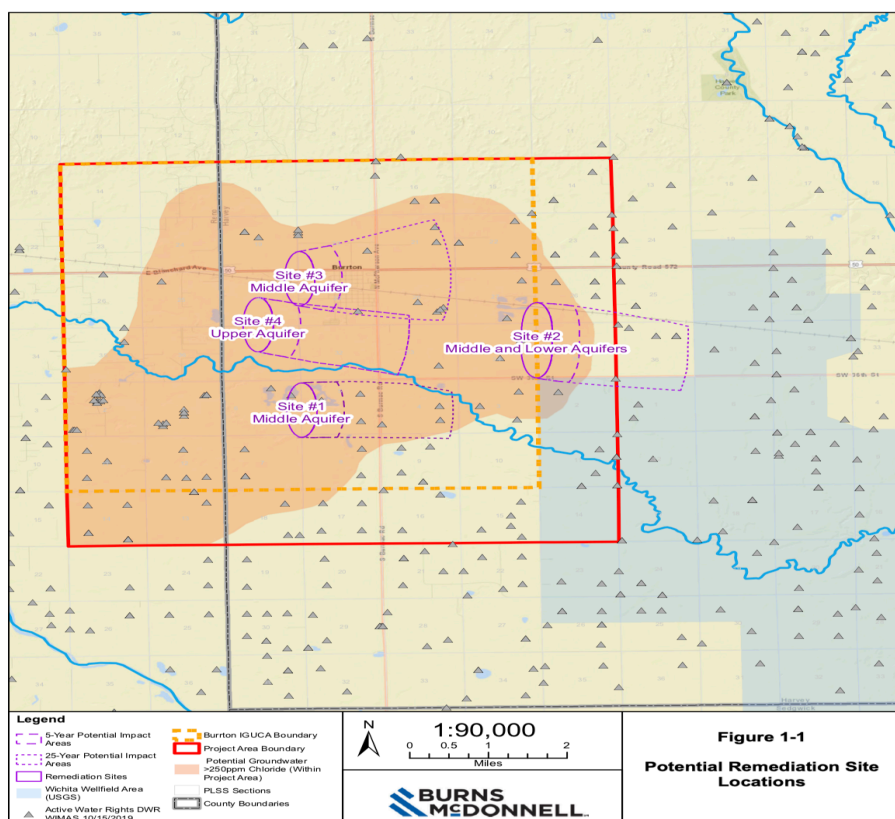


Figure 1-1
Potential Remediation Site Locations

KDHE Local Environmental Protection Program (LEPP)

FY 2024 Request \$250,000 (New from FY 2023)

This new FY 2024 SWPF budget request by the KWA would reinstate funding for the LEPP which was discontinued in 2012. The LEPP would provide funding and technical assistance to enable local authorities to develop water protection plans that complemented other water quality efforts being implemented by state and federal agencies. At the core of each plan would be the adoption and enforcement of county environmental codes with an emphasis on onsite wastewater systems and private water wells. The LEPP would work to ensure Kansas communities have access to support to ensure the proper and safe treatment of contaminated water for both human health and environmental health.

KWO Produced Water Pilot Project

The Kansas Water Office previously secured a Bureau of Reclamation WaterSMART grant to help fund a project to address produced oil field water. This produced water is a by-product of oil production having a high chloride content along with other dissolved minerals and oil which is currently being injected into the Arbuckle formation. In partnership with Fisk/Neptune, the University of Kansas (KU) and the Kansas Water Office, equipment is being developed to treat produced water. The project site located in Barber County near Hardtner has a deep disposal well with chloride levels often measuring over 120,000 ppm.

A recent sample collected at the site had chlorides at 125,000 ppm and Boron at 17 ppm. These values need to be reduced to 250 ppm and 4 ppm, respectively, to meet stock water/irrigation requirements. Current requirements for human consumption limits are 250 mg/L for chloride and 2 mg/L for Boron. Anticipated delivery of equipment is spring of 2023. There will be a 60-day period during which the equipment will be operated and evaluated, after which KU will issue a final report. The report will also evaluate the potential to repurpose residuals such as chlorides to off-set the need to mine this material.

KDA Non-Point Source Pollution Assistance - FY 2024 Request \$1,863,636 (No increase from FY 2023)

This program is administered through the KDA-DOC and provides financial assistance to landowners for the establishment of conservation practices. The primary goals are (1) water quality protection and restoration in watersheds with TDMLs, (2) information and education for adults and youth, and (3) other water quality issues.

Similar to the Water Resources Cost-Share program, appropriated funds are broken down into sub-categories and allocated to county conservation districts for program implementation. In partnership with KDHE, funds are also directed to high priority watersheds for the restoration and protection of water quality.

Grid sampling and variable rate fertilizer application were added to the program this year. 95 county conservation districts continue their participation in an on-farm trial initiative. This initiative allowed conservation districts to sponsor field trials that addressed a county-specific water resource issue. For example, Doniphan County Conservation District evaluated 3 trial sites using no-till farming, crop rotation, and cover crops to assess if an increase to 12% slope is warranted to implement broad-based terraces or underground outlets.



Some of the practices implemented through the Non-Point Source Pollution Assistance Program include:

- Abandoned-well plugging
- Ponds
- Pasture and rangeland planting
- Cover Crop
- Cross fencing
- Livestock waste management
- Nutrient management grid sampling with variable rate fertilizer application

KDA State Aid to Conservation Districts - FY 2024 Request \$2,502,706 (↑ \$29,333 from FY 2023)

The Conservation District is the primary local unit of government responsible for the conservation of soil, water and related natural resources within the county boundary. Kansas Conservation Districts are political subdivisions of state government charged with this vital role.

The State Aid to Conservation Districts program provides funds that the KDA-DOC requests through the State Water Plan Fund budgeting process, for conservation district activities implementing local, state and federal programs identified in the Kansas Water Plan. The KDA-DOC requests up to \$25,000 per district of SWP funds to match the amount of funding provided each district by the county in which the district is located. K.S.A. 2-1907c.

Program funding is utilized by conservation districts to assist landowners in implementing the KWP, including best management practices that improve natural resources, as well as to provide information and education reaching all ages through field days, workshops, and school visits.



KWO Arbuckle Study - FY 2024 Request \$150,000 (No increase from FY 2023)

At the request of Governor Kelly, an Arbuckle Study Group, representing a variety of state agencies and stakeholders, was formed and began meeting in 2020 with a goal of addressing fundamental data needs to characterize the Arbuckle's disposal and storage capabilities for continued long-term safe use. In FY 2020, \$68,000 in SWPF was appropriated late in the 2020 legislative session to initiate discussions and scoping of the Arbuckle Study.

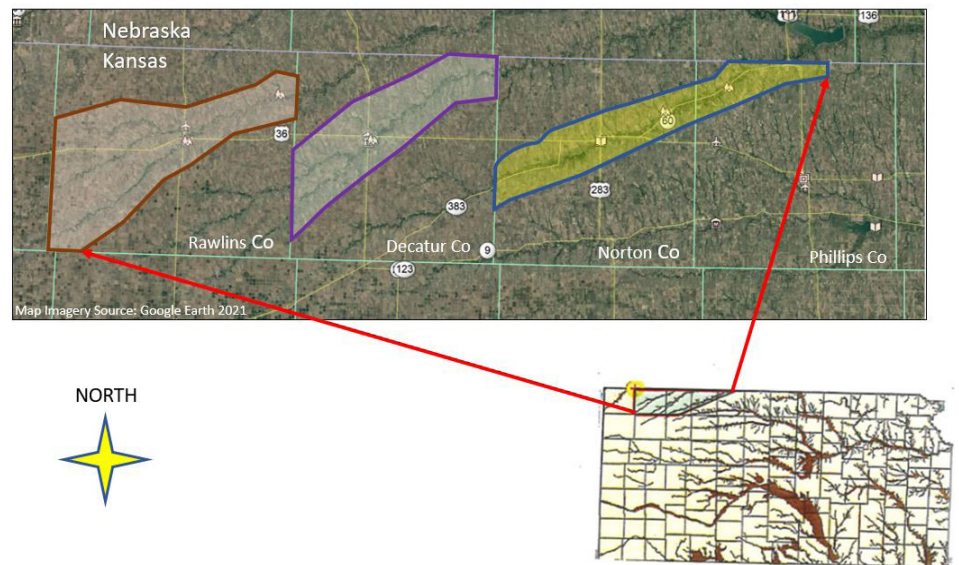
In January 2021, the KGS was contracted to begin a study of Class II wells at which static fluid level, density, and bottom-hole pressure data could be acquired. Methodologies developed and implemented at these locations were to be evaluated to determine the accuracy and functionality of various measurement techniques for future routine acquisition of time-lapse data across a broader Arbuckle monitoring network. In early 2022, the KGS completed a "Report on Feasibility Study of Regional Arbuckle Properties in South Central Kansas; Now and Planning for the Future" which proposed to evaluate methodologies and develop a testing protocol for accurately and functionally acquiring Arbuckle fluid data on a routine basis across spatially optimized network of Arbuckle monitoring wells. The KGS also contracted for collection of bottom hole pressure data in 2022 at two Class II wells owned by the KCC. Unfortunately, difficulty identifying additional suitable sampling wells and obtaining consent for accessing privately owned wells has slowed progress in accomplishing key milestones.

However, the KGS, with assistance from the Arbuckle Study Group, is continuing to pursue identification of, and access to, wells that would be suitable for data collection and that could lay the groundwork for the development of an expanded monitoring network capable of answering some of the basic questions in areas of high priority. Considerations for development of the network also include determining if any abandoned wells could be reworked and outfitted to provide reliable data or, if needed, contracting drilling of new monitoring wells for long-term surveillance in critical locations. Obtained data and analysis would provide guidance on appropriate actions needed to protect this valuable resource and its economic benefit to Kansans, and to address any associated seismicity and water quality risks.

Mineralization Studies

Upper Arkansas Mineralization Study

The KWO continues to work with KDHE, KDA, KGS and Southwest KS Groundwater Management District No. 3 in a two-year study to collect current data on areas adjacent to the Arkansas River and surface irrigation canals on the declining quality of groundwater in Hamilton, Kearny, Finney, Gray, and Ford Counties in response to a legislative resolution passed in 2019. KDHE is analyzing the water samples and KGS is sampling additional water wells for lab analysis. KGS will combine the additional laboratory data with the first phase lab results to develop a report of findings. This study is funded through KWO Assessment and Evaluation Program.



Northwest Kansas Mineralization Study

KDHE partnered with Fort Hays State University (FHSU) to conduct a two-year groundwater mineralization study in Northwest Kansas. In 2021, the focus was on private water wells located in the Prairie Dog River alluvium in Norton and Phillips Counties. The primary focus of the study is to identify uranium concentrations in the groundwater, but samples were tested for conductivity, sulfates, nitrates, chlorides, arsenic, manganese, selenium, iron, and uranium. FHSU sampled 31 domestic wells in 2021. Owners who have wells with mineral concentrations at or above the primary drinking water standards will be provided information regarding potential health effects, potential causes of the contaminant, and potential remedies. The Northwest Kansas Mineralization Study continued through 2022.

KDHE Total Maximum Daily Load Program - FY 2024 Request \$384,916 (No increase from FY 2023)

The Clean Water Act requires states to identify all water bodies where state water quality standards are not being met. Every two years, a list of impaired waters is submitted to the EPA for approval, utilizing water quality data associated with the KDHE targeted stream, biological and lake monitoring networks.

The waters listed in the Section 303(d) list require a TMDL. The TMDL sets a limit for the maximum amount of a contaminant that a water body can receive and still meet standards. TMDLs are developed consistent with Kansas' TMDL Prioritization Framework, which focuses on stream phosphorus and nitrate impairments since 2012. A variety of local, state, and federal programs utilize the 303(d) list and TMDLs to establish watershed restoration, protection, and funding priorities to address contributing pollutant sources, particularly sediment, nutrients, and pathogens.

A few updates from this past year include:

- Resurrected the lake and wetland program to sample 61 sites.
- Initiated a cooperative investigation into the source of bromide loads into the Kansas River that create disinfection byproduct complications for public water suppliers such as WaterOne, Lawrence and Topeka. This effort involves KDHE, KWO, the Kansas River PWS, KGS and USGS.
- 75 of 120 municipal wastewater treatment plants are meeting their nitrogen and/or phosphorus goals.



KDHE met its original TMDL Vision commitments to EPA, exceeding the expectation by 5 segments with 5 more pending approval and another 61 segments under development.

[2022 Initiative Accomplishments]

TMDL Initiatives

536

segments or lakes in Kansas have established TMDLs, with another 66 poised for submission and approval.

KDWP Aquatic Nuisance Species Program - FY 2024 Request \$224,457 (No increase from FY 2023)

Aquatic Nuisance Species (ANS) are non-native species that threaten the diversity or abundance of native species or the ecological stability of infested waters, or commercial, agricultural, aquacultural, or recreational activities dependent on such waters.

ANS can diminish food supplies and degrade habitat for other species; reduce numbers and variety of desirable fish; reduce fishing, boating, and other recreational activities; lower property values and decrease quality of municipal water sources; foul water lines; clog intakes; burn out pumps; damage power generating facilities; and decrease water system efficiency, as well as increase the risk of flooding due to overcrowded biomass and clogging of lake outlets.



In 2005, the Kansas ANS Management Plan was created and established within KDWP. SWP funding for FY 2023 will allow the ANS program to expand watercraft inspection and decontamination activities, which will help prevent ANS introductions into currently uninfested waterbodies.

Some goals of the ANS Management Plan include: prevent introductions of ANS to Kansas; prevent dispersal of established populations of ANS into uninfested waters in Kansas; eradicate or minimize the adverse ecological, economic, social, and public health effects of ANS in an environmentally sound manner; educate all aquatic users of ANS risks and how to reduce the harmful impacts.

STATEWIDE WATER ISSUES

Quivira/Rattlesnake Creek

In Kansas, as in most western states, the date of a water right defines its relative priority. When there is not enough water to satisfy all rights, older ("senior") rights are entitled to be satisfied before newer ("junior") rights can use the same source of water. For decades, the U.S. Fish & Wildlife Service (USFWS) expressed concern that its senior water right on Rattlesnake Creek, held for the operation of the Quivira National Wildlife Refuge, was being impaired by reductions to Rattlesnake Creek streamflow caused by junior groundwater pumping.

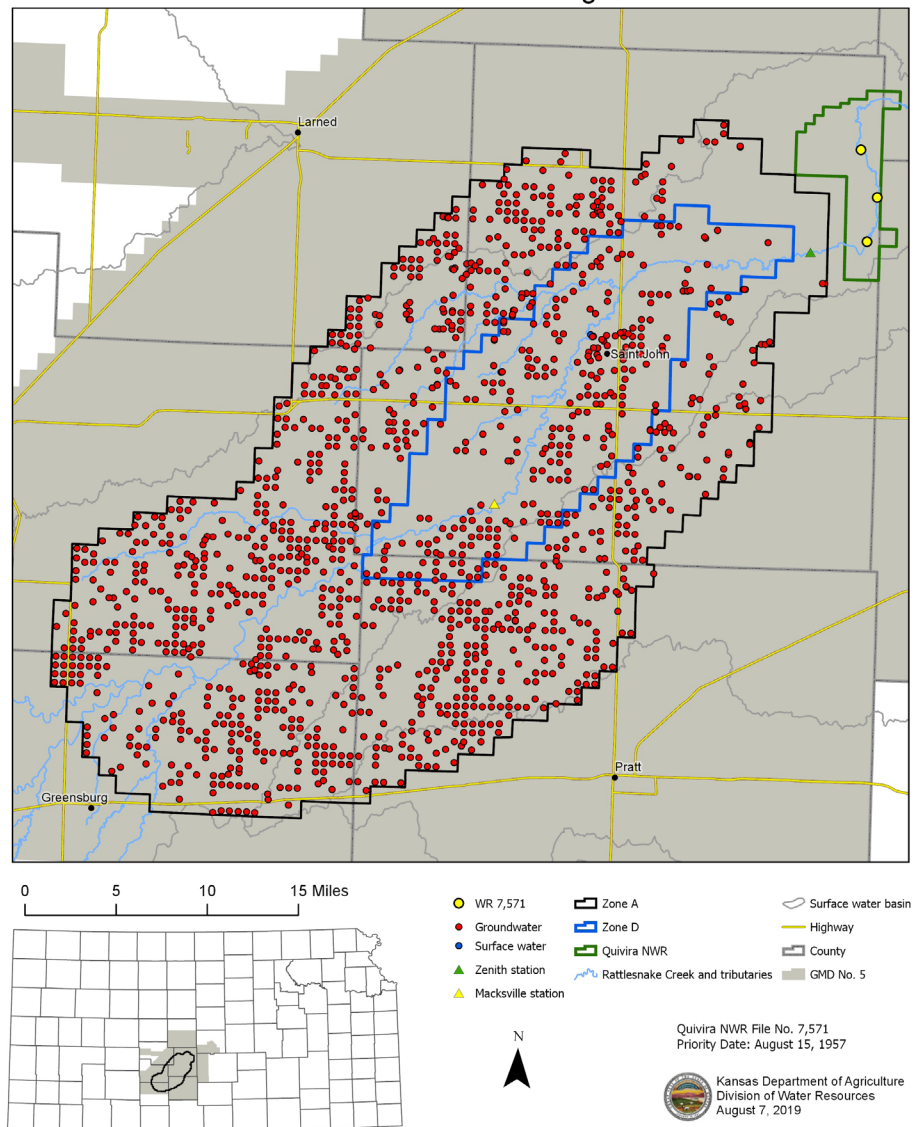
In response to USFWS's 2013 formal complaint, KDA-DWR investigated and in 2016 found that junior groundwater pumping impairs the senior right frequently and significantly prevents the refuge from getting the water to which it is entitled. After years of negotiations, the USFWS and GMD No. 5 agreed to pursue stream augmentation (pumping groundwater into the stream) as the primary way to address the impairment. Other strategies to help relieve the impairment included development of a water rights purchase program, a water rights relocation program, and a program to incentivize the removal of center pivot end guns within the district.

In December 2020, a \$725,000 grant was awarded to GMD No. 5 through the NRCS Watershed Protection and Flood Prevention Program (WPFPP) for the development of a watershed plan covering the Rattlesnake Creek Basin as one of the steps necessary for GMD No. 5 to begin fulfilling the terms of its agreement with the USFWS.

In September 2021, GMD No. 5 secured a contract with a consulting firm to develop the augmentation plan and environmental assessment as required by the grant.

That work has been ongoing through 2022. GMD No. 5 tentatively plans to complete the environmental assessment by mid-2023.

Points of Diversion under Junior Water Rights Found to be Interfering with Quivira's Water Right



Hays/Russell – R9 Ranch Water Transfer

In 1995, the City of Hays purchased the R9 Ranch near Kinsley, KS, later selling an interest to the City of Russell. With this purchase, the cities own a cumulative water right authorization for irrigation use of approximately 7,700 acre-feet with a calculated consumptive use of 6,750 acre-feet, which could be requested to convert to municipal use.

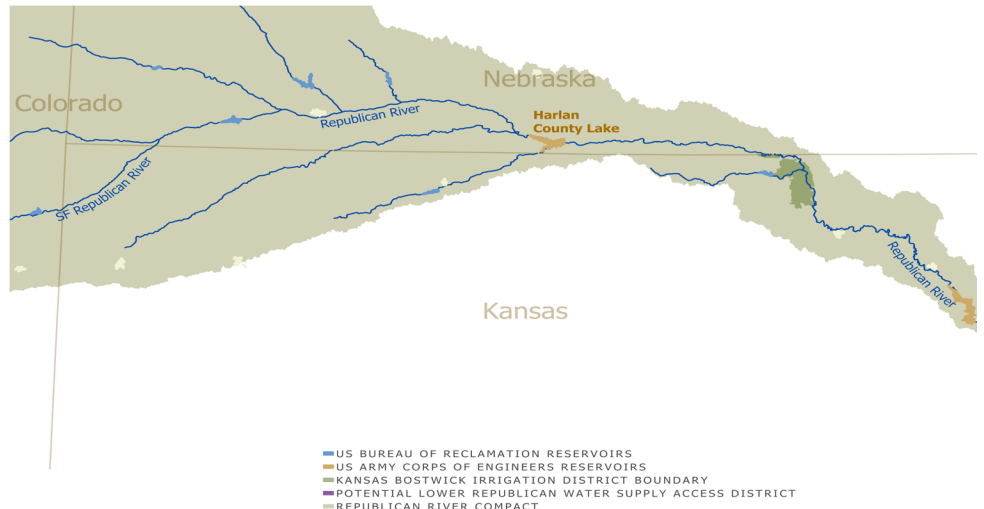
In 2015, Hays and Russell began the process to request permission to convert the water rights to municipal purposes and transfer the water. Based on a modeling analysis with the change application process, they have agreed to limit the quantity which could be diverted from those wells for municipal use to a 4,800 acre-feet average over 10 years, an amount they describe as sustainable on an annual basis.

In 2019, following consideration of comments from local individuals and entities, including GMD No. 5, the Chief Engineer of KDA-DWR contingently approved the change applications submitted by Hays and Russell to convert the R9 Ranch irrigation rights to municipal use for the cities. In May 2019, the Water Protection Association of Central Kansas (WaterPACK) filed a request for judicial review. In June 2022, the district court held that WaterPACK had not shown that the chief engineer improperly considered the change applications. WaterPACK appealed that decision; the matter is now before the Kansas Supreme Court. The cities have begun the Water Transfer request process. The hearing phase will begin in early 2023.



Republican River Update

After decades of legal conflict arising from violations of the Republican River Compact, Kansas received settlement funds from both Nebraska and Colorado to resolve any disputes over past use of water. Funds are being used to implement water conservation projects, water use efficiency upgrades, water management plans by water right holders, and cost-share programs in the Republican River Basin.



Republican River Water Conservation Project – Nebraska Fund \$3.5 million

The Kansas Bostwick Irrigation District

(KBID) is in the process of converting portions of their remaining open irrigation canals to a buried pipe system and automating the control structures that regulate the flow of water into and through the canal system. As of FY 2022, KBID has completed five installments of the canal project, which included the elimination of a total of 14.77 miles of open irrigation canals. In 2022, KBID and its Nebraska counterpart (NBID) worked together to automate the main structure that diverts the Republican River into both districts' canal systems. KBID has also automated water structures along the canal to improve efficiency and reduce waste. More water gate automation projects are planned for 2023.

Republican River Water Conservation Project – Colorado Fund \$2 million

Approximately \$137,000 was expended in 2020 for irrigation technology cost-share in the South Fork Republican River Basin, and to date, approximately \$211,000 has been allocated for the 2021 sign-up period. In October 2020, \$500,000 was sent to the Cheyenne County Conservation District for projects supporting improved water use efficiency and water conservation in the South Fork Basin. By leveraging these funds, along with others contributed, the Cheyenne County Conservation District was awarded RCPP funding through NRCS.

Wichita Aquifer Storage and Recovery (ASR)

The City of Wichita currently operates an ASR project which allows for the diversion of water from the Little Arkansas River during high flow periods, treatment of the diverted water to drinking water standards, then injection of the treated water into the Equus Beds Aquifer for later recovery and use. Through this process, the city accumulates recharge credits with KDA-DWR, allowing Wichita to subsequently withdraw this recharged water from the Equus Beds Aquifer in addition to their native water rights. With the recent recovery of the Equus Beds Aquifer in the Wichita wellfield area to near pre-development conditions, recharge activities were being hampered by limited space within the aquifer.



In March 2018, Wichita submitted to KDA-DWR a proposal for modifications to the conditions associated with Wichita's existing Phase II ASR permits. Formal administrative hearings took place from 2018 through 2021. In January 2022, the presiding officer recommended denying the proposal for modifications to the Chief Engineer of KDA-DWR. The Chief Engineer concurred that the modifications should be denied because they should have been lodged with DWR as new change applications. Though it was the main opponent to the proposed modifications and a participating party in the hearing process, GMD No. 2 has requested that the chief engineer's order denying the modifications be reviewed in district court. That review is currently underway.

Kansas-Colorado Arkansas River Compact Update

One main feature of the Kansas-Colorado Arkansas River Compact (Compact) is that Kansas and Colorado share the benefits of John Martin Reservoir (JMR), on the Arkansas River about 60 miles upstream of the state line. Kansas has two JMR accounts that can be called upon to satisfy the surface water irrigation demands by six irrigation ditches in southwest Kansas.

Persistent and extreme drought conditions in the Arkansas River Basin in both Colorado and southwest Kansas created heavy demand on storage in JMR for the 2022 irrigation season and have drawn reservoir levels down to near historic lows. Colorado remains in compliance with the compact. Though Colorado had a shortfall in its 10-year rolling average accounting 2012-2021, it made up for the shortfall by delivering water to Kansas control as provided for in the compact.

The Kansas-Colorado Arkansas River Compact Administration's 2022 annual meeting was held December 8 in Lamar, CO. Federal agencies and local water districts provided updates on last year's water operations, and on current and future projects. Water quality continues to be a prominent issue among the states. Dry conditions have worsened the water quality issues in the basin, especially below John Martin Reservoir. In June 2022, two Kansas legislators joined water quality officials, water rights administrators, academics, water users from both states on a water quality-focused tour of the basin. Naturally occurring salts have been flushed into the river system by common irrigation practices in both states for over a century. Both states are committed to investing in best management practices to improve the water quality of the basin.

After several years' work among the states, Kansas and Colorado agreed to a new multi-purpose account pilot project. One of the proposed purposes is to facilitate irrigation improvements in Colorado that have potential to benefit water quality. Among the provisions of the pilot project are a 5-year project term and progress towards resolving long-standing compact issues that could further benefit Kansas' water supply.

Missouri River Coordination

The Lower Missouri River extends from Sioux City, Iowa, to St. Louis, Missouri, draining thousands of square miles of rural and urbanized areas while also containing numerous federal and non-federal projects that provide varying levels of flood protection. The Missouri River set a new record of flow in the Lower Missouri River Basin in 2019.



As a result of the record-setting flooding in 2019, the states of Kansas, Iowa, Nebraska and Missouri partnered with USACE to begin the process of developing a comprehensive plan to evaluate solutions to lessen flood risk in the Lower Missouri River Basin. These planning efforts include input from local citizens who have been repeatedly impacted by flooding.

In 2021, the 4 states signed a formal Memorandum of Understanding designating the respective contribution amounts each would provide to the Lower Missouri River Flood Risk and Resiliency Study to comprise the total sponsor share in coordination with USACE. Kansas committed to contributing \$184,375; of this amount, \$75,000 was paid in 2022. The remaining obligation from Kansas is \$99,375 within this five year study. Various coordination meetings between the USACE and the state sponsors took place during 2022, primarily to report updates on system plan study progress and technical reports.

Flood Response Study - FY 2024 Request \$200,000 (No increase from FY 2023)

The 2019 Special Legislative Committee on Flooding recommended funding for a basin-by-basin evaluation of flood risks in Kansas. In 2020, \$100,000 in funding from KWO's Assessment and Evaluation Program was appropriated for Flood Response Study efforts. In conjunction with this previously appropriated funding, the KWO is continuing efforts to leverage federal resources for completion of studies in flood prone areas of Kansas. Flood study efforts look to identify areas of recurring flooding, determine economic loss from these events, and identify potential mitigation projects that can lessen future flood damage.

In previous fiscal years, a portion of KWO's Reservoir & Water Quality Research was utilized for the development of a stand-alone flood inundation mapping tool by the Kansas Biological Survey, which will allow for real-time estimation of flooding and potential impacts. FY 2023 funding will be utilized to begin additional watershed level flood risk studies, using 2D flood models, due to be completed in 2023, to identify potential flood mitigation projects and outreach to impacted stakeholders.

Kansas River Reservoirs Flood and Sediment Study



The Kansas River Basin includes 18 federal reservoirs, 12 of which reside in the State of Kansas, which regulate 85% of the drainage area in the basin, providing critical water supply, flood damage risk reduction, and vital river flow support to downstream regions. In an effort to more effectively manage those resources and improve overall understanding of the Kansas River Basin, the USACE, KWO, and KDWP launched the Kansas River Reservoirs Flood and Sediment Study in March 2019.

Study efforts have included planning discussions and stakeholder outreach to identify and define issues and opportunities, goals and objectives, and measures and strategies for the watershed. Additionally, assessments to evaluate existing conditions and projected future conditions without action in the watershed are underway for flood risk management, water management, sediment management, water supply, water quality, and biological resources. The Shared Vision Milestone was officially completed in June 2021. Future study milestones will include recommendations and, ultimately, a Watershed Study Report expected to be completed in 2024. The total cost of the study is \$3,000,000 including \$2,250,000 from USACE and \$750,000 in contributions from the State of Kansas.

Drought Monitoring and Response

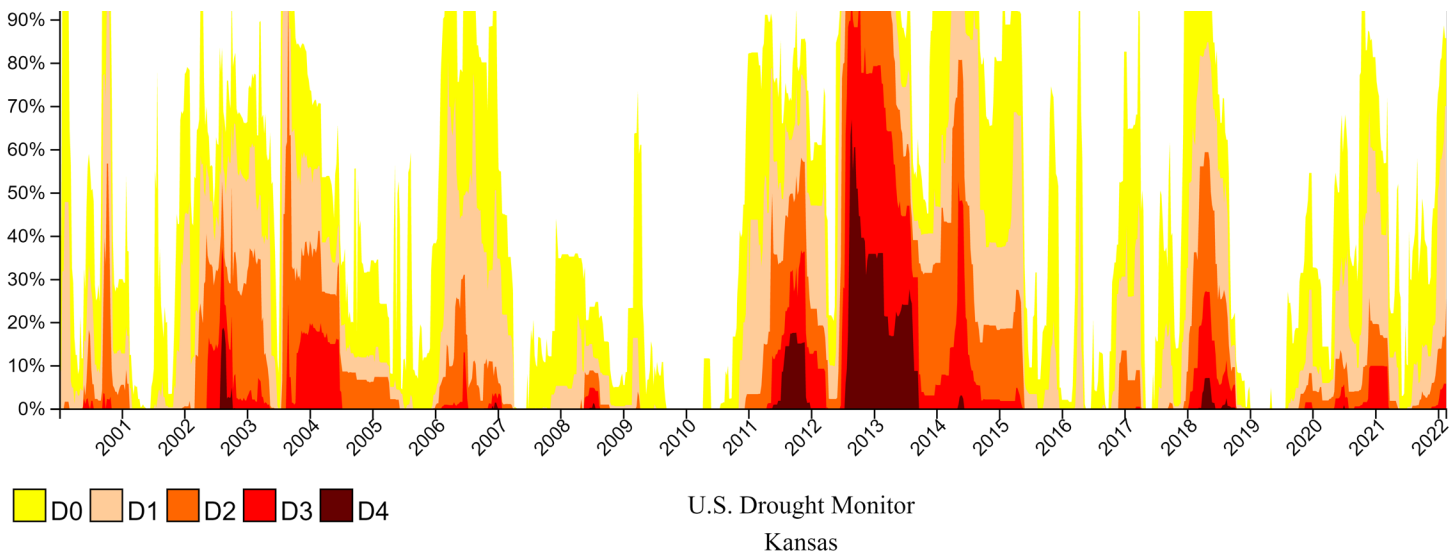
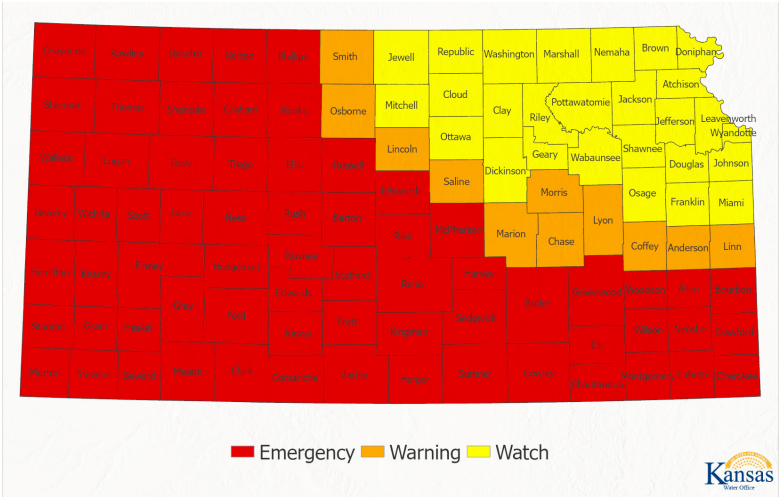
The Kansas Water Office is responsible for monitoring drought and notifying the Governor when drought conditions exist within the state and recommending assembly of the Governor’s Drought Response Team. The team reviews conditions and recommends drought stages for each county. The Director of the Kansas Water Office makes a recommendation to the Governor, who then issues a drought declaration through executive order. This declaration is in effect until rescinded or superseded.

Response to drought is provided through many state programs and associated authorities or responsibilities. The Drought Response Team is responsible for implementing an interagency state government response to drought that is properly coordinated with local and federal response activities at all drought stages. For example, an interagency agreement between the Kansas Water Office, Kansas Department of Wildlife and Parks, and the Kansas Division of Emergency Management qualifies counties in emergency status for emergency use of water from certain state fishing lakes to fight wildfires. These counties also become eligible for water in some federal reservoirs, in addition to state fishing lakes, for domestic stockwater.

The latest drought declaration from the Governor was issued on October 6, 2022 with Executive Order 22-08. The drought

declaration placed 67 counties in emergency status, 11 counties in warning status, and 27 counties in watch status.

The KWO is also responsible for the management of state-controlled conservation storage in 15 federal reservoirs to maintain adequate streamflow and water supplies for Kansans, primarily critical to satisfy municipal and industrial demands. Two thirds of the state’s population is reliant on stored water in federal reservoirs during drought, and all 15 reservoirs are being used to support these needs. Reservoir support of streamflow has been quite dramatic in 2022, with reservoir releases making up more than 90% of the flow in some river reaches.





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