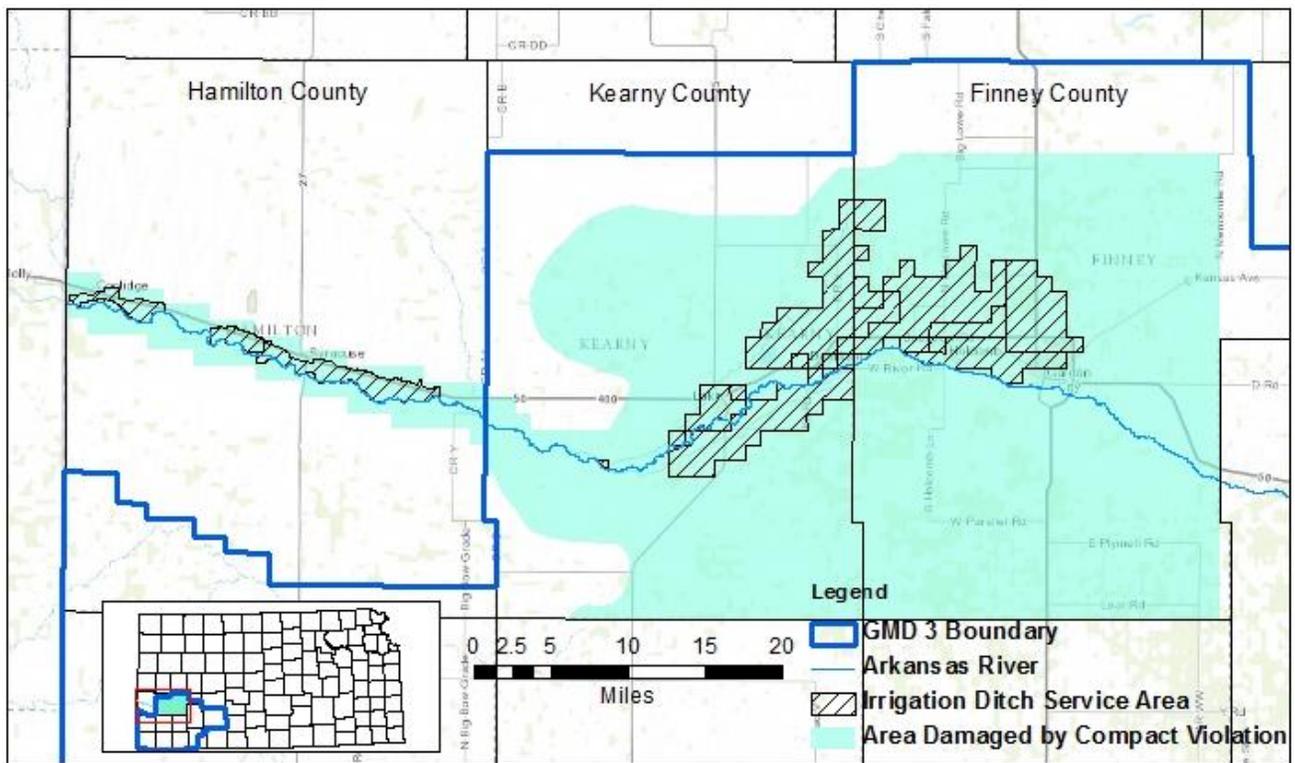


2019 Legislative Report on
GMD3 2018 Western Water Conservation Projects
Fund Grant Activity and Related Concerns

Returning a fraction of the Cash Damage Award from KS vs. CO
to the area affected.

Submitted by:

**The Southwest Kansas Groundwater Management District
Number 3 (GMD3)**
Kansas Water Office Contract Number 08-0129



Area of locally directed WWCP Fund activity.

Financial Statement for 2018. The Western Water Conservation Projects Fund (WWCPF) of GMD3 began year 2018 with \$3,032,558.69 and ended the year with \$2,679,771.41. There were expenditures totaling \$390,004.98 and income of \$37,218. Expenditures include a 3% fiduciary and management expense of \$11,152.07 paid to GMD3. The 2018 Audit Report for GMD3 has been completed and found secured investments consistent with municipal investment law and acceptable expenditure procedures.



Background and Priority Recommendation

As a result of litigation filed in the United States Supreme Court (*Kansas v. Colorado, No. 105 Original*), the State of Kansas received more than \$34.7 million in damage award from the State of Colorado for actual Kansas losses to crops and fields in Southwest Kansas, including interest. The cash damage award was quantified from the effects for certain Colorado violations of the Arkansas River Compact (Compact, K.S.A. 82a-520). The cash damages paid back the state litigation cost, with 1/3 of the remainder going to the Kansas Water Plan and 2/3 to the actual affected area in southwest Kansas in the form of the WWCPF.

Ark River Supply. The Arkansas River in both Colorado and Kansas has been over appropriated for all supplies except for the very high flood flows and reservoir spill conditions. The question of flood flow apportionment under the compact is yet unresolved and added use and storage efficiencies further threaten Kansas supply. Reservoir construction and storage improvements in Colorado have dramatically increased water use efficiencies in Colorado and Kansas over time. Additionally, groundwater withdrawals and storage further diminish the base flows to the river in both Colorado and Kansas. The Arkansas River flows in southwestern Kansas are highly dependent on the irrigation demands of Kansas ditches and the farmer owners have been protecting and diverting surface water for Kansas since the 1880s. Thus, water called for by the six Kansas irrigation ditch companies is put to beneficial use in Hamilton, Kearny, and Finney counties under their federal court decree and state vested water rights and the Compact. Most of the lands irrigated from the river also have groundwater wells that also supply irrigation water through conjunctive use management.

Water Quality. Water quality (water usability) of river flows is a significant problem and a growing concern in both states. Colorado is currently seeking a joint state legislative “Memorial” asking the federal government to pay more than \$100 million for the Arkansas Valley Conduit project to help address basin poor quality water problems east of Pueblo to Lamar, Colorado. The federal Bureau of Reclamation environmental impact statement for the Arkansas Valley Conduit recognized that simply replacing contaminated groundwater supplies with surface water from the Arkansas River is problematic because the river is also contaminated with high levels of selenium, sulfates, uranium, and salts. Near all contaminated river flows from Colorado into the Kansas portion of the basin are applied onto crops or recharge and expand the contamination of the Ogallala Aquifer and public well fields east of the Arkansas Valley Conduit project area. No remedy is being considered below Lamar and into Kansas and this portion of the basin problem should not be forgotten. A joint Kansas legislative resolution is proposed to communicate this to the federal government.

Swept Special Account: The Kansas Interstate Water Litigation Account

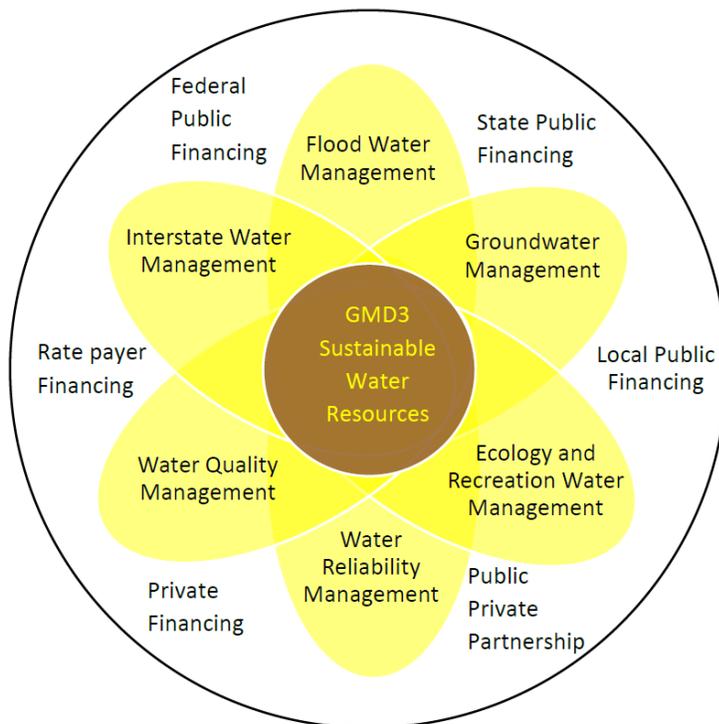
\$20 million was determined to be the cost Kansas incurred to prosecute the recent *KS v. CO* case. When that was paid from the damages, the \$20 million became a standing fund in a lock box managed and reported by the Attorney General’s office for the purpose to protect Kansas interests in interstate and tribal water matters. **The Kansas Interstate Litigation Fund was soon swept to balance state general fund fiscal demands.** The absence of this water management tool is a circumstance that has not gone unnoticed by water managers in Colorado, Oklahoma, Nebraska and the Missouri River basin states.



Kansas nearly lost KS v. CO 105 due to lack of timely funding. Shortly after the KS v. CO lawsuit was filed, several of the ditch companies contributed financially to the state of Kansas so the lawsuit could continue until the legislature could act to fund the action. Therefore, a statewide account is a benefit to correct a Kansas disadvantage, and is a vital and cost-effective tool for protecting Kansas interstate water interests. The existence of the account is considered a key factor in the early settlement agreement reached in the *Kansas v. Nebraska and Colorado, No. 126 Original*.

Enhancing interstate water management capacity

Even though there has been legislative effort to restore an Interstate Litigation Fund after being swept to state general funding, resources for the fund now rely on the potential for any future cash damage awards and/or extra state general funds. As written, K.S.A. 82a-1801 does not provide the water protection tool identified as needed to support interstate water management actions from sister states or federal authority that may adversely affect Kansas water management and supply. In recent years GMD3 and the advisory committee activity has recognized an alternative Fund. Rather than a litigation fund per K.S.A. 82a-1801, a more appropriate find outside the Kansas Attorney general budget used for interstate water management support of state staff efforts is a better choice. A funded Interstate Water Management Support Fund communicates the Kansas commitment of Kansas to working with other interstate interests on questions and proposals of interstate water supply significance.

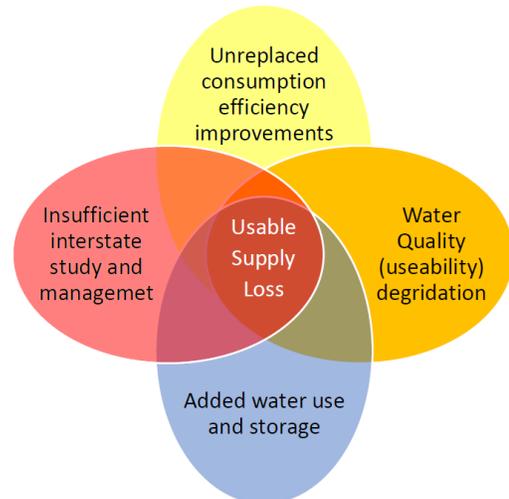


Work to restore funds into an Interstate Litigation Fund (or Water Management Support Account) should be a high priority Kansas initiative. Local advice for more than two decades has been to learn from the past funding struggles and set Kansas up for sustainable water supply management success. The **water flow** Venn Diagram at left illustrates the necessary water management activities that intersect for Kansas sustainable water resources, including for southwest Kansas. The importance of funding an Interstate Water Management Account for Kansas cannot be over-emphasized as a better management strategy than trying to reallocate existing funds in state agency budgets as the need may arise and agency priorities may dictate.



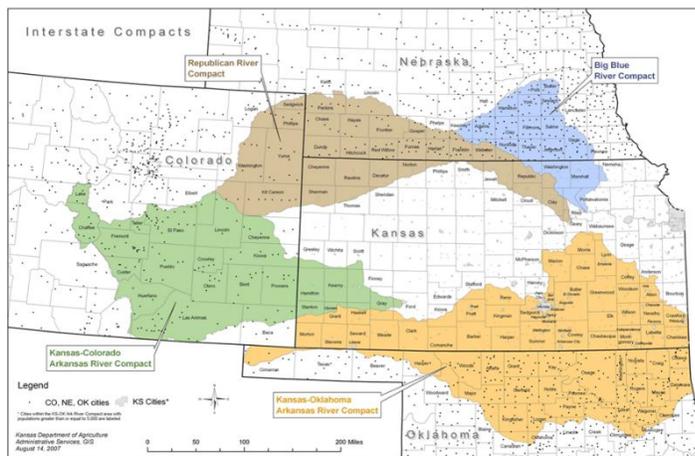
The lack of dedicated funds preserved and managed for interstate water management support unnecessarily places Kansas (staff time and resources) at significant disadvantage and in a subordinate role in interstate discussions affecting future renewable supply for Kansas. This is true regardless of whether a compact agreement may be in place or should be in place affecting the source. There are numerous examples provided through time of this problem discussed by local leaders since before the last KS v. CO sup. Court case filed in 1985. Information from available data and timely expert analysis is usually the need. Actions or inactions are occurring for Kansas based on cost, but with missing benefit to cost evaluation and other information that should occur and made possible with a dedicated funding source outside regular agency budget priorities. Such examples occur every year and they affect renewable supplies for all time.

Critical State Study. Recently, KDA requested WWCP funds for help in critical state study to evaluate Colorado administrative provisions of well pumping replacement plans affecting compact compliance and the basin renewable supply to Kansas and GMD3. The GMD3 WWCP Fund is protected from state budgeting sweeps as a model for funding future water needs.



Above is a Venn Diagram of ongoing concerns that cause usable supply loss to Kansas.

At left is a commonly used map of interstate water compact areas. It also includes non-colored areas with interstate water management support needs. All areas have study questions needing answers in support of interstate water manage.



For example, this year the lack of information to appropriately judge

short order response to thousands of acre feet of new Colorado groundwater development being allowed from the Cimarron River alluvium and the effects to historical river flows near the Stateline with Kansas and into the Cimarron National Grassland. GMD3 area High Plains Aquifer is closed to new large appropriations but Colorado and Oklahoma portions are not closed. River flows and groundwater levels are declining. GMD3 recognize the need to engage the Colorado administrative and political process and hired consultants when Kansas officials did not have the needed resources; considered it too expensive politically and scientifically to protect Kansas interests. We believe friendly interstate relations are promoted when Kansans provide the information necessary to inform efforts to protect Kansas water interests.

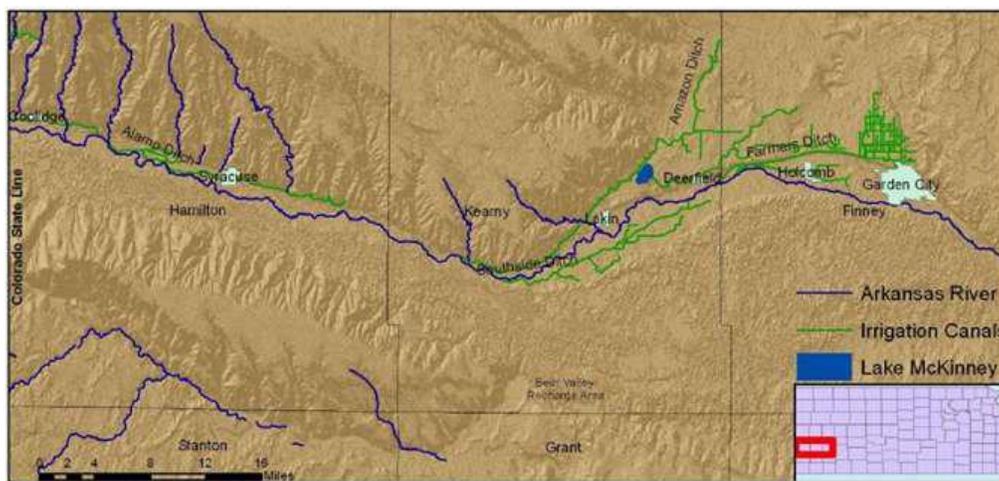
Priority One for local leadership in the Arkansas River Litigation Funds Advisory Committee and GMD3 Board, knowing the importance of managing renewable interstate water supplies, is to preserve resources needed to meet timely needs of investigation and protection activities.



Purposes of the Western Water Conservation Projects Fund

The *KS v. CO* damage award was split 1/3 to the State Water Plan Fund (SWPF) and 2/3 to the Water Conservation Projects Fund (WCPF) for use in the area affected by the compact violations. The statewide Water Plan portion was used primarily as state cash funding to create the Kansas Conservation Reserve Enhancement Program (CREP). However, several state legislative funding cycles have removed most of those damage funds from the Kansas CREP. Work to continue the commitment to CREP funding is ongoing.

KSA 82a-1801-1803 stipulates the portion of these funds placed in the WCPF Reserve Account be used for projects that contribute to water conservation efficiency in the area directly affected by the Colorado and Kansas Arkansas River Compact. The area is illustrated in blue on the front of this report.



Map of the ditch system in the damaged area.

Ultimately, to assure the damage funds from Colorado would be available for the intended purposes, **the 2008 legislature authorized a grant** to be made from the Kansas Water Office (KWO) to a GMD3 special fund through a grant agreement.

History: WWCPF Background Prior to the KWO Grant Agreement

1996. Legislation was passed (K.S.A. 82a-1801 et seq.) creating WCPF as part of an overall allocation system for financial damages accrued to Kansas from the Arkansas River litigation (*KS v. CO*)
- KWO charged with administering fund with input from Chief Engineer.
2005. \$34.7 million received from Colorado and distributed as prescribed by 1996 Legislation.
- \$20.2 million to Litigation Fund secured in a “lock box” in the Attorney General’s budget.
 - \$9.7 million to WCPF (2/3).
 - \$4.8 million to SWPF (1/3).

2006. \$1.1 million received from Colorado

- Not distributed per 1996 legislation.
- Placed into a suspense account.
 - Suspense account transferred to SWPF to fund the Kansas Department of Agriculture, Division of Water Resources' (KDA/DWR) Interstate Water Issues in 2006 and 2007.
 - Funding appropriated from WCPF to reimburse Ditch Companies for state expenses incurred during litigation. Project funds were expended for project reconnaissance, feasibility studies, and project oversight on the following:
 - Southside Ditch Alternative Delivery System
 - Southside Ditch Lining
 - Lake McKinney Renovation
 - Enhanced Aquifer Recharge Projects

2008. Appropriations language directs KWO to transfer remaining balance of \$9.964 million to GMD3 as a Western Water Conservation Projects Fund (WWCPF)

- Included \$9.225 million from WCPF and \$739K from SWPF (suspense account)
- Other provisions included:
 - Must be used for same purposes as WCPF.
 - Creation of an advisory committee consisting of ditch companies.
 - GMD3 must submit expenditure and status reports to KWO.
 - Annual report to legislature: Ways and Means and Appropriations.
 - August 6, 2008 – KWO and GMD3 enter into agreement to transfer funds and establish appropriate oversight procedures per 2008 Appropriations Act proviso. WCPF becomes WWCPF.

WWCPF Under GMD3 Management

When the 2008 Kansas Legislature provided for GMD3 to administer WWCPF through a grant agreement with the KWO, it provided an efficient way to accomplish the purposes of the WCPF and allowed the interest to also accrue to those purposes. The WCPF became the WWCPF by legislative budget proviso and KWO Grant Agreement.

General WWCPF project goals are to:

1. Maximize general public good (public interest).
2. Maximize efficiency of call water for ditch irrigation (low transit losses).
3. Maximize benefits of high river flows to improve recharge.
4. Mitigate water quality problems in surface and groundwater.
5. Reduce consumptive use of water to help stabilize the system.
6. Improve the stability of the hydrologic system for irrigators.
7. Address compact compliance.

Projects funded in whole or in part by the WWCPF must be in the area impacted by the Arkansas River Compact and meet eligibility requirements and goals in K.S.A. 821-1803 and Senate Bill 534. Under the provisions of SB 534 and the KWO Grant Agreement, the Arkansas River Litigation Fund Committee established in 2005 became the advisory committee to the GMD3



board, who in turn manages the funds, approves projects and expenditures, and makes requests to the KWO Director for approval as consistent with grant purposes, in consultation with the Chief Engineer, KDA/DWR.

Southwest Kansas Groundwater Management District No. 3 Board of Directors

The board of directors for GMD3 is comprised of 15 directors, one from each of the twelve counties having all or part of the county in the district, one surface water director, one industrial water use director, and one municipal use director. The directors serve three-year terms and are elected by the members of the district at an annual meeting held each March. Candidates are



nominated during a nomination period that ends prior to the annual meeting. The directors are volunteer members who commit considerable time to monthly board meetings. The board of directors is supported by an executive director, staff, and consultants as needed. The management of the WWCPF and its purposes is well-suited to the groundwater management district activities as described in the Kansas GMD Act (K.S.A. 82a-1020 et. seq.). The working relationship of GMD3 with both water users and state and federal agencies benefits the purposes of the WWCPF.

Arkansas River Litigation Funds Advisory Committee (ARLFAC or Advisory Committee)

A stakeholder group was formed in 2005 comprised of representatives from the six irrigation ditch companies in the damaged area and GMD3 to provide recommendations and guidance to the state agencies on projects to be funded from WWCPF. KWO and KDA/DWR staff has provided advice and guidance to this committee. ARLFAC members have given significant attention to the river management issues and compact issues for many years. A preliminary list of projects believed to fit the requirements of K.S.A. 82a-1803 was developed by this stakeholder work group in 2006 based on a GMD3 conducted study in 2005 known as “Upper Arkansas River Conservation Project Reconnaissance Study.” These priorities resulted in three feasibility studies initiated in 2006 by the Kansas Water Office using the funds. A basis for moving the funds to local care was formed with review assistance by the advisory committee and GMD3 in 2007 and the Kansas Legislature agreed and passed a budget proviso in 2008 moving the remaining funds to GMD3 fiduciary care.

The Advisory Committee is chaired by Randy Hayzlett, representing the South Side Ditch Association. He also serves on the Arkansas River Compact Administration (ARCA) and the Kansas Water Authority (KWA) representing the President of the Kansas Senate, Susan Wagle.



Advisory Committee Members

| Name *Voting | Representing | Address | Telephone/Email |
|---|--|---|--|
| *Randy Hayzlett Chairman | South Side Ditch Association (also active as Kansas Representative on ARCA, GMD3 Board, and KS Water Authority. | 1112 Road T Lakin, KS 67860 | (620) 355-7499 Home (620) 271-4008 Cell (620) 355-7064 Fax hayzlett@pld.com |
| *Troy Dumler Vice-Chairman | Great Eastern Ditch Association (also newly appointed Kansas Rep. to ARCA | P.O. Box 597 Garden City, KS 67846 | (620) 276-3246 Office (620) 640-2339 Cell (620) 276-2795 Fax troy.dumler@sbcglobal.net |
| *Mike Standley | Finney CO Water Users Association (Farmers Ditch) | 14550 N VFW RD Garden City, KS 67846 | (620) 260-6354 Cell swkscornfarmer@gmail.com |
| *Shane Knoll | Garden City Ditch Company | 2245 N Little Lowe Garden City, KS 67846 | (620) 260-5707 Cell shane_knoll@hotmail.com |
| *Hal Scheuerman | Kearny County Farmers Irrigation Association (Amazon Ditch) (also active as past Kansas Representative on ARCA and GMD3 Board) | P.O. Box 222 Deerfield, KS 67838 | (620) 260-6540 Cell (620) 426-6073 Home schrman@pld.com |
| *the late Steven A. Hines, now Stanly Hines | Frontier Ditch Company Representative | P.O. Box 147 Coolidge, KS 67836 | (620) 372-8251 Shop (620) 372-2636 Fax |
| Patty Stapleton Recording Secretary | GMD3 Staff | 2009 E Spruce St Garden City, KS 67846 | (620) 275-7147 Office pstapleton@gmd3.org |
| Mark Rude Treasurer | GMD3 Executive Director | 2009 E Spruce St Garden City, KS 67846 | (620) 275-7147 Office mrude@gmd3.org |
| Diane Knowles | Water Resource Planner, KWO | 901 S Kansas Ave Topeka, KS 66612 | (785) 296-3185 Office (785) 296-0878 Fax diane.knowles@kwo.ks.gov |
| Michael Meyer | Water Commissioner, KDA/DWR | 2508 John Street Garden City, KS 67846 | (620) 276-2901 Office (620) 276-9315 Fax mike.meyer@ks.gov |
| Kevin Salter | Interstate Water Engineer, KDA/DWR | 2508 John Street Garden City, KS 67846 | (620) 276-2901 Office (620) 276-9315 Fax kevin.salter@ks.gov |

Dates of Advisory Committee meetings in 2018

Committee meetings were conducted at the GMD3 office in Garden City, with those attending either in person or by phone on March 20th, July 31st and December 11, 2018. ARLFAC minutes and GMD3 monthly board meeting minutes can be accessed online at <http://www.gmd3.org>.

Kansas Upper Ark CREP and GMD3 WWCPF Activity

The 2007 Kansas Legislature authorized the Kansas Conservation Reserve Enhancement Program (CREP) using part of the money Kansas received from Colorado as repayment of quantified damages to southwest Kansas. The portion of those funds dedicated to SWPF were



leveraged with local, state, and federal resources under CREP to provide voluntary cash incentives to transition irrigated land to dry land grass and to permanently retire groundwater water rights in the Upper Arkansas River basin. Most of the cash damage reimbursement from Colorado originally committed to the CREP has been swept to other Kansas legislative funding priorities. The program benefits are locally viewed as a cost-effective mechanism to mitigate some of the damaging effects of compact violations by Colorado. Those damages included incremental loss of aquifer water levels and the costs that will be incurred to pump water from greater depths. Local retirement of groundwater rights help offset those effects while encouraging land transition in highly erodible soils.

A significant portion of the activities of GMD3, its volunteer board, and the activities of the volunteer Advisory Committee members and WWCPF expenditures are counted as cash and in-kind contributions in the Kansas CREP. The amount of in-kind costs which the GMD3 expended in the CREP area includes the following:

GMD3 general fund expenditure attributed to the CREP Area: \$119,703.44

Below is a summary table of the CREP related direct expenditures made from the Western Water Conservation Projects Fund and in-kind technical assistance and management development facilitated by the GMD3.

**Western Water Conservation Project Fund Cash Contribution to CREP goals:
October 2017 through September 2018.**

| Proposed Project | Cash for Surface Water Efficiency | Cash for Aquifer Recharge | In-kind Cost |
|---|-----------------------------------|---------------------------|--------------|
| WWCPF Farmers Ditch Headgate | \$28,172.00 | | \$500 |
| WWCPF Alternative Delivery System/ South Side Ditch System | \$233,196.45 | | \$600 |
| | | | |
| WWCPF George Austin Muskingum River Routing Method | \$17,517.08 | | \$200 |
| WWCPF Willis Technology Farms | \$10,000 | | \$200 |
| WWCPF Reimbursement to GMD3 for fiduciary and fund operations | | | \$18,269.45 |
| Totals from WWCPF for report period | \$288,885.53 | \$0.00 | \$20,169.45 |

Annual cash and in-kind contributions to CREP from the WWCPF were committed prior to GMD3 receiving the WWCPF and was made a part for the grant agreement with KWO. GMD3 continues to support CREP as the program for soil and water stability in the area affected by the





source of state funds. The Kansas Department of Agriculture, Division of Conservation provides a full CREP report on the Kansas Department of Agriculture website at:

<http://agriculture.ks.gov/divisions-programs/division-of-conservation/water-conservation-programs>

Photo: Constructing end of ditch return flow control structure and measuring station on South Side Ditch.

A Local Project Approval and Review Process that Works

After careful review by the ARLFAC for benefits and the beneficial improvements of the area directly affected by the damages quantified in the *KS v. CO* case, recommendations are then provided to the board of GMD3 for project funding approval. A request for project approval is then submitted to the KWO Director for review of consistency with the purposes of the WWCPF. The KWO Director regularly consults with the Chief Engineer in conducting his review.

The expertise in the advisory committee is uniquely suited to carry out the purposes of the WWCPF. The Advisory Committee is comprised of knowledgeable representatives who understand the work that is needed and who have a vested interest in the priority projects underway. Their regular review of proposed project details and expenditures provides a powerful assurance that the projects undertaken will be at the least cost for the best results.

GMD3 Payment Voucher Submittal Processing

Payment from the WWCPF occurs through the submittal of a signed voucher with attached invoices by an approved project operator. The request for payment is reviewed by GMD3 staff for consistency with a project budget amount that has had both ARLFAC and GMD3 board action. The voucher requires signature from an authorized ARLFAC representative and an approved GMD3 board representative. A check is generated by the GMD3 staff to the vendor identified on the voucher and signed by two GMD3 representatives authorized to remit GMD3 funds. All vouchers and finances are reviewed by the advisory committee and GMD3 board.

GMD3 Western Water Conservation Project Fund Activities

- 1) **Upper Ark CREP** - state match funding by GMD3 and WWCP Fund activity (Ongoing).
- 2) **South Side Ditch Phase 1** (Initial project construction completed, 2011)
 - a) Southern Alternative Delivery System consideration and main ditch restoration.
 - b) Lining of South Side Ditch and construction of efficiency improvement in key areas.



- 3) **Lake McKinney** (Construction completed, 2011)
 - a) Restoring Lake McKinney capacity and storage efficiency, update outflow control structures.
 - b) Alternate bypass canal around Lake McKinney
- 4) **Arkansas River Recharge** (ongoing)
 - a) Enhanced Aquifer Recharge options from Arkansas River, reconnaissance study completed.
 - b) Specific site and operational evaluations conducted as part of a System Optimization Review Project grant with federal Bureau of Reclamation.
 - c) Seeking additional sources of fresh water flow for importation and grants.
- 5) **Preferred Interstate Supply Assessment**
 - a) Phase one, Institutional Structure and Agreements compilation completed.
 - b) LiDAR surveys for floodwater management partnering with Kearny and Grant Counties and the Water Office.
 - c) The remaining authorized assessment expenditures were suspended.
- 6) **Amazon Headgate Improvement Project** (Construction completed, 2012)
 - a) Replacement of headgate to improve diversion efficiency.
 - b) Some automation of headgate structure to improve efficiency.
- 7) **Amazon Canal Sand Creek Flume Evaluation** (Completed 2015)
- 8) **Frontier Ditch West Bridge Creek Flume Evaluation** (Completed, 2011)
- 9) **Frontier Ditch West Bridge Creek Flume Project** (Completed, 2012)
 - a) Flume replaced to improve delivery capacity and water distribution efficiency.
- 10) **Upper Arkansas basin gage and data collection funding.**
 - a) Restored O&M funding lost from state agency budgets for existing needed gages, identified and received dedicated funding source from Legislature (completed 2012).
 - b) Equip South Side return gage (Completed, 2012)
 - c) Identify and equip other needed groundwater gage sites:
 - i) In 2013, a need for Stateline groundwater gages resulting from new development in Colorado near the Stateline (Established 2014 with sustained O & M funding from Legislature that year).
- 11) **A System Optimization Review of the Associated Ditches in Kearny and Finney Counties, Kansas with assistance from federal Bureau of Reclamation** (Completed, 2014).
 - a) Losses estimated at structures and segments of ditch identified by water users as problem areas.
 - b) Potential projects to address losses and improve efficiency were proposed by Spronk Water Engineers and GEI.
 - c) A cost-benefit analysis was conducted to rank the proposed projects.



12) Review of An Appraisal of alternatives for Improving Drinking Water supply due to bad quality in the Arkansas River Basin in Hamilton, Kearny and Finney Counties, Kansas conducted by GMD3. (Completed, 2014)

- a) Bureau of Reclamation Rural Water project grant assistance and cost share work throughout 2013 with assistance from the KWO, Wichita State University, Kansas Department of Health and Environment, and GMD3.
- b) Collect water quality samples in collaboration with the Kansas Geological Survey and report.
- c) Sample root structure of various crops to investigate uranium contamination concerns, partnering with KSU and KGS.

13) Frontier Ditch Return Gage (Completed, 2015)

- a) Gage was replaced to accurately measure return flow to the Arkansas River from the Frontier Ditch.

14) Amazon Canal Sand Creek Flume (Completed, 2016)

- a) Replace the Amazon Ditch Flume over Sand Creek.



15) South Side Ditch Headgate (DWR required 1996, reimbursed 2016)

- a) Replaced the South Side Ditch headgate with a more efficient structure.

16) South Side Ditch Alternate Delivery System Phase 2 (Ongoing)

- a) Evaluate and replace check structures along the ditch as needed.
- b) Construct pits for center pivot irrigation.

17) Study for Kansas Interstate Team(KDA), Lower Arkansas Water Management Association's (LAWMA) Arkansas River Basin Replacement Plan (2016-2017).

18) Willis Water Technology Farm (Completed, 2017)



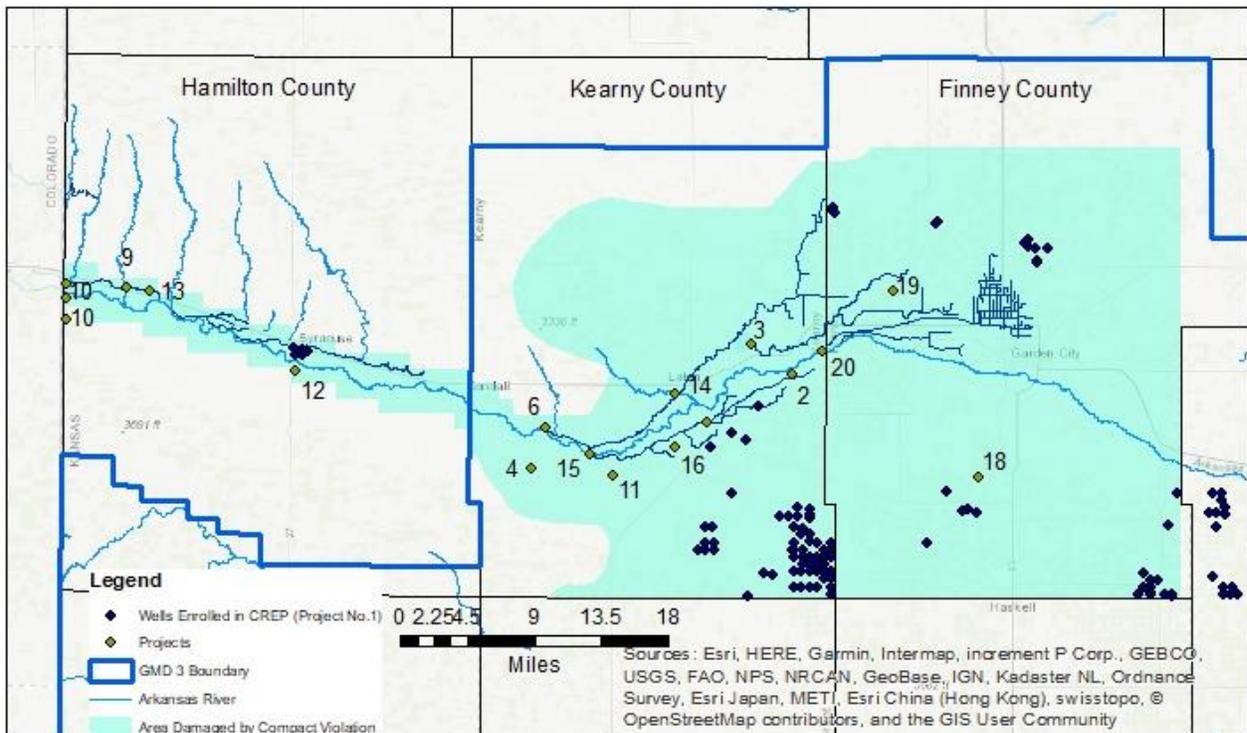
19) Roth/Garden City Company Tech Farm water quality (Ongoing)



Field Day at the Roth water technology farm includes bubbler nozzle efficiency. One of two water technology farms in Finney County with support from WWCP Fund.

20) Replacement of the Farmers Ditch Headgate (Ongoing)

- a) Replace the Farmers Ditch Headgate with a more efficient structure.
- b) Bid process has struggled to stay near budget.
- c) River administrative boundaries for Kansas owned river land is problematic.



Map of Fund related projects. Numbers correspond to the above list.

Active Project Notes

South Side Ditch Alternate Delivery System Phase 2

The South Side Irrigation Association has identified a need to improve efficiencies in water use throughout their ditch system. Phase 2 expands upon the canal improvements made during phase 1 by replacing needed check gates and offtake structures. Work began in 2016 and concrete work on most structures has been ongoing. The improvements allow for more efficient delivery of surface water and provide the ability to eventually install pits so surface water can be run through center pivot irrigation systems. The total budget for Phase 2 is \$1,400,000. A total of \$464,841.61 was spent on the project in 2017 and \$316,046.45 in 2018. Photo is construction of a check gate structure on the South Side Ditch. Numerous similar structures have been built or are planned.



Lower Arkansas Water Management Association Decree Analysis

In 2015, The KDA/DWR was short on interstate water management funds and was granted \$75,000 of WWCPF funds used for technical analysis and consulting work related to the effects that the LAWMA decree operations have had and will have on Kansas water supplies. In 2017, this budget was extended to \$95,000. Analysis supports good interstate working relations and issue resolution. State agency budgets were insufficient to support the needed work. This is an example of the need for a Kansas Interstate Water Management Fund outside regular state agency budgets.

Application of Muskingum River Routing Method to Management of Arkansas River Flows

At the request of the Frontier Ditch Company, \$50,000 was approved to evaluate flows from the Stateline to the Garden City gauge and develop Muskingum River routing methods under average and dry river conditions to better estimate the transit losses in the river and allow for more efficient use of available stored surface water in Colorado. The Muskingum River routing method is one of several factors used to credit the Stateline delivery of Kansas Account releases from John Martin Reservoir. \$37,482.92 was spent in 2017. Some project overruns occurred between the engineering and legal expenses, and \$17,517.08 was paid in 2018, for a total project expense to the Fund of \$55,000.

Replacement of Farmers Ditch Headgate (ongoing)

The Farmers Ditch headgate structure is the last surface water diversion structure regularly supplied by deliveries from John Martin Reservoir releases in Colorado of compact conservation storage and includes any deliveries to the Garden City Ditch right at that river control structure. These deliveries occur according to a federal court decree initiated in 1910 and the interstate compact with Colorado. The Finney County Water Users Association has begun engineering work to replace the Farmers Ditch headgate with an updated and efficient structure and control technology. The total project authorized budget for engineering work associated with the headgate replacement is \$68,500, with \$40,328.00 spent in 2017 and \$28,172.00 in 2018. Significant expense and a grant from the federal Bureau of Reclamation is anticipated in 2019.



Drone photo of the Farmers Ditch Diversion from the Ark River near Deerfield, KS. Engineering for new control structure is struggling with state river land boundaries and acceptable costs.



Administrative boundaries are needed so river flow can be routed in south channel in the vicinity of the Farmers Headgate structures across considered state land rather than considered private land accretions gained by adjacent landowners.

Arkansas River Bank Breach in Finney County, O&M problem for state river bed and banks

In 2000, high river flows created a breach in the bank of the river, diverting stream flows into an adjacent sand pit. The breach is approximately 200 ft long and the pit now collects 100% of river flow until it is full. This puts an electric utility line at risk as a transmission tower is located on the eastern end of the breach. In most years, the pit never fills river flows cease at the breach. Restoring the river flows downstream of the breach would extend the flow of the river and provide an important source of recharge to many groundwater users with depleting well capacity near the river channel. GMD3 is currently seeking federal and other funding to address this problem. For drone footage, see: https://www.youtube.com/watch?v=1fme_ZTApkQ



Aerial photography showing the river breach and transmission tower.

River navigability for title and the GMD3 management program. The obvious effect of water development and reservoirs in the basin upstream affects interpretation of “normal high-water mark,” which forms the basis for property boundaries between state owned land and private land along “navigable streams.” New normal for flow in a highly regulated basin raises a resource management reality that one cannot manage what one cannot define. Ownership boundary law is ambiguous and working boundaries for state property lines are undefined. GMD3 and the local need has a riparian interest for administrative river boundaries. GMD3 may propose river administration easement boundaries or other solution to the property boundary questions that are consistent with prior administrative boundary determinations, working with the Secretary of State, Kansas Water Office, the Chief Engineer and others in the public interest.

Additional Next Projects of Fund and GMD3 Activity in/for area

1. **Compact help on flume replacement.** See that the deteriorating Frontier Ditch Stateline compact measurement flume relied on for compact compliance purposes is replaced by the Ark River Compact Administration.

2. **Water Transfers and transportation.** Water transfer project to investigate acquiring and importing accessible water from willing Oklahoma landowner sellers to the Kansas Arkansas River system. Such a source could replace the missing 400,000 acre-feet of forced groundwater use by Colorado compact violations at a bargain price of free, plus pumping costs and interest.

3. **The Upper Ark water quality and usability crisis (ongoing).** The water usability crisis has long been a discussion of the advisory committee and GMD3 for the Kansas portion of the basin. GMD3 interstate discussions with Colorado has identified where Kansas may benefit from action by the 2019 Kansas legislature to match the 2019 Colorado legislature in asking the federal government for funding and assistance for the Ark Valley Conduit and mitigation strategies for the rest of the basin radionuclide problem into Kansas. Federal funding to address the basin problem in Colorado should not leave out consideration of the Kansas portion of the public health crisis. See: http://leg.colorado.gov/sites/default/files/documents/2019A/bills/2019a_sjm001_eng.pdf

The basin water usability crisis of contaminated water is illustrated in estimates from the Kansas Geological Survey of the weight of uranium coming into Kansas annually from Colorado via the Arkansas River are indicated in the results (tables from D. Whittemore, KGS Open-File Report 2017-2, and updated January 2018) of ongoing studies supported by GMD3 and other partners.

Colorado Uranium delivery estimate results for the Arkansas River near Coolidge. (tables from D. Whittemore, KGS Open-File Report 2017-2, updated January 2019)

The data and results for approaches A and B in the report are listed in Tables 1 and 2
 Table 1. (a) Data and estimates for approach A, based on average annual flow, average annual specific conductance, and estimated average annual uranium concentration for each year. (b) Same as for part (a) except based on median annual flow and specific conductance.

(a)

| Year | Average annual Sp.C., $\mu\text{S}/\text{cm}$ | Average annual uranium concentration, $\mu\text{g}/\text{L}$ | Average annual flow, ft^3/sec | Average daily uranium load, kg/day | Annual uranium load, metric ton/yr | Annual uranium load, ton/yr | Annual uranium load, lbs/yr |
|------|---|--|---|--|------------------------------------|-----------------------------|-----------------------------|
| 2012 | 4,271 | 73.0 | 28.7 | 5.13 | 1.88 | 2.07 | 4,140 |
| 2013 | 4,395 | 75.9 | 26.9 | 5.00 | 1.82 | 2.01 | 4,020 |
| 2014 | 3,813 | 62.7 | 92.1 | 14.1 | 5.14 | 5.68 | 11,400 |
| 2015 | 3,230 | 50.1 | 196.1 | 24.1 | 8.78 | 9.68 | 19,400 |
| 2016 | 3,285 | 51.3 | 201.5 | 25.3 | 9.25 | 10.20 | 20,400 |
| 2017 | 3,324 | 52.1 | 234.6 | 29.9 | 10.92 | 12.03 | 24,100 |
| 2018 | 3,409 | 53.9 | 206.6 | 27.2 | 9.95 | 10.96 | 21,900 |



(b)

| Year | Median annual Sp.C., $\mu\text{S}/\text{cm}$ | Median annual uranium concentration, $\mu\text{g}/\text{L}$ | Median annual flow, ft^3/sec | Median daily uranium load, kg/day | Annual uranium load, metric ton/yr | Annual uranium load, ton/yr | Annual uranium load, lbs/yr |
|------|--|---|--|---|------------------------------------|-----------------------------|-----------------------------|
| 2012 | 4,245 | 72.4 | 8.9 | 1.58 | 0.58 | 0.64 | 1,270 |
| 2013 | 4,530 | 79.1 | 18 | 3.48 | 1.27 | 1.40 | 2,800 |
| 2014 | 4,020 | 67.3 | 59 | 9.72 | 3.55 | 3.91 | 7,820 |
| 2015 | 3,480 | 55.4 | 131 | 17.8 | 6.48 | 7.15 | 14,300 |
| 2016 | 3,410 | 53.9 | 125 | 16.5 | 6.04 | 6.65 | 13,300 |
| 2017 | 3,620 | 58.4 | 168 | 24.0 | 8.79 | 9.69 | 19,400 |
| 2018 | 3,600 | 58.1 | 149 | 21.1 | 7.74 | 8.53 | 17,100 |

Table 2. Data and results for approach B, based on daily specific conductance, estimated daily uranium concentration, daily flow, and the sum of daily loads for each year.

| Year | Annual uranium load, metric ton/yr | Annual uranium load, ton/yr | Annual uranium load, lbs/yr |
|------|------------------------------------|-----------------------------|-----------------------------|
| 2012 | 1.80 | 1.98 | 3,960 |
| 2013 | 1.61 | 1.78 | 3,560 |
| 2014 | 3.77 | 4.15 | 8,300 |
| 2015 | 6.01 | 6.63 | 13,300 |
| 2016 | 7.47 | 8.23 | 16,500 |
| 2017 | 9.10 | 10.03 | 20,100 |
| 2018 | 8.42 | 9.28 | 18,600 |

4. Water quality and usability investigations, including work at the Roth Water Technology Farm in Finney County. Both river and aquifer sources are adversely affected by very low water quality from Colorado. A 2017 KSU trial showed that dryland corn out performed irrigated, due to poor quality river water. In 2019, a permanent subsurface drip irrigation plot will be established to benchmark the impact of poor quality river water and groundwater and determine potential mitigation practices.



5. Kansas Water Vision steps for critical work to secure the usability of existing renewable supplies and to add additional renewable supplies, including advocating to move Water Transfer Projects forward that hold future opportunities for areas across Kansas.

Kansas Water Vision. Water Vision implementation includes action steps that are consistent with a preferred interstate supply for the area and for Kansas. The Colorado Water Plan recently targeted agricultural alternative transfer mechanisms (ATM's) to pilot projects using voluntary alternative transfer methods that preserve irrigated agriculture-based communities in Colorado while providing additional supply to meet the growing front range municipal demands. This activity may prove to be a challenge without diminishing supply to Kansas and GMD3. Action steps have been identified by GMD3 from the Kansas Water Vision for renewable supplies and new interstate water sources for the Ark River water reliability and usability problems and for Kansas. See GMD3 letter of January 22, 2018 to the Water Office and Water Authority awaiting reply at: <http://www.gmd3.org/wp-content/uploads/2018/01/Letter-to-Water-Study-Coordination-Committee-and-Water-Authority.docx>

Financial Statements

The 2018 financial statements of GMD3, as audited and opined in January 2019 by Lewis, Hooper, and Dick, LLC, Certified Public Accountants, Garden City, Kansas, are available upon request and posted at:

<http://www.gmd3.org/wp-content/uploads/2019/02/SWKGMD-3-2018-Powerpoint-Presentation.pdf>
<http://www.gmd3.org/wp-content/uploads/2019/02/SWKGMD-3-2018-Management-Letter.pdf>
<http://www.gmd3.org/wp-content/uploads/2019/02/SWKGMD-3-2018-Financial-Statement.pdf>

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A Special thank you for the ongoing advisory assistance of the local Fund advisory committee to the GMD3 board and unwavering support of the Kansas Water Office, the Kansas Department of Agriculture's division of water resources and division of conservation, Kansas State University and the Kansas Geological Survey.

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