

Division 2 Annual Report 2021

Arkansas River Basin

Department of Natural Resources
Division of Water Resources



April 2022



COLORADO
Division of Water Resources
Department of Natural Resources



Kevin Rein
State Engineer/Director of Colorado Division of Water Resources
1313 Sherman St. - Rm. 818
Denver, CO

This document is provided as an executive summary report of activities and accomplishments of Division 2 personnel during 2021 in partial fulfillment of the requirements of CRS 37-80-105.

Special thanks and recognition is due to the many Division 2 employees who helped compile the key information in this report and to all of the Division 2 employees who continued to perform their work in a manner that assisted in the effective and efficient use of water during 2021.

This past year has been one of the most difficult years Division 2 has had to go through with the loss of a beloved member of our staff, John Van Oort on November 30, 2021. The unexpected loss of John has been extremely difficult to overcome and our folks as well as our water users are on the long road to recovery from that loss. John began his career with the Division of Water Resources as the Water Commissioner for Water Districts 14/15. John's talents ultimately elevated him to the position of River Operations Coordinator. His many talents were always used to serve others and for the benefit of his co-workers and especially for the water users of the Arkansas Basin. John was a loving husband, father and grandfather. He was involved in his community and coached football and track at Rye High School. In one of the many kind emails I received from DWR folks and others the following was noted:

"With the passing of Justice Hobbs on the same day the Lord apparently has some water problems he needs taken care of. Two great men of equal stature taken from us too soon."

We would not have survived the difficult year without the hard work and dedication of our staff and without the care and kindness exchanged between us and offered from those outside of Division 2.

Although the drought subsided somewhat in Division 2 during 2021, the water supply was still very limited and as it turned out was reduced from the supply in 2020.

A stateline shortfall was experienced for the first time in 2021 for operation of well augmentation plans in the Arkansas Basin. The shortfall was small at 62 acre-feet, however the fact that it occurred was a significant warning for future operation of well augmentation plans in the basin.

Water Court activity was highlighted by the Division Engineer's Office participation in a three week trial in the Lower Arkansas Water Management Association's (LAWMA) 2017CW3069 court case. This case centered on whether or not LAWMA could reasonably add another twenty wells to their plan for augmentation and whether the additional terms and conditions could be imposed in the original augmentation plan as opposed to just with respect to the particular case involving the addition of the wells.

Perhaps the most significant work effort that took place in 2021 was the launching of the Pond Management Program in January of 2021. This program had been planned and prepared for two years prior to the initiation of contact with approximately 248 pond owners with 545 ponds.

I offer this report in partial fulfillment of my statutory obligations as Division Engineer.

Bill W. Tyner

Bill W. Tyner, P.E.
Division Engineer

April 6, 2022

Date

CONTENTS

1	2021 Water Supply and Administration Operations	4
1.1	Water supply indicators	5
1.1.1	U.S. Drought Monitor	5
1.1.2	Snow Pack	7
1.1.3	Precipitation and Streamflow	8
1.2	Administration Activities	12
1.2.1	Pueblo Winter Water Storage Program	12
1.2.2	Transmountain Diversions	12
1.2.3	Surface Water Administration	12
1.2.4	Ground Water Administration	14
1.2.5	Water Court Activity	15
1.2.6	2020 Abandonment Update	16
1.2.7	Administration of Decreed Plans for Augmentation	16
2	Compact Issues	16
2.1	Compact Operations	16
2.2	Compact Compliance	17
2.2.1	Post Compact Wells	17
2.2.2	Surface Water Irrigation Improvements	17
2.2.3	Special Engineering Committee	18
3	Highlights of 2021	18
3.1	Pond Management Program	18
4	Organizational Changes	24

1 2021 Water Supply and Administration Operations

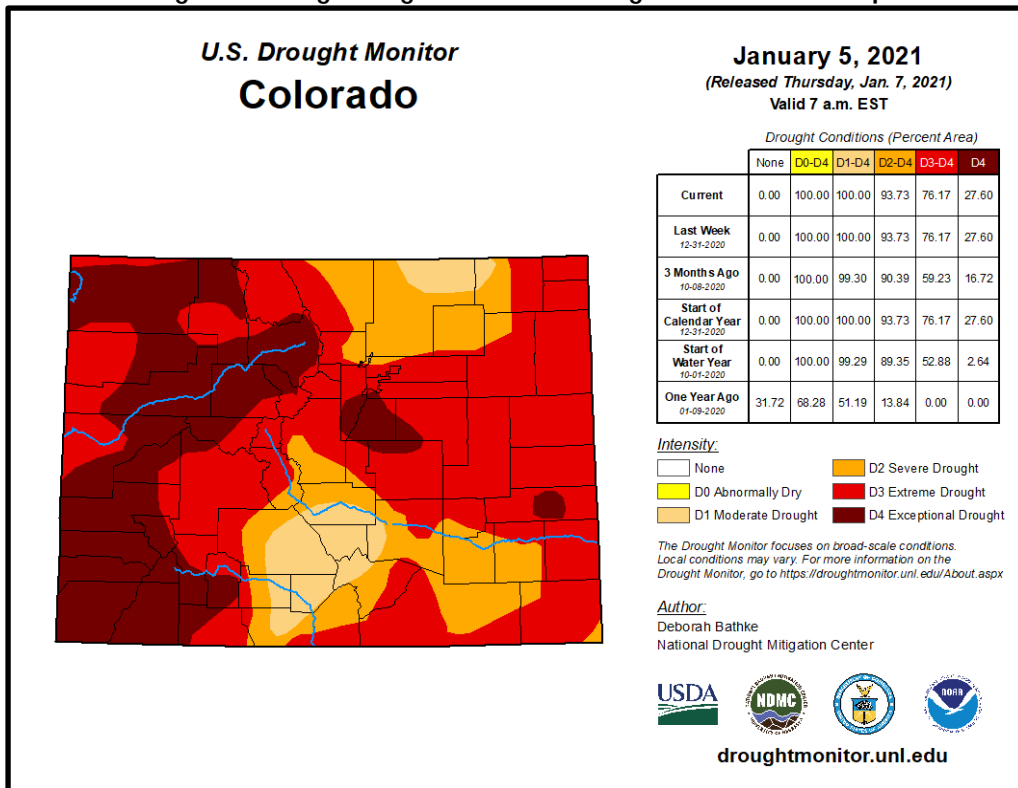
Water supply conditions in 2021 were below average within the Arkansas River basin and was considered a “Very Dry” year in the year-type calculations used in the basin for the 1950 period forward. In order to compare years for water supply conditions in the larger mainstem irrigation areas along the mainstem from Pueblo to the stateline, a comparative tool has been used that totals the flow through Pueblo Reservoir, the flow to the Arkansas River from Fountain Creek and the flow to the Arkansas River from the Purgatoire River and compares that total to each year from 1950 through 2021. Using this criteria, 2021 ranked as the ninth worst year in that 70 year period.

1.1 Water supply indicators

1.1.1 U.S. Drought Monitor

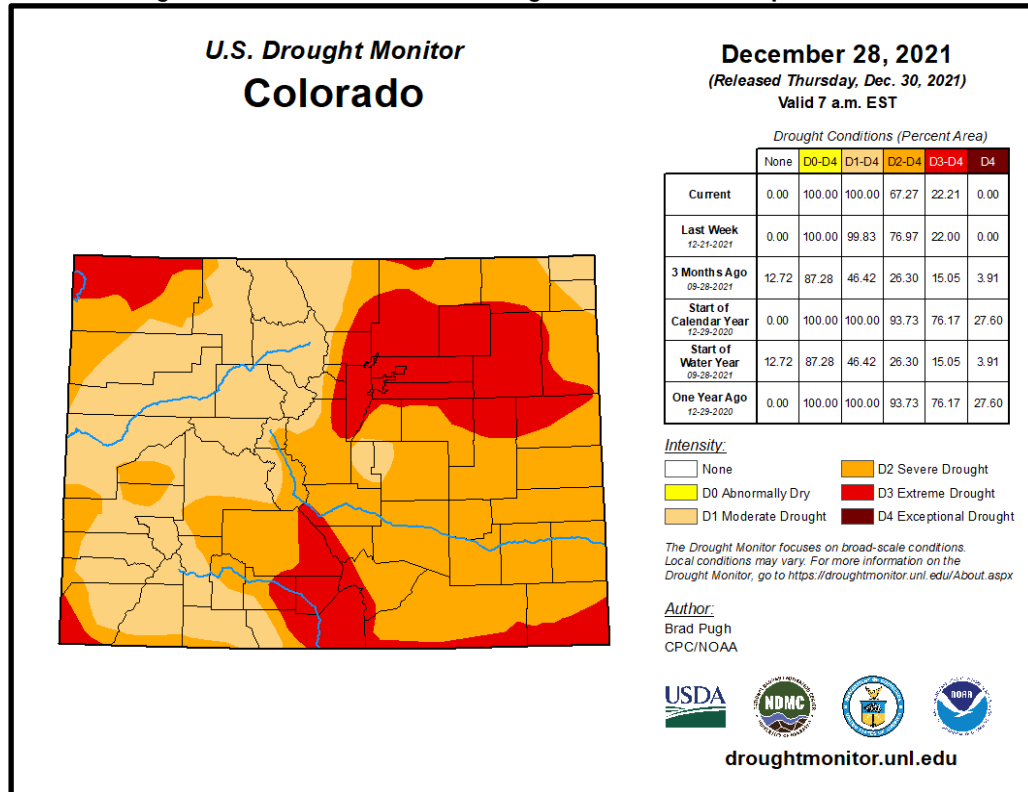
Drought conditions in the Arkansas Basin at the beginning of 2021 were not good even though the Arkansas Basin was not as bad as other parts of Colorado as reflected in the January 5, 2021 Drought Monitor map below:

Figure 1: Beginning of Season Drought Conditions Map



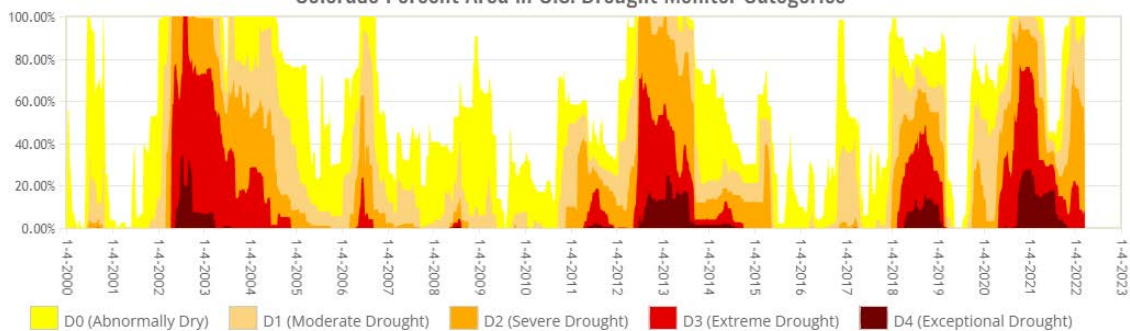
At the end of 2021 the drought conditions had improved as shown below, however large portions of the basin were in Severe Drought or Extreme Drought:

Figure 2: End of Season Drought Conditions Map



The figure below shows how drought conditions have cycled during the past twenty years and gives a reference for how severe the drought has been in the past few years.

Figure 3: Time Series Drought Conditions
Colorado Percent Area in U.S. Drought Monitor Categories



1.1.2 Snow Pack

The snowpack in the Arkansas Basin was a little below average on March 1, 2021, but improved by April 1, 2021. Below normal soil moisture conditions inhibited the better snowpack resulting in better streamflows.

Figure 4: Monthly Snowpack Summary Map March 1, 2021

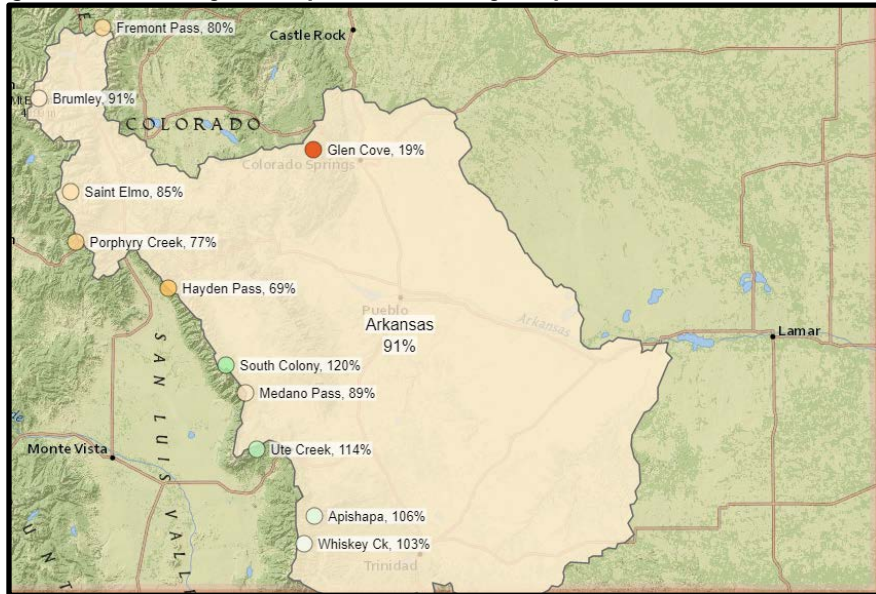
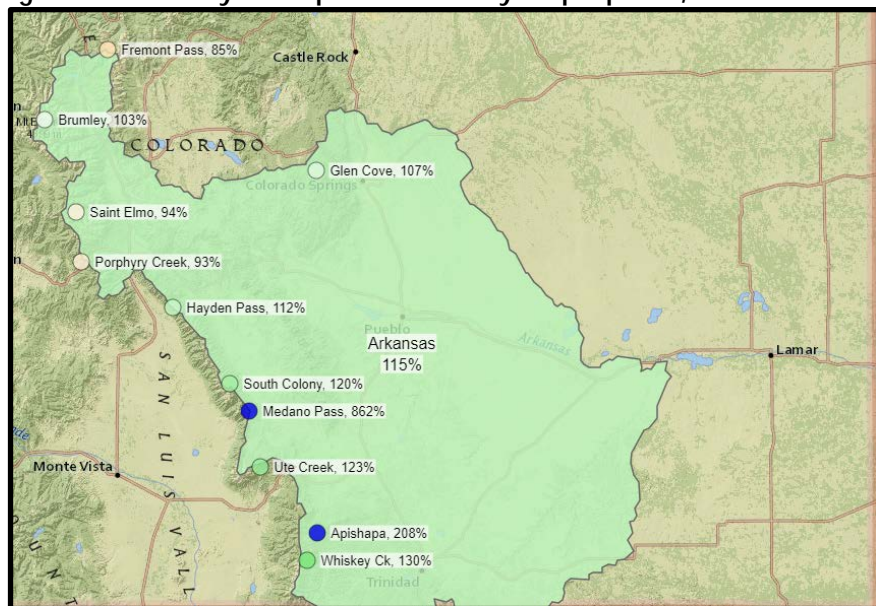


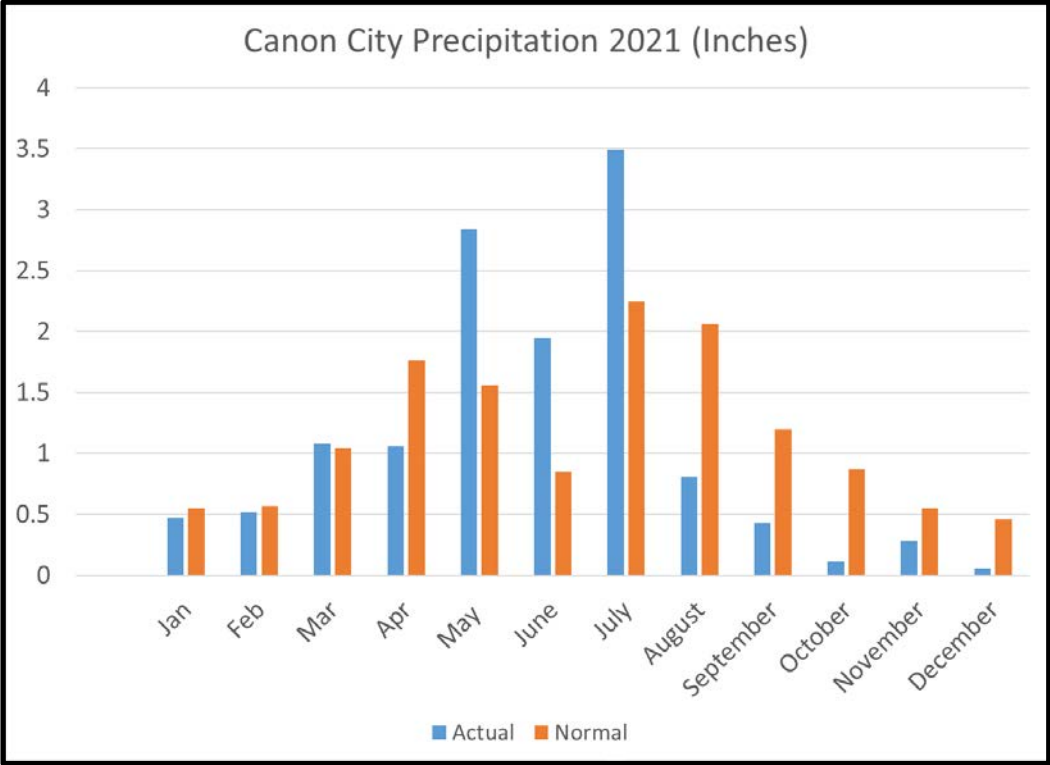
Figure 5: Monthly Snowpack Summary Map April 1, 2021

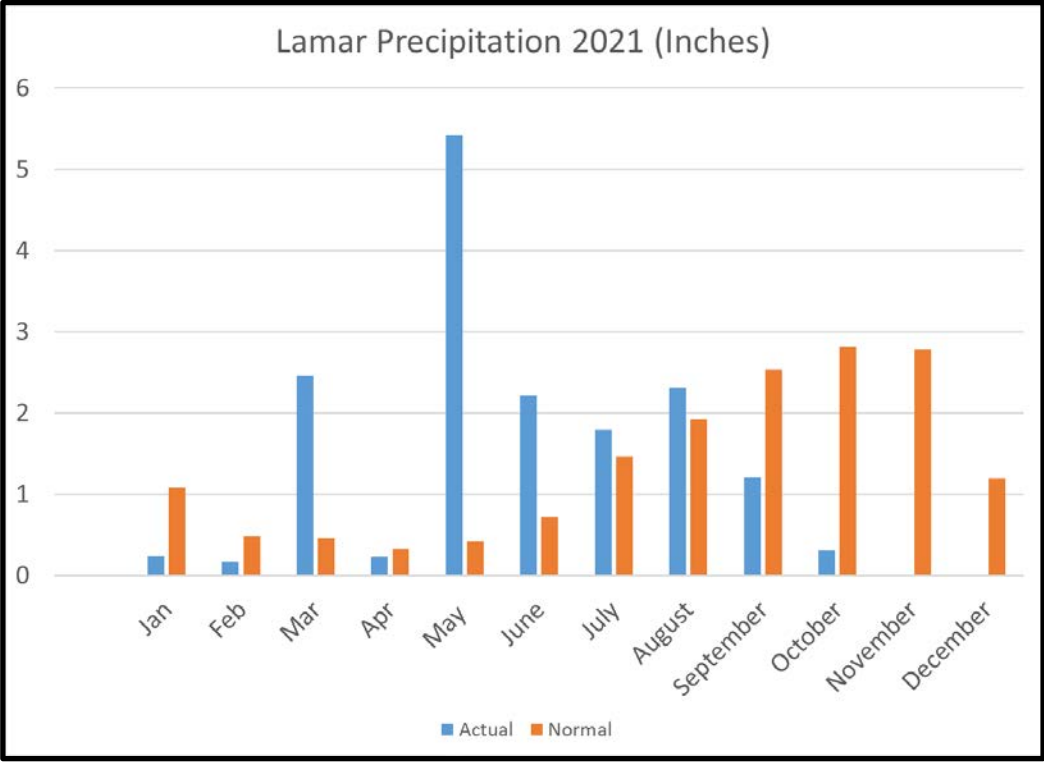
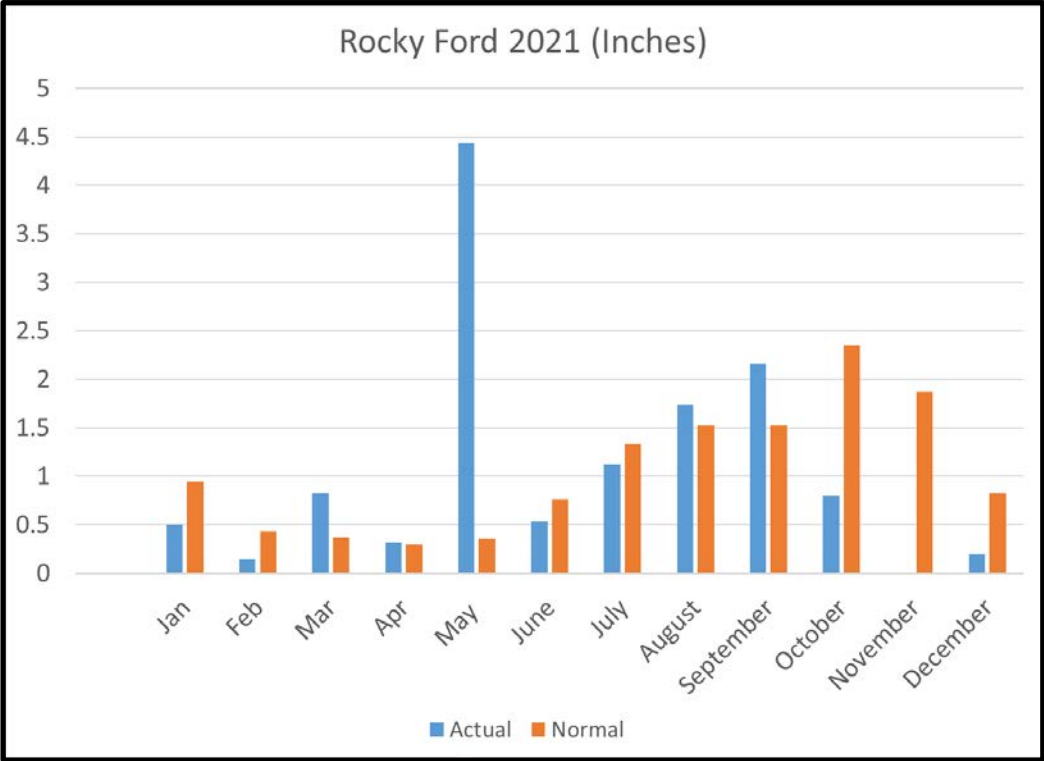


1.1.3 Precipitation and Streamflow

The precipitation in the Arkansas Basin in 2021 was split between above average precipitation in generally the May through July or August timeframe, but below average for the balance of the year. The three location graphs below provide an illustration of the precipitation that occurred during the year.

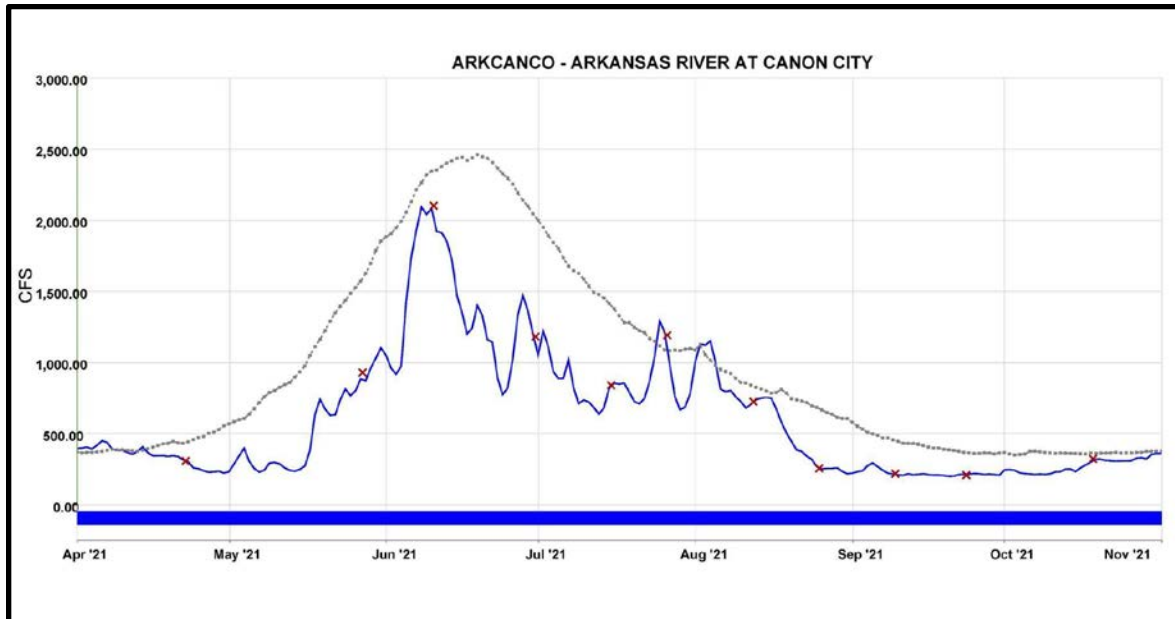
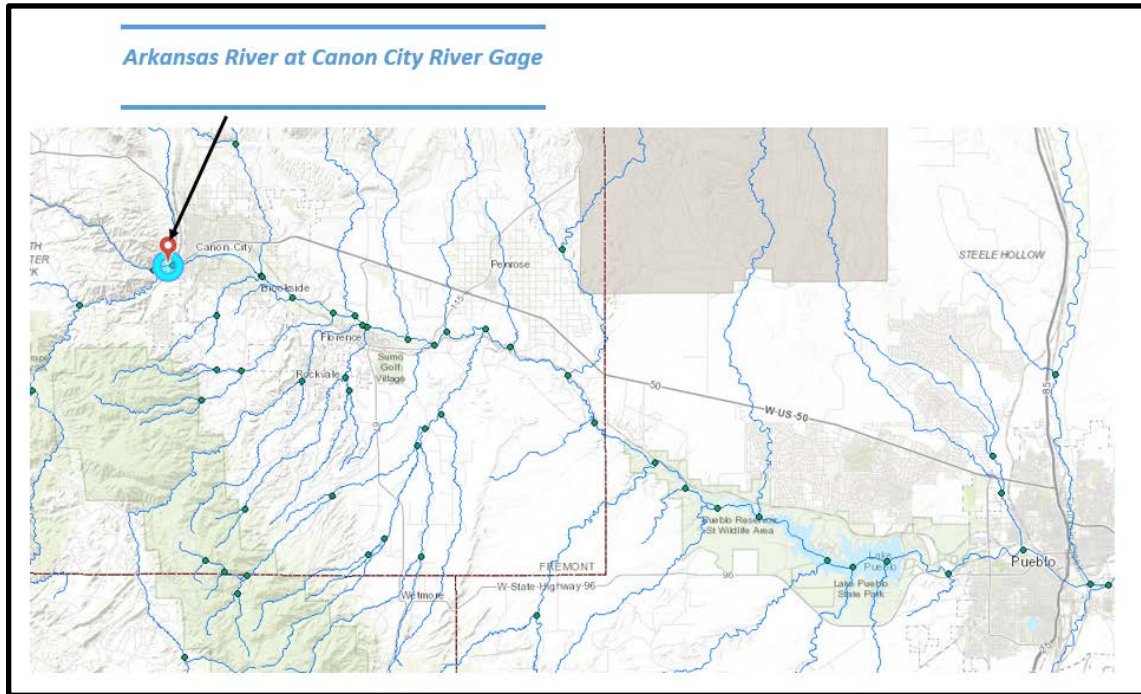
Figure 6: Average Precipitation at Key Locations compared to Measured Precipitation 2021



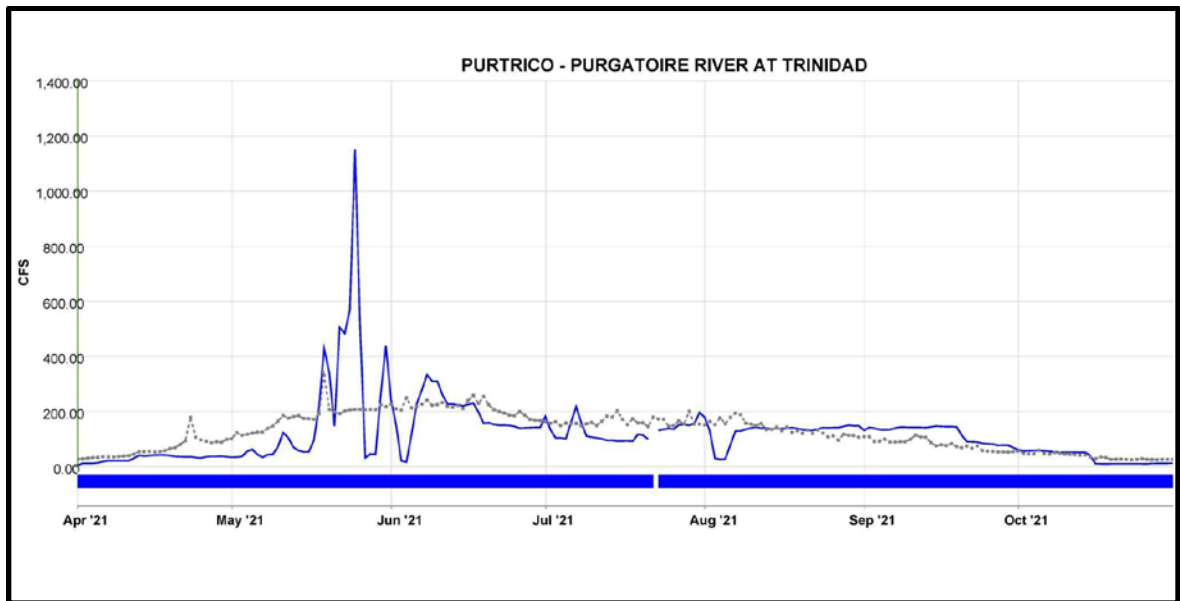
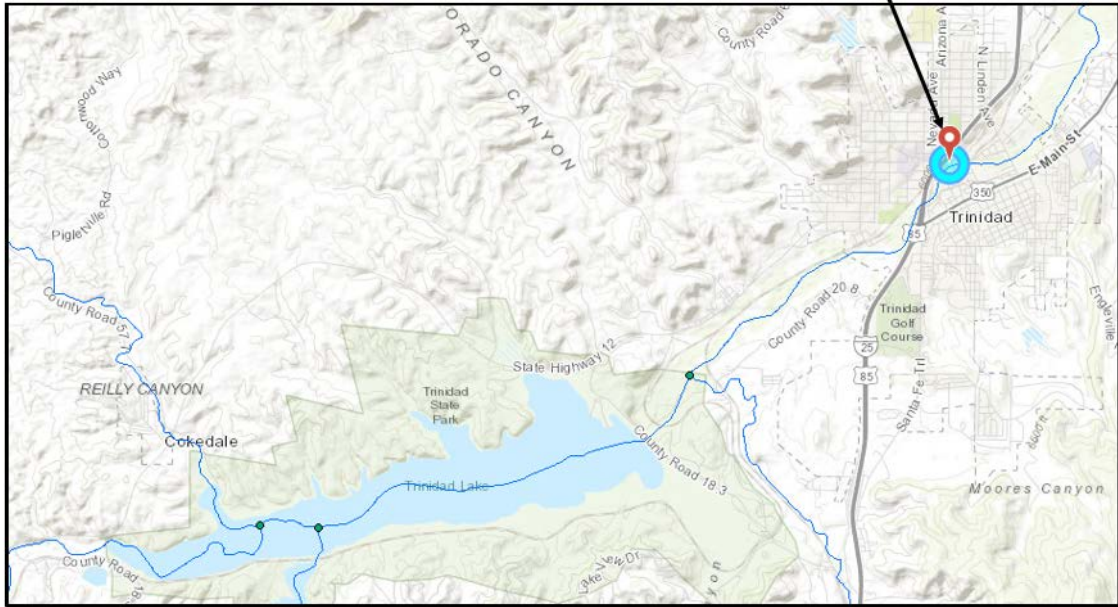


Streamflow was weaker on the mainstem through most of 2021 and flows above Pueblo Reservoir were lower throughout the year than normal. The Purgatoire River streamflow was close to normal and benefited from some large rain events.

Figure 7: Average Stream flow compared to 2021 Stream flow at Various Locations



Purgatoire River at Trinidad Gage



1.2 Administration Activities

1.2.1 Pueblo Winter Water Storage Program

The final report for the period November 15, 2020 through March 14, 2021 showed a system grand total of 83,668 acre-feet which was 33,172 acre-feet less than was stored in the previous year and 45,782 acre-feet less than the previous 20-year average.

One of the terms and conditions of the decree entered in 84CW179, which approved of the Winter Water Storage Program, is that the conservation storage in John Martin Reservoir is to be monitored to ensure that over time, the program does not have an adverse effect on Compact storage in John Martin Reservoir. During the winter of 2019-20, a total of 13,525 acre-feet was accumulated in John Martin Reservoir as conservation storage prior to March 15, 2021. This was 9,499 acre-feet less than the amount stored during the period 1950 - 1975.

1.2.2 Transmountain Diversions

Table 1: WY 2021 Transmountain Water Imported to Division 2

RECIPIENT				
DIV/WD	DIVERSION STRUCTURE	STREAM	ACRE-FT	STREAM
2/11	COLUMBINE DITCH	ARKANSAS RIVER	1,230	EAGLE RIVER
2/11	EWING DITCH	TENNESSEE CREEK	420	EAGLE RIVER
2/11	WURTZ DITCH	TENNESSEE CREEK	1,520	EAGLE RIVER
2/11	HOMESTAKE TUNNEL	LAKE FORK CREEK	27,830	EAGLE RIVER
2/11	BOUSTEAD TUNNEL	LAKE FORK CREEK	34,430	FRYINGPAN RIVER
2/11	BUSK-IVANHOE TUNNEL	LAKE FORK CREEK	3,230	FRYINGPAN RIVER
2/11	TWIN LAKES TUNNEL	LAKE CREEK	32,620	ROARING FORK RIVER
2/11	LARKSPUR DITCH	PONCHA CREEK	213	TOMICHI CREEK
2/79	HUDSON DITCH	HUERFANO RIVER	385	MEDANO CREEK
2/79	MEDANO DITCH	HUERFANO RIVER	933	MEDANO CREEK
2/10	BLUE RIVER PIPELINE	FOUNTAIN CREEK	8,991	BLUE RIVER
	TOTAL:		111,802	

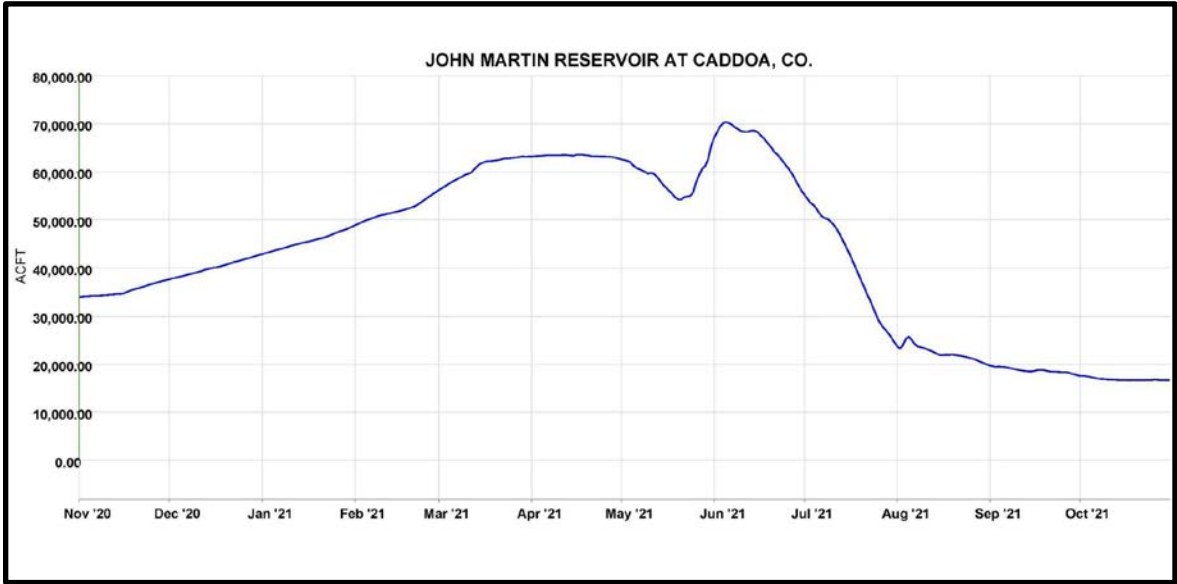
The Fryingpan-Arkansas Project reported that their imports of transmountain water in 2021 were 81% of average.

1.2.3 Surface Water Administration

Runoff conditions were less than expected from snowmelt runoff, however some timely precipitation from May through August helped with water supply. Conditions deteriorated in the latter part of the season resulting in the below average overall supplies. John Martin Reservoir saw a below average amount of storage during the 2020-2021 winter months with a peak daily storage amount of 70,282 acre-feet on June

4, 2021. Storage content at the end of the irrigation season in John Martin Reservoir was 16,362 acre-feet.

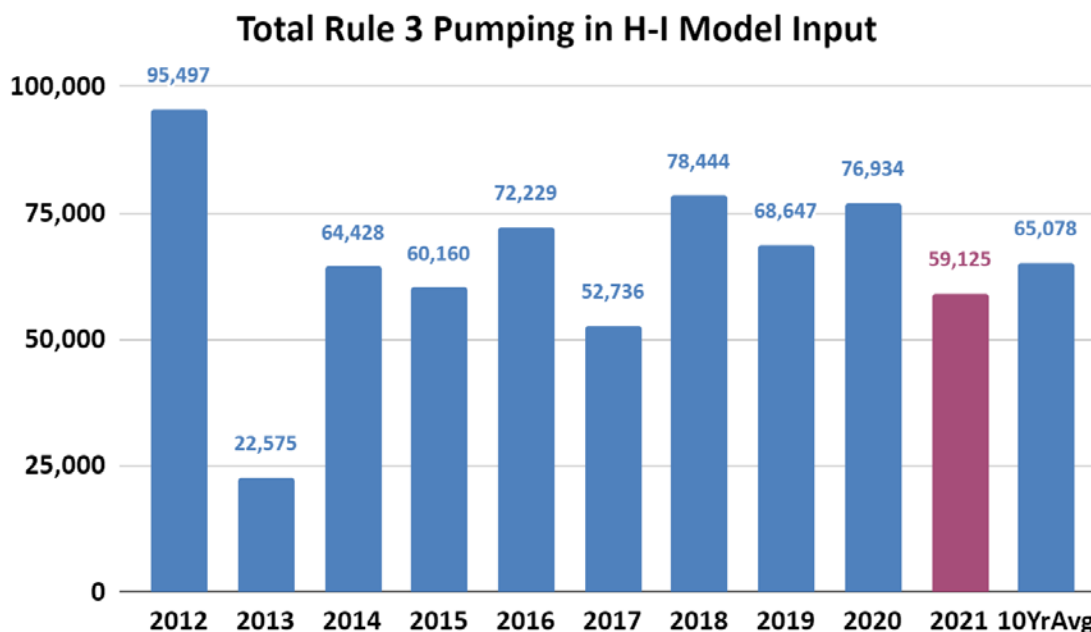
Figure 8: Storage Content John Martin Reservoir IY 2021



1.2.4 Ground Water Administration

During 2021 the irrigation well pumping represented in the H-I Model totaled 59,125 acre-feet. For User Groups 1-14 (above John Martin Reservoir Area) the total pumping was 39,241 acre-feet and for User Groups 15-24 (below John Martin Reservoir) the total pumping was 19,884 acre-feet.

Figure 9: Irrigation Well Pumping - Ten Year Comparison



For 2021 supplemental flood Rule 3 irrigation wells were assigned 36% presumptive depletion factors pursuant to Appendix A.4 of the Decree in Kansas v. Colorado.

Rule 3 irrigation pumping delivered to fields via flood and furrow irrigation was assessed the 50% presumptive depletion factor unless flood irrigation of dry-up lands occurred under a Rule 6 temporary change of water rights. In this circumstance the presumptive depletion factor was increased to 65% for flood and furrow irrigation. Rule 3 irrigation wells supplying sprinkler systems were assigned a 75% presumptive depletion factor except for those wells irrigating dry-up lands per a Rule 6 temporary change of water rights. Under this circumstance the depletion factor was set at 85%. Rule 3 irrigation wells supplying drip irrigation systems were assigned a 100% depletion factor.

Overall irrigation well pumping in 2021 was below average for the past ten year period. The 2021-2022 Rule 14 Plan approvals for AGUA, CWPDA and LAWMA provided for an estimated amount of pumping and stream depletions as follows:

Table 2: Estimated Pumping, Irrigation Pumping and Stream Depletions

Plan	Estimated Total Pumping (Original Plan without Amended Pumping) (AF)	Estimated Rule 3 Irrigation Pumping (Original Plan without Amended Pumping) (AF)	Estimated Stream Depletions (Original Plan without Amended Pumping) (AF)
AGUA	8,654	6,454	3,828
CWPDA	44,893	36,040	23,848
LAWMA	41,600	33,710	22,672
TOTALS	95,147	76,204	50,348

The 2021 calendar year actual pumping and stream depletions for AGUA, CWPDA and LAWMA were as follows:

Table 3: Actual Pumping, Irrigation Pumping and Stream Depletions

Plan	Actual 2021 Calendar Year Pumping (AF)	Actual 2021 Calendar Year Rule 3 Irrigation Pumping Included in H-I Model (AF)	Actual 2021 Calendar Year Stream Depletions (AF)
AGUA	4,167	2,904	5,212
CWPDA	36,466	28,656	20,794
LAWMA	28,005	25,512	9,418
TOTALS	68,638	57,072	35,424

1.2.5 Water Court Activity

2021 caseload summary:

- 109 new cases were filed.
- 12 Statement of Oppositions were filed
- 5 cases we were parties to were decreed.
- 33 cases we are parties to remain un-decreed

We had several applications come in without augmentation and instead relying on a futile call. Although we did not resist this in 2021, we have begun recently to provide statements that the applicant must prove that there is a geologic disconnect between the structure location and the administrable stream nearest to that point in order for a futile call to be recognized.

As previously stated Division 2 staff along with Chris Stork and Allison Robinette from the Attorney General's Office were heavily involved in LAWMA Court Case No. 17CW3069 including participating in the three week trial where expert testimony was provided by the Division Engineer with exceptionally good support from Rachel Zancanella, Lori Lest, Bethany Arnold, Joe Regur and others from the Division 2 Office and the outstanding AG's Office attorneys.

1.2.6 2020 Abandonment Update

Division 2 received objections regarding water rights and determinations were made regarding each of those objections to arrive at a final 2020 Abandonment List filed with the Division 2 Water Court that included 695 water rights.

1.2.7 Administration of Decreed Plans for Augmentation

Fourteen new augmentation plans were decreed in 2021, with the current total number of decreed plans shown here:

Table 4: Number of Augmentation Plans by Water District and Year

WD	2016	2017	2018	2019	2020	2021
10	285	340	379	387	400	408
11	116	127	129	130	132	133
12	38	48	51	53	56	57
13	30	30	31	31	33	33
14	15	34	34	38	42	43
15	13	13	13	13	14	14
16	20	28	28	29	29	29
17	9	15	19	20	20	20
19	10	14	14	14	15	15
67	18	19	19	19	20	23
79	2	2	2	3	3	3
Total	556	670	719	737	764	778

2 Compact Issues

2.1 Compact Operations

During the period of Winter Compact storage from November 1, 2020 through March 31, 2021, 16,077.90 acre-feet (net) was stored as Compact Water. This total included Offset Transfers to Winter Compact storage in November (11.63 acre-feet), January (1,011.97 acre-feet), February (9.79 acre-feet) and March (1,224.19 acre-feet) for well depletions and return flow maintenance. Distribution into accounts began on April 7, 2021, in accordance with Subsection II A of the revised 1980 Operating Plan and continued at the prescribed rates until exhausted on April 16, 2021. The transfer of 17,158.28 acre-feet as prescribed by Section II D of the 1980 Operating Plan (including 1,281.60 acre-feet of summer stored water from April 1, 2021 through April 16, 2021.

In contrast, the previous year's storage totaled 13,524.87 acre-feet (net). The 1950 to 1975 historical average amount of Winter Compact Water storage was 21,849 acre-feet in the period prior to the beginning of the Pueblo Winter Water Program operations.

During the 2021 Summer Compact Storage season, there were two events that resulted in additions to Conservation Storage beyond April 16, 2021. The first Conservation Storage event started on May 25, 2021 and ended on June 5, 2021 with total inflows of 19,396.71 acre-feet. The second Conservation Storage event started on August 2 and ended on August 6th with total inflows of 6,776.44 acre-feet.

For additional details concerning the operation of John Martin Reservoir, the reader is referred to the Operations Secretary's Report for CY 2021 and the Report of the

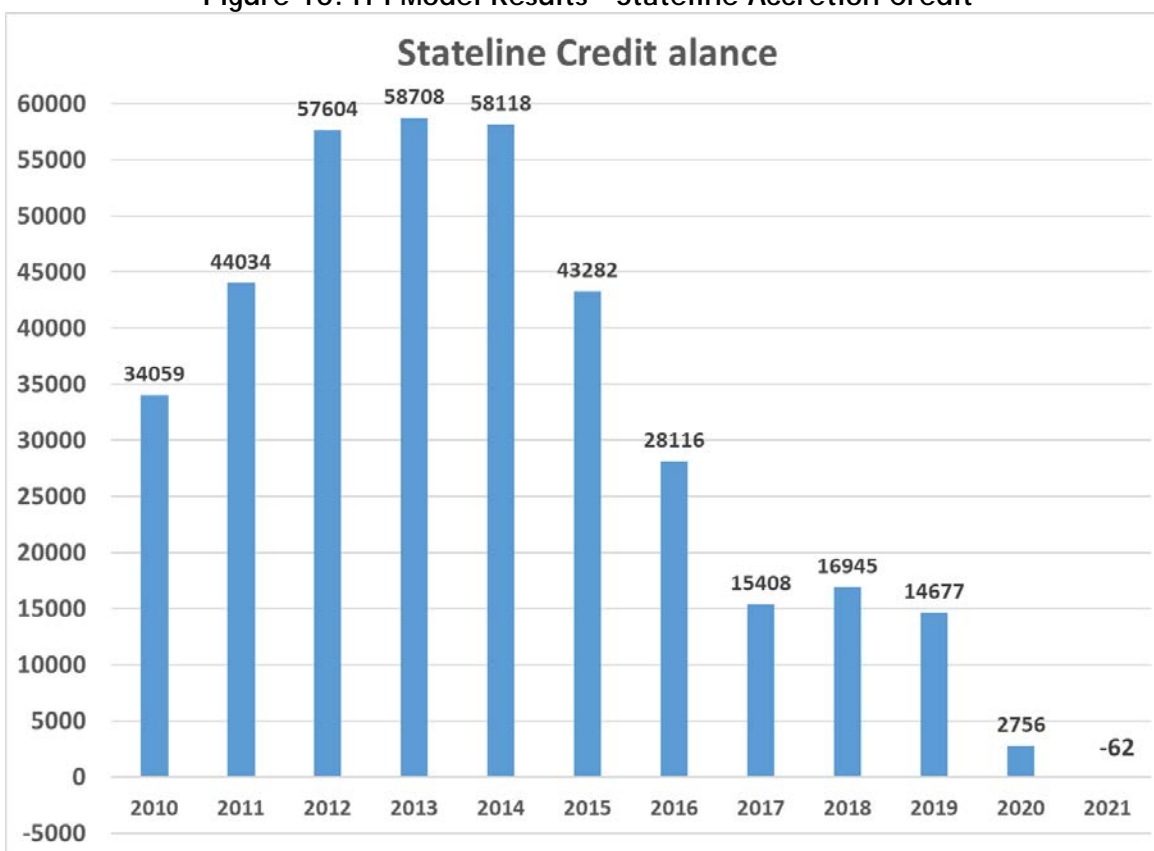
Colorado State Engineer to the Arkansas River Compact Administration concerning the Offset Account.

2.2 Compact Compliance

2.2.1 Post Compact Wells

The H-I Model is used for the purpose of determining depletions to usable stateline flow caused by well pumping of a ten-year period, which is updated annually. The update made in 2021 was for the period 2011-2020. This update showed a deficit or shortfall of 62 acre-feet which had to be made up along with associated evaporation and transportation losses by LAWMA. The following figure illustrates the status of Compact compliance over the past decade.

Figure 10: H-I Model Results - Stateline Accretion Credit



2.2.2 Surface Water Irrigation Improvements

Administration of the Irrigation Improvement Rules began the tenth year of operations since the Rules were promulgated in 2011.

Four Rule 10 Plans were approved for operation during 2021-22 including a plan by the Lower Arkansas Water Management Association (LAWMA) for sprinkler improvements under the Lamar Canal, Fort Lyon Canal and Amity Canal involving approximately 4,747

acres of improvements and a plan by the Purgatoire River Water Conservancy District (PRWCD) for sprinkler improvements under the Enlarged Southside Ditch and Model Canals east of Trinidad involving 1,711 acres of improvements. The Lower Arkansas Valley Water Conservancy District (LAVWCD) applied for two Rule 10 Plans in 2021. The Fort Lyon LAVWCD Plan involved approximately 20,389 acres of sprinkler improvements and 1,173 acres of lateral improvements under the Fort Lyon Canal while the Non-Fort Lyon LAVWCD Plan involved approximately 10,158 acres of sprinkler improvements, 639 acres of drip improvements and 1,804 acres of lateral improvements.

2.2.3 Special Engineering Committee

In 2021 the Special Engineering Committee met on several occasions. The Special Engineering Committee met for the first time on October 1, 2021. The primary focus for the SEC was related to renewing discussions on the Colorado Multi-Purpose Account in John Martin Reservoir and related topics and those discussions continued into Compact Year 2022. Additionally, staff from Kansas and Colorado met on October 7, 2021, October 26, 2021 and on November 23, 2021 to discuss technical aspects of the SEC efforts. Numerous meetings have occurred in the first part of 2022 to continue negotiations.

3 Highlights of 2021

3.1 Pond Management Program

During 2021 Division 2 launched the Pond Management Program by sending our 245 letters to owners involving 545 ponds. These letters were primarily focused on education on options, however some owners already have taken actions including breaching or backfilling ponds, enrolling the pond in an augmentation plan or submitting documentation to try to show the pond qualifies for an exemption.

The targeted areas in Division 2 where the program was launched include those shown on the overview map and the four regional maps below.

Figure 11: Selected Basins for Pond Management Efforts

POND MANAGEMENT STUDY - DIVISION 2
OVERVIEW OF PHASE ONE AREAS OF INTEREST

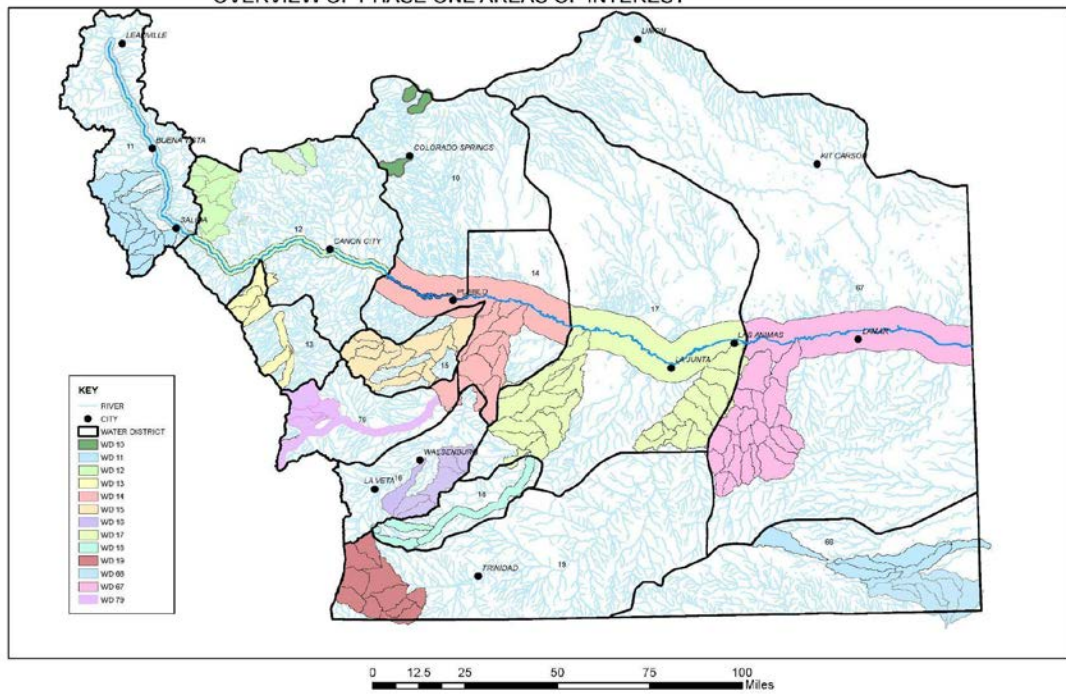
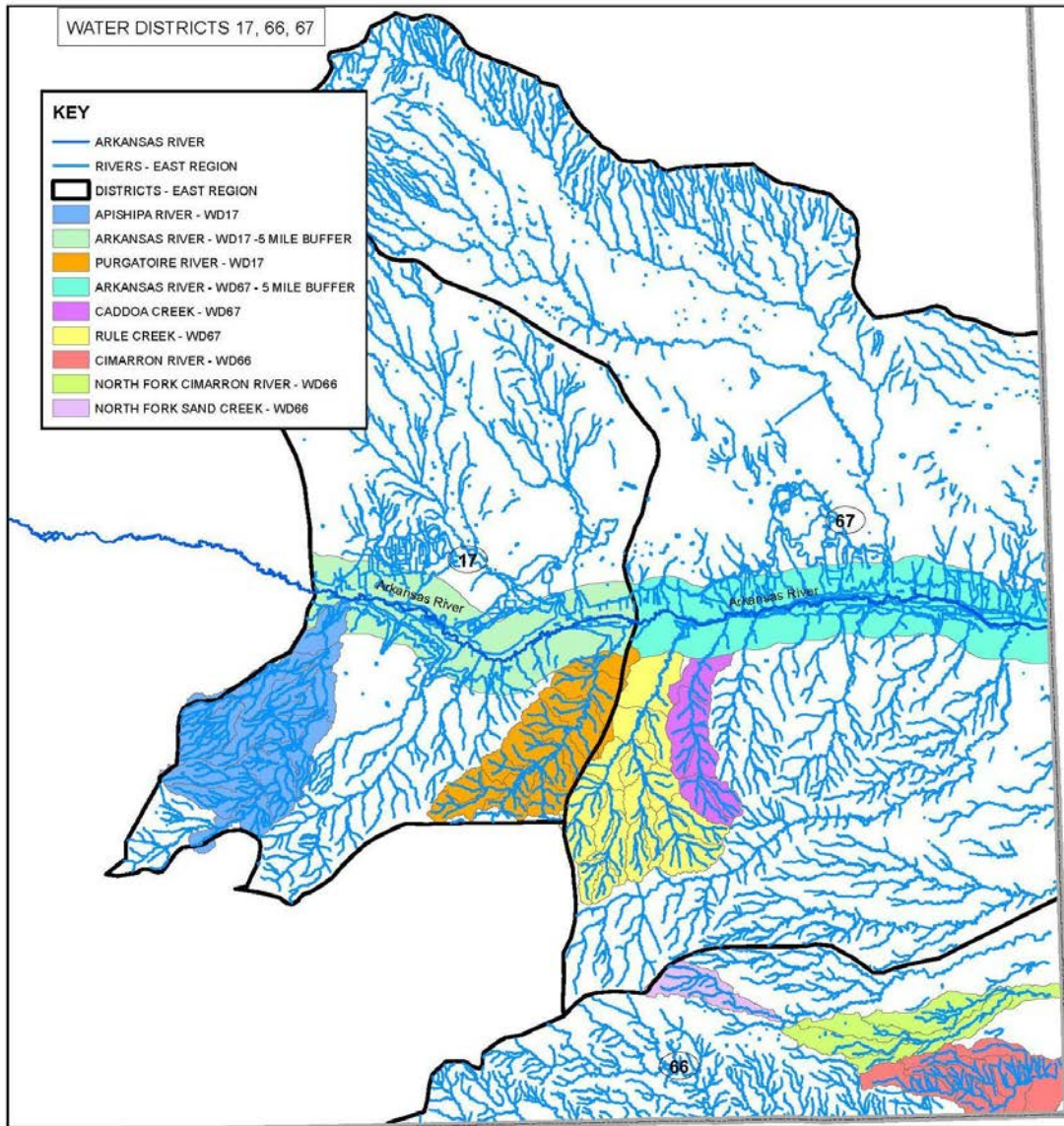
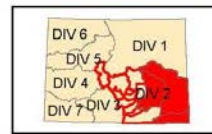
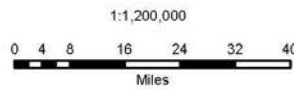


Figure 12: Selected Basins for Pond Management Efforts in the Lower Basin

POND MANAGEMENT OVERVIEW - EAST REGION



COLORADO
 Division of Water Resources
 Department of Natural Resources



LOCATION MAP

Figure 13: Selected Basins for Pond Management Efforts in the North Central Areas

POND MANAGEMENT OVERVIEW - NORTH REGION

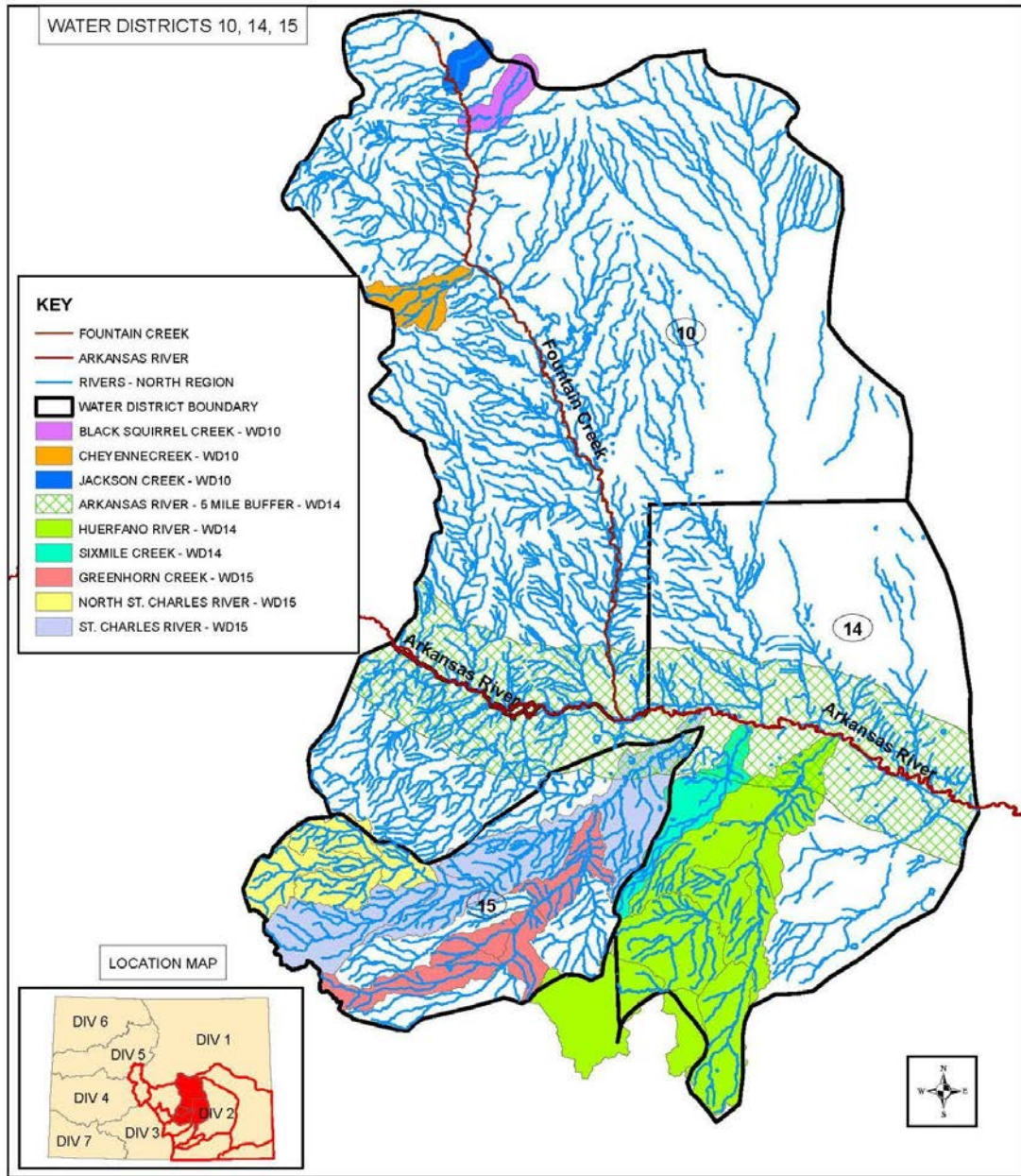


Figure 14: Selected Basins for Pond Management Efforts in the Southern Water Districts

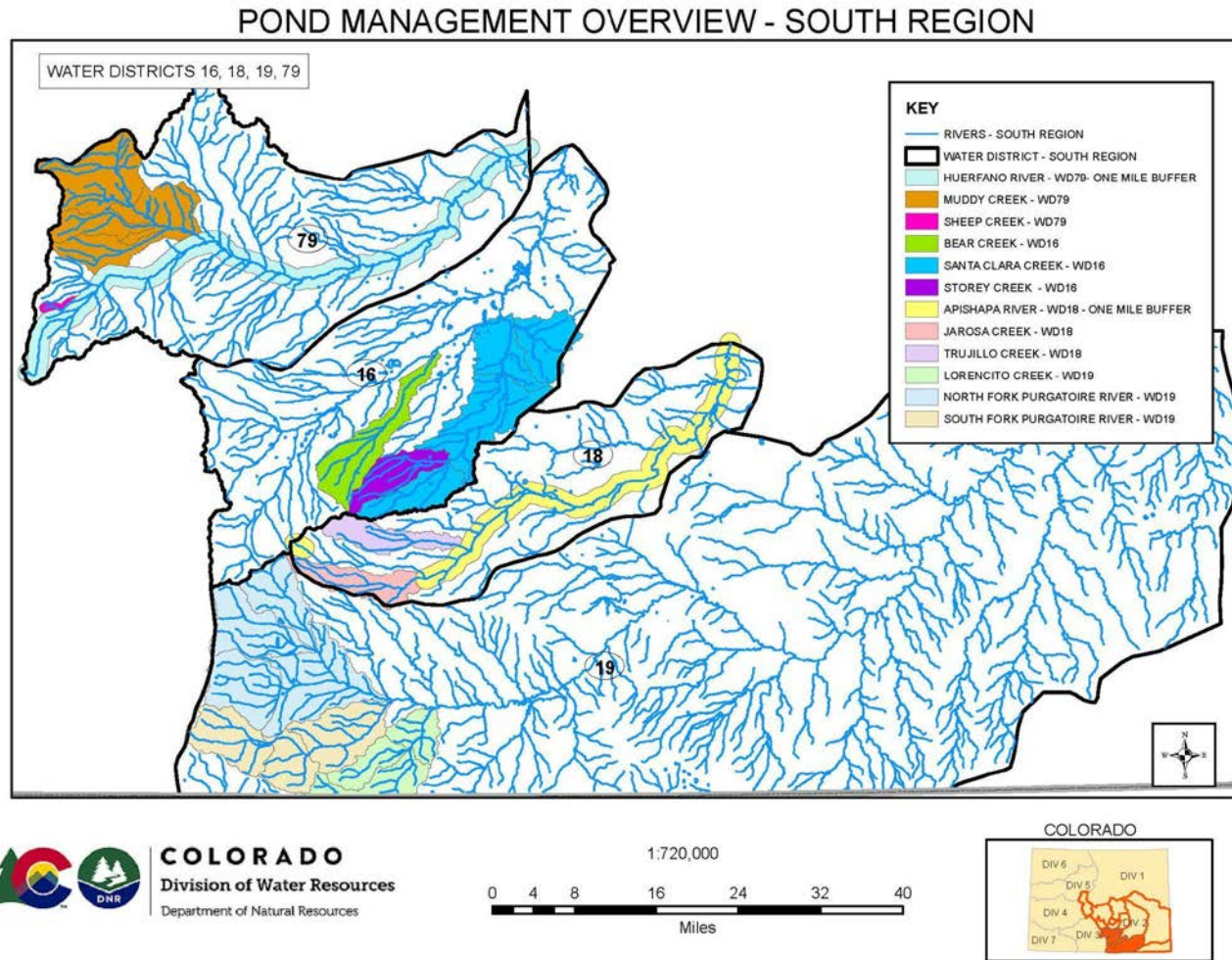
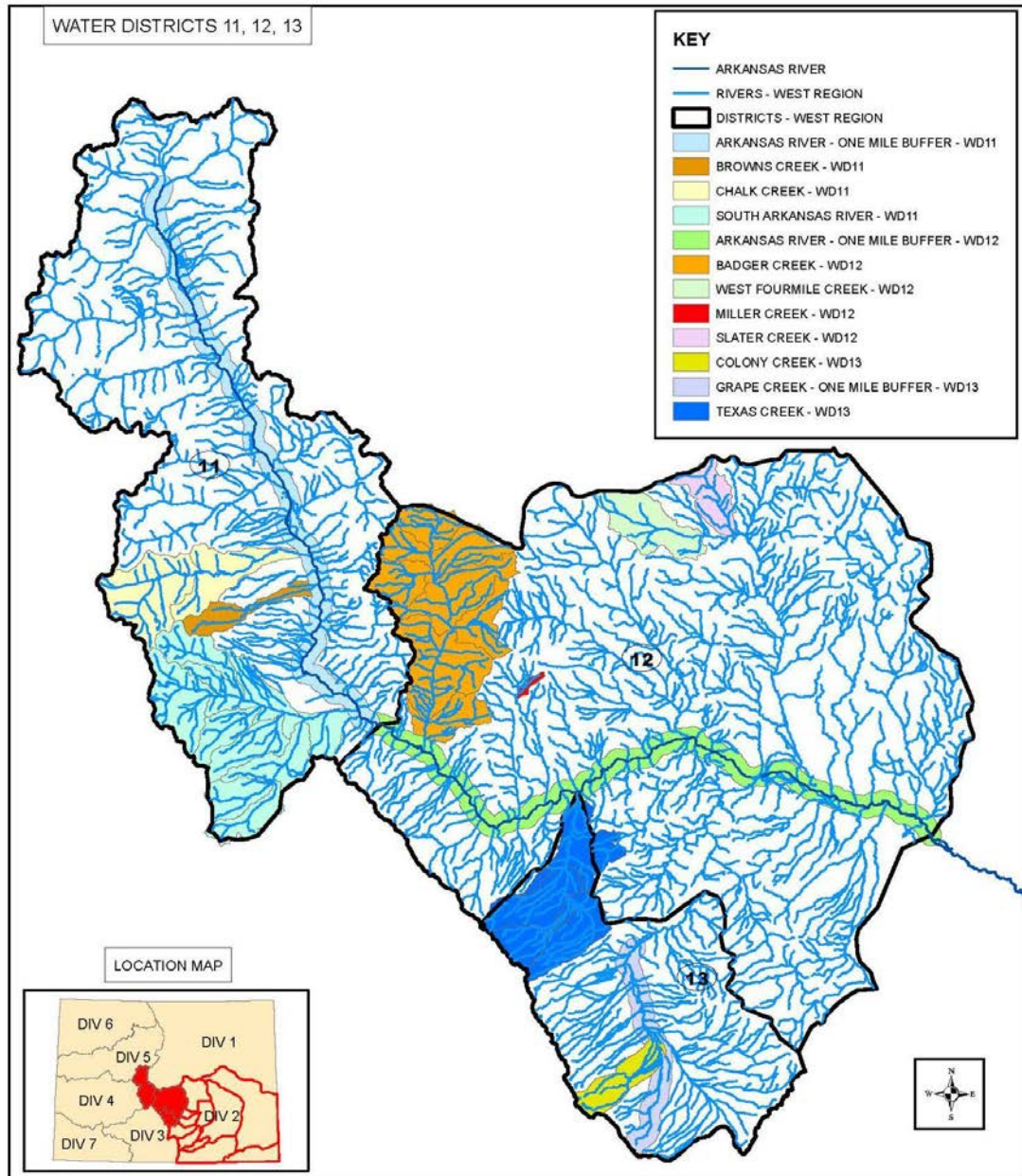


Figure 15: Selected Basins for Pond Management Efforts in the West Basin Area

POND MANAGEMENT OVERVIEW - WEST REGION



4 Organizational Changes

2021 felt like a difficult year on the personnel front. We started the year with quite a few vacancies and we ended the year with some remaining vacancies. Due to the pandemic and uncertain tax revenue hiring was by internal transfers only until April 2021 when we were allowed to hire by external announcements.

Retirement: Ina Bernard (GIS) and Dennis Jones (WD12 Deputy Water Commissioner).

Resignations: Gary Peltack (Hydrographer) and Kaleb Dunn (Groundwater Commissioner).

Transfers: Will Scott (WD11 Water Commissioner) transferred to Division 2 from Division 1; Monica Long (GIS) transferred from the Groundwater group to GIS; John Hunyadi (Dam Safety Engineer) accepted the Chief of Dam Safety position.

Rehire: Lenna Rauber (WD79 Water Commissioner)

New hires: Edwin Diemer (WD18/19 Deputy Water Commissioner).

Temporary employees: Cheyenne Norton (Groundwater) and Talon Canterbury (WD12).

Promotions: Brian Lenherr was promoted to EPSTII; Dan DiRezza was promoted to EPST III.

Change: Jessica Wodiuk was changed to full time by combining her 6 month position and the 6 month position vacated by Donna Smith in the previous year.

A heartfelt loss was the passing of John Van Oort (River Operations Coordinator) in November 2021.

Training/Staff Development

Employee training/educational opportunities include the following:

- March 30-April 1, 2021 - Brian Lenherr: Tech XP Conference by Frontier Precision
- May 7, 2021 - Rachel Zancanella: Old Ideas, New Directions by Colorado Bar Association
- June 3, 202 - Bill Tyner, Rachel Zancanella, Bethany Arnold, Jacob Olson, Joe Regur, Lori Lest, Jessica Wodiuk, Jeanette Myers, Monica Long, Talon Canterbury, Jerry Livengood: Lower Arkansas River Basin Virtual Tour
- June 18, 2021 - Rachel Zancanella, Brian Sutton, Will Scott: Upper Basin Raft Tour
- August 16, 2021 - Brian Lenherr, Russ Dash, Monica Long, Talon Canterbury: Innovations and Strategies for the sustainability of Irrigated Agriculture in the Arkansas Valley
- September 23, 2021 - Cheston Hart, Jessica Wodiuk, Bethany Arnold, Joe Regur, Will Scott, Steve Stratman: Pueblo Dam Tour
- September 24, 2021 - Joey Talbott: Bike the Bessemer Tour

CWOA

The annual meeting to be hosted by Division 4 was canceled due to uncertainties caused by the pandemic.

Budget & Pay

Division 2's operational budget was reduced to \$174,367. There was a one time addition of \$2917 to cover expenses for vehicle safety equipment. Materials and goods were difficult to acquire due to shortages and shipping challenges. Large purchases were approved beginning January 2021 but were carefully reviewed by Denver prior to getting final approvals to move forward. The FY21 budget allocation was underspent by about \$24,000.

Pay for Performance was once again unfunded. Salary Survey was a 3% across the board salary increase. However, an additional .5% went to PERA contributions. The required furloughs instituted in the previous year needed to be completed by April 30, 2021. They were applied by salary brackets as shown in the table. All time off needed to be completed by April 30, 2021.

Table 5: Furlough Days Schedule

Lower Salary Band	Upper Salary Band	Number of Days	% of Overall Salary
\$0	\$50,000	0	0.0%
\$50,000.01	\$70,000	1	0.4%
\$70,000.01	\$90,000	2	0.6%
\$90,000.01	\$140,000	3	1.2%
\$140,000.01		4	1.5%

Overtime was paid for by Denver's funds and was allocated on a month by month basis. Funding for winter work was approved for Jerry Livengood, Lenna Rauber and Edwin Diemer.

Five employees received a salary increase based on Salary Compression review in October 2021.

Vehicles

Six new vehicles were received this year. We were able to keep the vehicles being replaced as delayed turn-in and those were used by part-time field staff. We were able to keep a loaner vehicle from Denver that was not being driven during the Work from Home period.

Awards

Dan Henrichs was named Water Commissioner of the Year.

Above and Beyond Awards were given to each employee for the extraordinary work done by all during the Pandemic. The award included 1 day of Administrative Leave for everyone.

Other notes of interest

Kathy Trask (retired in 2020) passed away in February 2021.

The Covid 19 Pandemic continued our Remote Work status. Hybrid schedules began about May 2021 and that status remained through the rest of the year.

The Colorado Department of Health and Environment moved into our leased space, renting 2 offices for use as needed by their remote working employees. Effective October 1, 2021.

Executive Order (September 2021) required non-vaccinated employees to participate in twice weekly serial testing.

Governor Polis granted a Governor's Holiday on November 26 and half day on December 23, 2021.

Executive Director Dan Gibbs created an Admin Leave Wellness Day for employees to be used for wellness related activities.

KRONOS went down to a Ransomware Attack in mid-December. The temporary fix was turning in time cards through Excel spreadsheets.

Figure 16: Division 2 Organizational Chart 2021

