

Final  
**Water Resources Management and Efficiency Plan**

**September 2015**



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**Upper Arkansas Water Conservancy District**



**Prepared by Sustainable Practices**

*Through generous grants provided by the US Bureau of Reclamation and the Colorado Water Conservation Board*

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### **Appendices**

**Appendix A – CRS 37-60-126**

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# **Water Use and Water Resources Management Efficiency Plan**

## **Upper Arkansas Water Conservancy District**

### **Organizational Background and Summary**

The Upper Arkansas Water Conservancy District (hereafter “the District” or “the Upper District”) is a statutory organization founded in 1979 for the purpose of protecting and securing water in the upper Arkansas Valley. In performing this role, the Upper District administers replacement water programs for thousands of customers using infrastructure located in the upper reaches of the Arkansas River Valley above Pueblo, and various legal instruments and decrees. The Upper District also serves as a “watchdog” for the upper basin challenging legislation that may threaten the availability and use of the Upper Arkansas River water supply, and securing sufficient water rights to provide augmentation for residential, commercial, environmental and industrial use within the Upper District’s service boundaries.

One example of the Upper District’s role in protecting and supporting appropriate use of the Arkansas River occurred in 1995, in the aftermath of the Kansas v. Colorado dispute. The District led the efforts of water users to join the State Water Engineer in amending the Rules and Regulations for water administration in the Arkansas River. In that landmark case, irrigation wells in the lower Arkansas Basin were found to be pumping out of priority and depleting Stateline flows requiring the State of Colorado to adopt new administrative rules. Pursuant to the adoption of the “Amended Rules and Regulations Governing the Diversion and Use of Tributary Ground Water in the Arkansas River Basin<sup>1</sup>” many wells in the region were required to cease diversions. The Upper District stepped in to offer an augmentation water plan while other areas outside the Upper District lost legal use of their well water. When the Rules and Regulations were amended by the Water Court, the District was instrumental in protecting property owners, businesses, and the environment by providing a means to replace stream depletions to meet State well pumping regulations.

### **Nature of Operations in the Upper District**

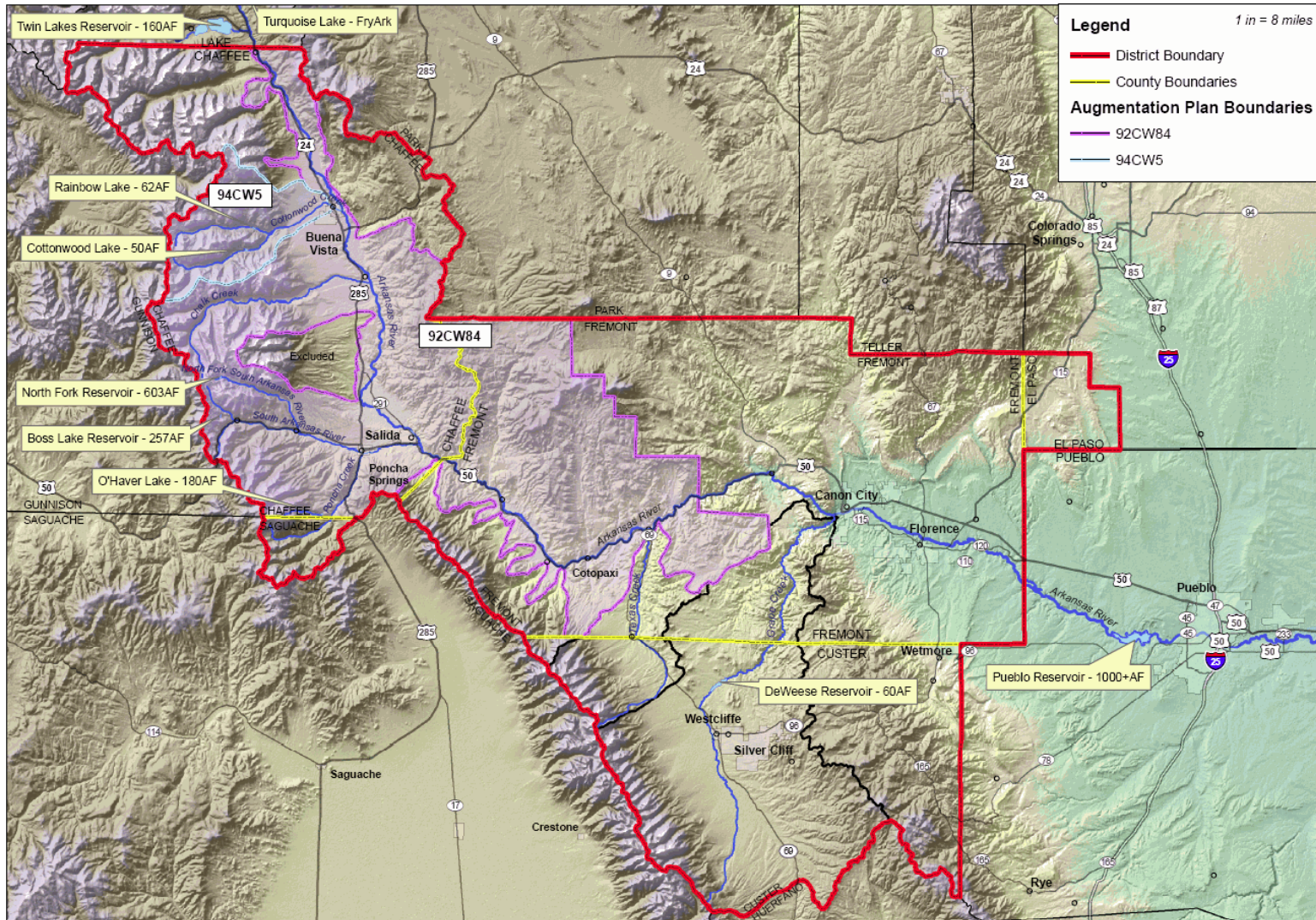
Water conservation planning related to the operations and functions of the Upper District is somewhat unique in Colorado, since the Upper District does not provide retail water sales to its customers, nor does it maintain the infrastructure typical for a municipal water utility (e.g., the District has no water distribution system or customer meters). Instead, the Upper District provides for and administers augmentation and Rule 14<sup>2</sup> replacement water programs for residential, commercial, environmental and industrial customers within the District’s boundaries (see Figure 1). To perform its services, the Upper

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<sup>1</sup> The Amended Rules and Regulations referenced herein were developed and executed on September 27, 1995 to amend the February 1973 rules and regulations that govern the use, control and protection of the surface and ground water rights located in the Arkansas River and its tributaries.

<sup>2</sup> Out-of-priority stream depletions to senior surface water rights caused by pumping wells which were permitted prior to 1986 which do not require augmentation plans are replaced under Rule 14 based on the Upper District’s Replacement Plan approved each year by the State Engineer.

Figure 1 – Upper Arkansas River Water Conservancy District Boundaries



District utilizes its augmentation and replacement programs based on anticipated stream depletions for each of its customers, executing the appropriate releases and accretions in accordance with the expected timing and location of the depletions. To properly perform the replacement water program, the Upper District must track information related to each structure that it supports on a daily basis such that all senior surface rights may be protected. Specific data that is tracked for each structure covered by the Upper District’s replacement water programs includes:

- Structure location and expected depletion in time, amount, and location;
- Consumed water (i.e., replacement requirement); and
- Transit losses related to replacement water releases<sup>3</sup>.

Therefore, the Upper District’s business focuses on the following:

- Performing the most efficient management of its replacement water sources<sup>4</sup> for the configuration of customer depletions in each month;
- Tracking the releases to ensure that senior surface rights are protected; and
- Reporting the releases to the State Engineers Office (SEO).

As previously stated, the Upper District does not utilize the typical infrastructure related to municipal water supply since the Upper District’s operations are focused on supporting multiple types of land use within Upper District boundaries while protecting downstream senior surface rights. The Upper District

therefore operates infrastructure based on a series of decrees and leases that allow for the shifting of water releases and accretions to support replacement water needs. Each customer (a listing of customer categories is shown in Table 1) pays an augmentation water fee and application fee to enroll their respective qualified structures in the Upper District’s umbrella augmentation decrees, and pays an annual fee to cover the costs for the Upper District to maintain storage and administer the replacement water program. For those customers that pump groundwater, they must provide annual meter readings to verify their actual water use, and pay a fee if they over pump. Under its “blanket” augmentation plan for Chaffee and western Fremont Counties (decree 92CW84, 06CW32 and others), the typical residential well depletions are augmented at a rate of 1/10 acre-foot per home per year based on an engineering analysis which determined that 10% of pumped water is consumed through normal in-house uses and outdoors as correlated to a 1,500 square foot irrigated lawn. The remaining 90% of pumped

<b>Table 1 Summary of Customers and Structures</b>	
<b>Customers Category by Structure</b>	<b>Number</b>
<b>Wells</b>	
Residential	1,061
Commercial	134
Industrial	5
Institutional (e.g., CDPW, schools)	4
Municipal	5
Trusts (wetlands, etc.)	27
<b>Total</b>	<b>1,236</b>
<b>Ponds</b>	
Residential	8
Commercial	2
Institutional (e.g., CDPW)	1
Trusts (wetlands, etc.)	1
<b>Total</b>	<b>12</b>
CDPW – Colorado Department of Parks and Wildlife	

<sup>3</sup> Each release of replacement water from a structure (e.g., reservoir or ditch) may lose a portion of the released water in transit, depending on location, time of year, and river conditions.

<sup>4</sup> The District has storage rights in nine reservoirs and additional rights in ditches and leases that are combined and integrated to provide replacement water as required to protect senior surface rights (see Table 3 for additional detail).

water is returned to the ground via non-evaporative means (e.g., septic tank and leaching field). A new customer would pay approximately \$4,000 to enroll their structure under this plan, and pay \$165 a year for storage and maintenance of the augmentation water program related to their depletions<sup>5</sup>.

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<sup>5</sup> Any over pumping of groundwater based on annual reporting requirements would cost the customer \$5 per thousand gallons of over use.

## Benefits of Water Conservation to the Upper District

The nature of water conservation and its benefits, as it relates to Upper District customers and its operations are not dissimilar to the nature and benefits of water conservation to municipal utilities and their customers. For example:

- The Upper District and its customers benefit from improved transit efficiencies<sup>6</sup> since more efficient transportation of replacement water to the location of expected depletion reduces overall storage needs and replacement releases; and
- District customers benefit from reduced water demands due to reduced energy costs associated with pumping costs.

Noteworthy, however, is that the impact of water conservation measures and programs on Upper District customers and operations can be substantially different than those realized by a typical municipal utility. For example, customer demand management in a municipality typically reduces water supply production (or diversion), treatment and distribution needs; whereas in many cases demand management by Upper District customers does not necessarily create a reduction in replacement water needs.

For example, installing high efficiency toilets and faucet aerators does not reduce water consumption for the Upper District's residential water customers<sup>7</sup>. Similarly, reducing outdoor water use by increasing efficiency (e.g., via more efficient irrigation practices) may not change the irrigation-based consumption only the demand, such that outdoor watering efficiencies may not reduce augmentation requirements, and may in fact increase augmentation requirements as a percentage of water use. Therefore, typical municipal water conservation measures and programs may not have any positive impact on the management of local and regional water supply and water resources, except for that related to the production of energy<sup>8</sup>. For these reasons, customer water use demand reduction measures typically do not have a positive impact on replacement water requirements or improved efficiencies in the Upper District's water resources portfolio<sup>9</sup>.

Another unique attribute of the Upper District's system of water resources, in comparison to those water utilities that typically develop and implement water conservation plans, is that the Upper District serves a customer base that lies within a service area of approximately 3,000 square miles, which is substantially larger than any municipality in Colorado<sup>10</sup>. The regional nature of the Upper District's customer base and related infrastructure that it uses to provide replacement water creates a different kind of opportunity, and need, for water conservation than is associated with Colorado's municipal water providers. This is

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<sup>6</sup> Reduced transit losses for the Upper District are similar to reduced real losses in municipal utility distribution systems associated with leaks.

<sup>7</sup> Residential water consumption is based on outdoor water use for irrigation only – based on an expected 1,500 square feet of irrigated bluegrass grass (or equivalent) on a 2-acre property.

<sup>8</sup> Reduced groundwater pumping will reduce energy consumption, which may translate into reduced water consumption for coal powered energy at a rate of between 2 to 20 gallons per kilowatt hour (WRA, 2010; other).

<sup>9</sup> Given that each home is required to use a totalizing flow meter to check and verify pumping, highly efficient water use homes can be designed and included in the Upper District's augmentation programs; however, these homes need to include calculations related to how irrigated acreage and return flows will be managed to allow for any changes in replacement water requirements.

<sup>10</sup> The area that the Upper District serves extends from Twin Lakes Reservoirs to Pueblo County (see Figure 1 for the District boundaries).

not to say that water conservation for the Upper District is not important, rather, typical municipal water conservation planning related to customer demand management measures and programs are not necessarily applicable to the Upper District's needs since many customer demand reductions typically will not reduce augmentation and/or replacement water requirements. In addition, typical water loss management programs related to non-revenue water and other utility best management practices are not applicable to the District's operations, per se.

Therefore, the Upper District's water conservation planning and implementation effort is focused on improving the efficiency of its replacement water programs, which will allow for the following:

- Reduced transit losses
- Improve operational and administrative flexibility in conducting exchanges
- Increased available storage to allow for improved system reliability
- Improved data collection and management programs, including but not limited to, monitoring of meteorological, stream flow, and aquifer level data

**By improving water use and water resources management efficiencies, the Upper District will be able to utilize the available water supply in a more reliable and sustainable manner, supporting all the needs of the local community including residential, commercial, environmental and industrial uses.**



## Summary of Water Supply System

The Upper District utilizes various facilities and legal instruments (e.g., decrees and leases) to provide replacement water in a timely and appropriate manner. This is because it is the Upper District's responsibility to "place" the appropriate amount of water consumed by those "covered" under the Upper District's programs into the appropriate stream segment impacted by customer water use as required by amount, location and time. This requires an elaborately engineered system which measures and records customer use and replacement water delivery from a senior water source, as well as tracks all transit related losses. The structures that must be maintained include reservoirs, and stream measurement stations, as well as the acquisition and legal maintenance of the water rights utilized in the plan.

Table 2 presents a summary of those replacement activities<sup>11</sup> that the Upper District conducted in each month of 2013 and the first quarter of 2014, indicating required replacements, origin of replacement water, and nature of replacement (i.e., direct replacement, release). Table 2 also indicates which leases were included in the operation of any particular month's replacement programs, and a summary of those decrees and leases that were relevant in the monthly operations.

Note that the volume of "requirements" listed in Table 2 is equivalent to the volume of "replacements" (with some rounding error). The volume of "releases" listed on Table 2 is consistent with the volume of "replacements" unless "direct replacement" water was used in conjunction with the releases. In those months when direct releases were made to support the replacement of depletions, transit losses and system inefficiencies required that larger releases be made to protect senior water rights downstream.

A total of 432 acre-feet (AF) of releases were made in 2013, with about 25 AF or approximately 6% of the Upper District's releases related to "make up" for transit losses.

Note that a significant portion of water that serves the Upper District's' augmentation plan comes from the Fryingpan - Arkansas Project, delivered to the eastern slope of Colorado via the tunnels operated by the US Bureau of Reclamation in conjunction with the Southeastern Colorado Water Conservancy District. This water is commonly referred to as "Project Water." Approximately 54,700 AF of Project Water is delivered annually to the Arkansas River basin, with the Upper District retaining an allocation of this water to support its annual operations. In 2013, for example, the Upper District requested a Project Water allocation of over 350 AF from the Southeastern Colorado Water Conservancy District.

### Importance of Water Dedication by the Upper District

In Colorado, counties require the dedication of water before approval of building permits or approval of the sub-division of property. Thus, developers and lot owners must obtain augmentation (dedicated replacement water) for each lot created upon which a dwelling may be constructed. Further, in order for the State of Colorado to issue a well permit to a lot owner, the owner must provide augmentation or be included in a court decreed augmentation plan. Regardless of whether a well is constructed or used, the Upper District is required to reserve the replacement water, the storage of this water and continues to

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<sup>11</sup> Replacement activities include programs that the District administers under augmentation plans, substitute supply plans, Rule 14 Plans, and leases.

**Table 2 – Summary of Upper District Operations 2013**

Requirement or Replacement Account	Location or Rule	(Volumes in Acre-Feet)												2014		
		2013												Jan	Feb	Mar
		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
<b>Requirement</b>																
Arkansas River Main Stem	Replacement	2.58	4.06	6.34	8.81	19.83	25.84	26.9	24.29	21.73	10.87	17.66	13.08	27.99	36.31	32.08
Cottonwood Creek	Cottonwood Creek Replacement	0.84	0.8	0.8	2.1	6.8	8.04	7.64	6.89	6.1	2.63	1.75	1.3	0.87	0.83	0.84
Moltz, SWSP 02CW073	Paul Moltz Trout Creek Res. Evaporation	4.72	2.54	4.28	4.04	3.93	3.97	4.12	4.34	4.54	4.68	4.76	4.79	4.72	4.54	4.28
Rule 14	Rule 14	4.96	0.31	2.4	2.6	5.43	4.88	13.3	10.5	1.5	3.33	3.61	7.25	1.26	0.82	1.79
So Arkansas River	South Arkansas Replacement	2.08	2.36	3.76	3.25	7.63	10.09	10.76	9.51	8.16	5.43	3.05	2.61	2.09	2.08	3.78
	<b>Total</b>	<b>15.18</b>	<b>10.07</b>	<b>17.58</b>	<b>20.8</b>	<b>43.62</b>	<b>52.82</b>	<b>62.72</b>	<b>55.53</b>	<b>42.03</b>	<b>26.94</b>	<b>30.83</b>	<b>29.03</b>	<b>36.93</b>	<b>44.58</b>	<b>42.77</b>
<b>Replacement</b>																
Arkansas River	DeWeese Dye Reservoir		1.35	6.34	2.35									9.93	31.28	
Arkansas River	Pueblo Res Project	2.58	2.71		6.46	19.83	25.84	26.9	24.29	21.73	10.87	17.66	13.08	18.06	5.02	32.08
Cottonwood Creek	Cottonwood Lake					1.53			1.11	1.44	0.07					
Cottonwood Creek	DeWeese Dye Reservoir		0.25	0.8	0.56							0	0.92	0.68	0.71	
Cottonwood Creek	Pueblo Res Project	0.84	0.54		1.42	0.81	2.97	1.65		1.43	1.44	1.75	0.38		0.12	0.84
Cottonwood Creek	Rainbow Lake					1.6			1.42							
Cottonwood Creek	Thompson Ditch				0.12	2.99	5.07	5.99	4.35	3.24	1.11					
Cottonwood Creek	Twin Lakes Reservoir													0.2		
Moltz, SWSP 02CW073	DeWeese Dye Reservoir		0.82	4.28												
Moltz, SWSP 02CW073	Pueblo Res, If and When	4.72	1.72		4.04	3.93	3.97	4.12	4.34	4.54	4.68	4.76	2.47			
Moltz, SWSP 02CW073	Twin Lakes Reservoir											0	2.32	4.72	4.54	4.28
Rule 14	DeWeese Dye Reservoir		0	0.85	0.69							0	3.27			
Rule 14	Lester Attebery											0	1.87	1.26	0.82	0.98
Rule 14	Pueblo Res, If and When	4.96	0.31	1.55	1.91	5.43	4.88	13.3	10.5	1.5	3.33	3.61	2.1			0.81
So Arkansas River	DeWeese Dye Reservoir		0.83	3.76	0.87							0	1.85	2.09	1.78	
So Arkansas River	North Fork Reservoir				0.02	0.15	0.05	0.19	0.16		0.1	0.06	0			
So Arkansas River	Pueblo Res Project	2.08	1.53		2.36	7.48	5.92	10.6	9.36	8.16	5.32	3	0.76		0.3	3.78
So Arkansas River	White Ditch from North Fork Reservoir					4.12										
	<b>Total</b>	<b>15.18</b>	<b>10.06</b>	<b>17.58</b>	<b>20.8</b>	<b>43.75</b>	<b>52.82</b>	<b>62.75</b>	<b>55.53</b>	<b>42.04</b>	<b>26.92</b>	<b>30.84</b>	<b>29.02</b>	<b>36.94</b>	<b>44.57</b>	<b>42.77</b>
<b>Direct Replacement</b>																
Lester Attebery					0.12	2.99	5.07	5.99	4.35	3.24	1.11		1.87	1.26	0.82	0.98
Thompson Ditch					0.12	2.99	5.07	5.99	4.35	3.24	1.11	0	1.87	1.26	0.82	0.98
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0.12</b>	<b>2.99</b>	<b>5.07</b>	<b>5.99</b>	<b>4.35</b>	<b>3.24</b>	<b>1.11</b>	<b>0</b>	<b>1.87</b>	<b>1.26</b>	<b>0.82</b>	<b>0.98</b>
<b>Release</b>																
Cottonwood Lake	(UAWCD)					1.53			1.11	1.44	0.07					
DeWeese Dye Reservoir	(USBR & DWR)		3.25	16.03	4.47								6.04	12.69	33.78	
North Fork Reservoir	(UAWCD)				0.02	0.15	4.18	0.2	0.17		0.1	0.06				
Pueblo Res, If and When	(USBR & DWR)	9.68	2.04	1.55	5.95	9.36	8.85	17.42	14.84	6.04	8.01	8.37	4.58			
Pueblo Reservoir Project	(USBR & DWR)	5.5	4.79		10.24	28.13	34.76	39.15	33.66	31.33	17.63	22.41	14.22	18.06	5.44	37.5
Rainbow Lake	(UAWCD)					1.6			1.42							
Twin Lakes Reservoir	(USBR & DWR)												2.32	4.92	4.54	4.28
	<b>Total</b>	<b>15.18</b>	<b>10.08</b>	<b>17.58</b>	<b>20.92</b>	<b>46.75</b>	<b>57.93</b>	<b>68.75</b>	<b>59.9</b>	<b>45.29</b>	<b>28.03</b>	<b>30.84</b>	<b>30.9</b>	<b>38.19</b>	<b>45.4</b>	<b>43.74</b>

**Table 2 – Summary of Upper District Operations 2013 (continued)**

<b>Leases included in above Summary by Plan</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug</b>	<b>Sept</b>	<b>Oct</b>	<b>Nov</b>	<b>Dec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>
Alebrie, LLC			0.09	0.13	0.17	0.22	0.22	0.19	0.15			0.16			0.09
Freemont Paving Evans Pit #2											2.89	2.32	1.94	1.7	1.7
Freemont Paving Mackenzie Pit Well											0.81	0.46	0.43	0.41	0.81
Holcim											5.27	3.66	2.91	11.66	6.3
Valco - Canon City East Pit											1.75	2.4	1.94	1.77	1.65
Freemont Paving & Redi Mix								1.28	1.27	0.91					
Valco - Rocky Ford													18.08	16.7	15.22
<b>Other Leases</b>															
Freemont Paving and Redi-Mix Evans Pit												16.54			
MOLTZ												1.3			
Valco - Canon City East Pit										1.64	1.17				
Freemont Paving Evans Pit #2										3.22					
Hocim Wetlands Lease			3.1	5.86	8.85	13.24	12.83		7.94	11.49					
			<b>3.19</b>	<b>5.99</b>	<b>9.02</b>	<b>13.46</b>	<b>13.05</b>	<b>1.47</b>	<b>9.36</b>	<b>17.26</b>	<b>11.89</b>	<b>26.84</b>	<b>25.3</b>	<b>32.24</b>	<b>25.77</b>
<b>Summaries of Leases and Decreases by Plan</b>															
Leases											10.7	9	25.3	32.2	25.8
06CW32	0.1	0.1	0.1	0.3	0.4	0.6	0.6	0.5	0.5	0.3	0.1	0.1	0.1	2	4.2
07CW87	0	0	1.7	0	0	0	0	0	0	1.4	0	0	0	0	1.7
92CW84	4.5	6.1	8.3	11.8	28	35.5	36.2	32.3	28.6	14.1	9.8	6.4	4.3	4.1	4.2
94CW05	0.8	0.8	0.8	1.7	5	6.7	7.4	6.9	6	2.6	1.6	1.2	0.9	0.8	0.8
94CW41	0.1	0.1	0.1	0.4	0.8	1.2	1.1	1	0.9	0.5	0.2	0.2	0.3	0.1	0.1
A												0			
MOLTZ	4.8	2.5	4.3	4	3.9	4	4.1	4.3	4.5	4.7	4.8	4.8	4.7	4.5	4.3
RULE14	5	0.3	2.4	2.6	5.4	4.9	13.3	10.5	1.5	3.3	3.6	7.3	1.3	0.8	1.8
<b>Total ACFT</b>	<b>15.3</b>	<b>9.9</b>	<b>17.7</b>	<b>20.8</b>	<b>43.5</b>	<b>52.9</b>	<b>62.7</b>	<b>55.5</b>	<b>42</b>	<b>26.9</b>	<b>30.8</b>	<b>29</b>	<b>36.9</b>	<b>44.5</b>	<b>42.9</b>

maintain the vessels and measurement devices for each owner of augmentation in the plans. Administrative functions include tracking ownership, reporting accounting for releases of water (including type of replacement (i.e., Rule 14, augmentation plan, etc., transit losses, etc.), as well as (in the case of constructed wells) reporting of meter readings to the State of Colorado.

The cost of maintaining the reservoirs and measurement devices as well as administrative functions by the Upper District are defrayed by the annual assessment of maintenance and storage fees. Without the dedicated and maintained augmentation for each lot, the lot could not legally exist, no well permit could be issued, and no occupancy in a dwelling could happen. Inherent in the value of the property is the dedicated replacement water. Augmentation can be viewed as an improvement to the property/lot. Unlike traditional improvements on a property such as fencing and landscaping, the right to appropriate water for beneficial use, provided by inclusion in an augmentation plan, is an essential part of the initial underlying value of the lot. In fact, the property/lot could not have been subdivided from the original land without the dedication of the augmentation water. Just as land improvements must be maintained in order to retain value, the maintenance of the augmentation water for delivery when needed is an integral part that makes up the value of the property.

### **Augmentation Plan and Water Storage Facilities**

Augmentation plans are very expensive to create and develop costing as much as several hundred thousand dollars and the plans can take more than two years to obtain once filed with the State. Even then, this expense does not end with the acquisition of a decreed plan of augmentation. In 1992, the Upper Arkansas Water Conservancy District board filed for and obtained a "blanket plan of augmentation", a plan in which citizens needing augmentation could make application through the Upper District for inclusion in its blanket plan at a greatly reduced cost. Today the cost to participate in the plan is \$4,000.00 per customer structure, which is a one-time fee, plus a nominal annual fee for maintenance and storage. For the typical residential customer who has in-house water use plus limited outside water use, approval for a well permit supported by the District's blanket plan takes less than 90 days. Note that some of the Upper District's customers may choose to join the Upper District's blanket plan requiring the dedication of water (augmentation) for a lot with the anticipation to construct a well or home at a later date.

<b>Table 3 Summary of Reservoirs Available to Store District Water Resources</b>	
<b>Reservoir</b>	<b>Sub-Basin</b>
Turquoise Lake	Main Stem
Twin Lakes	Main Stem
Rainbow Lake	Middle Cottonwood Creek
Cottonwood Lake	South Cottonwood Creek
North Fork Reservoir	South Arkansas River
Boss Lake Reservoir	South Arkansas River
O'Haver Lake	South Arkansas River
DeWeese Reservoir	Grape Creek
Pueblo Reservoir	Main Stem
Conquistador Reservoir	Taylor & Grape Creek

The blanket augmentation plan is only one of the Upper District's tools for supporting the use of the lands within the Upper District boundaries. The Upper District also maintains several other decrees, substitute supply plans and leases to allow for the appropriate protection of senior water rights on the Upper Arkansas River, Cottonwood and Chalk Creeks, and the South Arkansas River.

As part of Upper District operations, it stores water in several major reservoirs (see Table 3) along the Arkansas River and its tributaries to allow for replacement water to be drawn from its transmountain and

local water sources. **Having the geographic breadth of facilities and water rights allows the Upper District the flexibility to meet the demand for expanded water use in the region protecting against stream depletions associated with current and new development.**

### Summary of Current and Future Water Use and Depletions

As indicated previously, required releases related to District customer’s depletion obligations was 432 AF in 2013. This demand was composed of about 218 AF on the main stem and 114 AF on side drainages. This point illustrates the importance of the Upper District maintaining decrees and leases for water supply and water storage in various geographies throughout the upper basin.

It is also important to note that it is the Upper District’s policy to maintain three times the expected annual replacement water demand in storage. Therefore, the Upper District currently maintains about 1,500 AF of water in storage within those reservoirs listed in Table 3 at any given time.

New demands are occurring across the Upper District’s boundaries on a fairly consistent basis. Between 2000 and 2010, the number of structures that were registered by participants in the Upper District’s augmentation plans rose from 417 to 1,095 – which is an increase of over 160%. In 2013, 39 new structures were enrolled in the Upper District’s plans, which is equivalent to an increase of 3% for last year alone.

<b>Table 4 Estimate of Future Water Demand Based on Population Growth in Chaffee, Custer and Fremont Counties<sup>12</sup></b>					
	Population				
County	2015	2050		Percent Increase from 2015 to 2050	
		High	Low	High	Low
Chaffee	19,923	40,409	31,653	103%	59%
Custer	5,469	11,388	9,639	108%	76%
Fremont	54,743	99,513	86,692	76%	54%
<b>Total</b>	<b>81,866</b>	<b>151,310</b>	<b>127,984</b>	<b>85%</b>	<b>56%</b>

It is anticipated that population growth within the Upper District will continue within the existing decreed augmentation areas. A large part of future growth in augmentation water demand will be due to an expansion of the augmentation areas served within the existing Upper District boundaries. By 2020, an additional demand for domestic/household lots of about 20% will exist, or about 90 AF of additional depletions will require replacement, and an additional 300 AF of storage will be needed to maintain adequate buffers to protect against future depletions from this use. Augmentation water demand in future areas to be served within the existing District boundaries by expanding the augmentation decreed coverage are driven primarily by industrial demands. The water demands are much larger than the traditional domestic users. Within the next two years this demand will exceed 400 to 600 acre feet of depletion replacements. The growth, which is also referred to in the State Water Supply Initiative (SWSI) and in the work of the Arkansas River Basin Round Table, will produce a water supply gap characterized

<sup>12</sup> Data based on SWSI Phase II, CWCB, 2010. Note that although population growth in these three counties will not all be attributable to District current and future customers, since there are municipalities with separate water supply systems within each of these counties; there is an expectation that the District may be called upon to support municipal use in the future, including depletions that may occur related to changing publicly owned treatment works that have reduced return flow credits and changing irrigation return flow schemes. Therefore, these estimates are presented to indicate a reasonable range of potential future demands and storage needs for planning purposes.

to be in the range of 56% to 85% of current water use in Fremont, Chaffee and Custer Counties by 2050, reflecting the need for about 250 to 370 AF of additional replacement water, and about 750 to 1,100 AF of additional storage (see Table 4) by this time within the existing decreed augmentation areas. However it is anticipated that expansion of the decreed areas to meet present demands will require the addition of 400 to 600 acre feet of fully consumable water and at least 1000 acre feet of storage within the next 2 years.

## **Water Efficiency/Water Resources Management Programs – Cause and Effect**

The Upper District has long been a proponent of local and regional water use efficiency, due in part to its mission as an organization, and that prudent and intelligent water resources management makes sense and is good business. To this end, the Upper District has long supported customer education and engagement. The Upper District is also committed to providing resources to support promising pilot programs and studies that will bring about improvements to the science and the administration of the improved management and efficient use of local and regional water resources. Current programs that the Upper District supports and/or sponsors include:

- Water conservation tips on the Upper District website
- Website based evapotranspiration calculation tool (to help characterize water consumption) on the Upper District website
- Financial and other resource support to local and regional water education programs (e.g., Arkansas River Basin Water Forum, Rancher education program, water and hydrology internship program, etc.)
- Studies on improving irrigation efficiencies (e.g., lease following pilot, interruptible water supply pilot, TR-21 (related to engineering analyses of crop depletions))
- COAGMET Data Collection and Transmission (which provides meteorological data online and through the State Climatologist to support the estimation of crop consumption and total water needs)
- Development of decrees and leases that allow for operational flexibility in augmentation and Rule 14 replacements that improve water exchange potential, and/or protect the regional water resources.

Future water conservation programs will focus on leveraging educational programs with those programs that improve Upper District operational flexibility; and allow for regional management of water resources improving the overall efficiency of the Upper District's operations and programs. To accomplish these goals, the Upper District will pursue the development of legal, fiscal, and physical programs and tools that will support the regional management of water resources in support of residential, commercial, environmental and industrial needs. For this purpose, the Upper District will continue to support the water use efficiency and water resources management programs that are listed above.

In addition, the Upper District by necessity will pursue new water efficiency/water resources management programs related to those physical and legal tools that will address future gaps in both water supply and water storage. For example, the Upper District will invest in studying and potentially developing an aquifer storage recovery (ASR) facility in conjunction with a conservation easement and multiuse reservoirs that would enhance and expand the operational flexibility and efficiency of the Upper

District's replacement water programs. The ASR program is considered to be an improvement to the Upper District's current water storage facilities since water loss associated with below ground storage is minimal in comparison to reservoir evaporative losses. In addition, the location of potential ASR sites within the Upper District's boundaries may enhance the operational flexibility for the Upper District to replace stream depletions while minimizing transit related and evaporative losses. For these reasons, ASR facility development and operation is considered an important component of future water use efficiency and water resources management for the Upper District<sup>13</sup>.

Other programs that the Upper District may wish to consider involve supporting more rigorous assessment of selected State policies that address two key areas:

- i) The flexible use of conserved water which is placed into storage for regional use; and
- ii) The enhanced assessment of ecosystem mitigation and injury in association with the State's instream flow and lake protection programs.

Each of these issues is described in more detail below.

One of the most effective means of improving water use efficiency, especially as it relates to improving water supply reliability and sustainability, involves developing and implementing measures and programs that reduce water demand and storing the "conserved water" for use during periods of reduced water availability. Given that the Upper District utilizes its water supplies for purposes of supporting agricultural, municipal, industrial, commercial, and recreational uses, as well as for stock watering and fish and wildlife protection, measures and programs that the Upper District implements to create demand reduction and improve water use efficiency would support all of these uses. However, certain regulations may currently limit how regionally stored conserved water is shared and utilized. It may be in the best interest of the Upper District to be proactive in supporting actions that allow for the flexible use of water stored in regional facilities<sup>14</sup>, without requiring change of use and/or location re-quantification assessments and reporting through the State Engineers Office (SEO). This issue may directly impact the scope of water rights that may be managed and utilized through future Upper District projects including its Trout Creek ASR projects

With respect to instream flows and lake protection programs, improvements in data collection and ecosystem assessment protocols have not necessarily been included in State policies that regulate how and where instream flows are evaluated and considered. It may be in the best interest of the Upper District and many of its partners, including the CWCB, to re-evaluate the methodologies used to determine how instream flows protect the natural environment to a reasonable degree, such that greater balance between neighboring stream reaches and lake systems can be assessed, especially in circumstances where limited available water supplies will need to be shared between competing ecosystems (e.g., lake protection balanced with adjacent downstream instream flow right). The heart of this issue for the Upper District is to promote those policies that help manage resources at a macro scale,

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<sup>13</sup> Evaporation on some high mountain small storage vessels is inefficient compared to large deep vessels. Evaporation from these smaller vessels is as high as 25 to 50% for the Upper District.

<sup>14</sup> More flexible use of conserved water in this case creates efficiencies in terms of the sharing and future utilization of Ark basin water supplies that can be reused (e.g., Fry-Ark return flows, non-tributary groundwater sources, etc.) and in terms of human and capital resources that would be need to support filing and application with the SEO.

linking areas that are adjoining and/or share limited water supply availability, such that multi-use objectives can be considered in future allocation. It is important to note that the Upper District's interests are not in conflict with the State's ISF program, per se, but rather the manner in which the State determines to "preserve or improve the natural environment to a reasonable degree" is established and evaluated. The Upper District believes that new data collection and management programs may allow for a more sophisticated assessment than what has been used in the past, all in the name of improving water use (and water allocation) efficiency.



## Goals for Water Use Efficiency and Improved Water Resources Management

In the Upper District's role to protect and secure water in the Upper Arkansas Valley, it is continuously looking for ways to improve water resource management efficiency to maximize the appropriate use of wet water in the basin with the multiple needs of the community and the available water management facilities. Since many of the traditional best management practices related to municipal water conservation are not applicable to the operations and needs of the Upper District and the communities that it serves, it is important for the Upper District to focus its assessments and commitments to those measures and programs that will support improved water use efficiency within the constructs of the Upper District's operations – thereby helping to protect and secure water for the many uses of water in the Upper Arkansas River Basin<sup>15</sup>.

Therefore, the objectives of the Upper District with respect to improved water use efficiency and water resources management relate to identifying and implementing measures and programs that enhance the use of those water resources that are available to the Arkansas River, in general and the upper basin, specifically. The measures and programs of importance are both structural and procedural – linking the construction of facilities with flexible and creative uses permitted within the constraints of the prior appropriation doctrine.

Developing specific quantitative goals for the Upper District related to the implementation of water use efficiency and improved water resources management is not straightforward, given that the implementation of measures and programs by the Upper District, and the commitment of resources by the Upper District to move its efforts forward, may or may not directly reduce water use or demand in the upper basin. Some of the measures and programs that the Upper District will consider are expected to reduce water losses in the system by reducing demands related to transit and evaporation losses, for example. In other cases, the Upper District's efforts will be focused on allowing water to be shared and managed more efficiently, which by creating flexibility, allows for water to be “moved” from one place to another depending on circumstances and conditions. To this point, flexibility supports enhanced sustainability and utilization of basin-wide resources – efficiency, in other words comes from adjusting demands on an as needed basis, leveraging resources on a regional scale, using water savings in one location (or in one period of time) to support demands in another location or time.

With these limitations in mind, the Upper District has developed the following list of goals related to the implementation of this Plan:

- Develop projects and facility management policies that reduce transit and evaporative losses related to reservoir and other storage vessel operations;

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<sup>15</sup> Note that the District utilizes its water supplies for agricultural, municipal, industrial, domestic, commercial, and non-consumptive uses including protection of fisheries and habitat. Although, the District does not have customers that directly utilize local water resources for recreational uses, the District's management of replacement water enhances the flow of wet water through reaches of the river and its tributaries that support substantial recreational uses (e.g., fishing and rafting). For this reason, the District's water replacement programs sustain benefits for not only the District's customers, but for other entities and interests that rely on the Arkansas River and its tributaries for their livelihood and quality of life.

- Support the development of policies that allow for the flexible use of upper basin water supply, and the transfer and exchange of water between uses and users, to the extent allowed by the prior appropriations doctrine;
- Support local, regional and state-wide water education programs that help to educate the electorate, future voters, and water users of all kinds; and
- Support local and regional projects that improve water use efficiency and water resources management by the Upper District and by its partners.

Water use reductions that may be related to achieving the stated goals may include reductions in transit losses (which will be in the range of 8 to 10 AF); and evaporative losses (which may be in the range of 100 plus AF). More importantly, however, will be those efforts put forth by the Upper District to improve water use efficiency in the Upper Basin, allowing for the more effective utilization of thousands of acre feet of in-basin resources<sup>16</sup>.

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<sup>16</sup> Although this number can only be estimated, construction and operation of a large conjunctive use facility in the upper portion of the Arkansas River Basin will not only allow for the more effective timing of releases to address consumptive and non-consumptive needs, it will also greatly reduce evaporative losses that would accompany a similar sized surface reservoir. In addition, the implementation of programs and projects such as the Master Contract with the Southeastern District to store water in Pueblo Reservoir enhances the exchange potential with lower basin resources allowing for the transfer of underutilized Fry-Ark reusable return flows upstream, thus saving additional wet water resources. The policy changes that the Upper District seeks to explore also have the potential effect of expanding the use of wet water to achieve multiple objectives in a more efficient manner.

## Identification and Selection of Projects, Measures and Programs

The Upper District is not a covered entity under the definition that the State uses to determine which municipal water providers are required to develop and implement a water conservation plan under CRS 37-60-126 (see Appendix A). Therefore, the Upper District is not explicitly required to consider those measures and programs that are contained in Colorado Revised Statute 37-60-126 which defines specific content requirements for all water conservation plans developed by covered entities and approved by the State.

It is nonetheless valuable to present a review of how each of the State's required types of water conservation measures and programs were considered with respect to the Upper District's unique needs (see Table 5). In general, the Upper District has determined that customer demand management techniques are not particularly relevant to the operational issues that it currently faces, due in part to the nature of the augmentation plans that it administers. Indoor demand management does not impact the consumption of water, since all indoor use is essentially returned to the ground through non-evaporative means (i.e., septic tank and leaching field systems). Improvements in outdoor irrigation efficiency do not necessarily reduce consumption either, unless grass is removed and/or replaced with lower water use plantings. Therefore, many traditional water conservation demand management measures and programs do not impact the augmentation requirements needed to offset downstream depletions, and therefore is not of specific concern to the Upper District and the implementation efforts related to this Plan.

For example, customers have an incentive to install high efficiency fixtures and appliances in their homes, to the extent that lower domestic water use requires less energy to pump and heat water; however, these savings are the customer's alone, and do not impact the augmentation deliveries that are provided by the Upper District. Incentives are limited from the Upper District perspective regarding promoting and encouraging indoor and even outdoor water use efficiencies if those efficiencies do not directly impact augmentation efforts.

As for water loss management, which is also a component of the State's requirements for consideration, the Upper District does not operate an infrastructure latent water distribution system similar to those that all municipalities must construct, maintain and operate. The Upper District instead focuses its water loss management efforts on the reduction of transit and evaporative losses since the main stem and tributaries of the Arkansas River serve as the distribution system for the delivery of customer water (i.e., augmentation deliveries to offset the timing and volume of depletions). Therefore, water loss management for the Upper District is not at all like the programs that are applicable to municipal utilities. Even customer metering is different for the Upper District<sup>17</sup>.

For these reasons, the District will choose to focus its resources on those projects, measures and programs that address improved water use efficiency and water resources management of upper basin water supplies that are integrated or related to the augmentation water programs that it administers. Table 5 presents a review of the State's measures and programs that must be considered by a covered entity, and discussed the relevance of each with respect to the Upper District's circumstance and need.

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<sup>17</sup> Each customer/augmentation plan member is responsible for metering, meter maintenance, and meter data reporting to the Upper District on a monthly basis.

**Table 5**  
**Review of State Required Measures and Programs for Consideration Under CRS 30-67-126 (4)(a)**

Measure or Program	Applicability to the Upper District's Water Conservation Needs	Status for Further Evaluation
Water-efficient fixtures and appliances, including toilets, urinals, clothes washers, showerheads, and faucet aerators	Customer efforts to replace aging water using fixtures and appliances will create water demand reductions over the planning period saving energy costs and regional water demand for coal power generation; however the augmentation water provided by the District will not change based on indoor water efficiency improvements.	No further evaluation necessary
Low water use landscapes, drought-resistant vegetation, removal of phreatophytes, and efficient irrigation	Augmentation water requirements can be affected by reduced outdoor irrigation consumption, as long as lawn size is reduced and/or replaced with low water use landscapes and/or drought-resistant native vegetation.	The District may consider changes to enrollment fees and augmentation rates for appropriate landscape improvements
Water-efficient industrial and commercial water-using processes	The Upper District has only a few commercial customers who are chiefly gravel operations that have augmentation requirements related to evaporative losses. These facilities may benefit from improved water use efficiency; however the cost for new commercial equipment is beyond the scope of this planning effort.	No further evaluation necessary
Water reuse systems	The District does have the potential to utilize reusable water supplies, such as Project Water return flows, once the Master Contract has been executed. This may allow the Upper District to make exchanges with more entities including those in the lower basin leveraging the Master Contract to manage Pueblo Reservoir storage pools. Other future programs may also allow for expansion of other alternative water supplies.	Water reuse will be considered by the Upper District within its Plan
Distribution system leak identification and repair	The Upper District will evaluate methods to reduce transit losses and reservoir evaporative losses.	Include transit and evaporative loss management improvements within the Plan
Dissemination of information regarding water use efficiency measures, including by public education, customer water use audits, and water-saving demonstrations	The Upper District currently maintains educational programs to support public and customer education	Include water education programs within the Plan
Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner	The Upper District has a rate structure that is consistently applied to its customers. Future rate structures may be revised to provide incentives for more efficient landscapes; however, that effort is beyond the scope of this Plan.	No further evaluation necessary
Regulatory measures designed to encourage water conservation	The Upper District will continue to support improvements to water policy and procedures that improve water use efficiency and allow for the more flexible exchange and transfer of water within the construct of the prior appropriations doctrine.	Include efforts to support appropriate water policy development that supports the goals and mission of the Upper District
Incentives to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures	The Upper District does not receive direct benefit in providing incentives for customer indoor water conservation. Outdoor landscape water conservation developed by reducing consumptive use of lawns may be worth considering in the future but is beyond the scope of this Plan.	No further evaluation necessary

The projects, measures and programs that are relevant to the Upper District for consideration within the current planning horizon of 5 to 7 years are presented in Table 6. The projects, measures and programs that are listed in Table 6 include those that are ongoing, those that are related to other regional efforts (e.g., the Master Contract for storage with the Southeastern Colorado Water Conservancy District), those that the Upper District has long conducted (e.g., establishing proactive positions on relevant water policy), and those that are new, but have been long under consideration and evaluation (e.g., Trout Creek conjunctive use project). Combined, these projects, measures and programs not only address the goals of the Upper District's Water Use and Water Resources Management Efficiency Plan, but dictate a significant portion of regional water management in the upper basin.

**Table 6**  
**Listing of Projects, Measures and Programs for Consideration by the Upper District**

Program	Description	Implementation Tasks	Timing		
			1-2 years	3-5 years	>5 years
Master Contract for Storage of Non-Project Water in Pueblo Reservoir	Allows for exchanges with the LAVWCD including reusable Fry-Ark Project Water return flows and allows for the Upper District to meet demand during periods when direct flow rights do not meet demands and higher elevation storage vessels are subject to freezing - allowing for storage during peak runoff in Pueblo Reservoir until wintertime needs arise.	Execute contract with Southeastern	X		
		Continue operations with new contract (which allows for prolonged use of Pueblo Reservoir, and enhances potential for exchanges and transfers)	X	X	X
		Establish and continue annual reporting to Southeastern		X	X
Trout Creek ASR Project	Relates to the construction and future operations of 10,000 AF of conjunctive use facilities in the Buena Vista area, managed in coordination with downstream gravel pits reducing transit and evaporative losses associated with storage and delivery of augmentation flows.	Establish regional entity (i.e., legal structure and sub-district enterprise) to carry debt service	X		
		Obtain control of land and water rights		X	
		Conduct physical studies on ASR and the site hydrogeology		X	X
Establish proactive positioning regarding relevant state water policies	Regarding two key issues that currently impact (or will impact) the efficient management of Upper District facilities and water rights; and limits the efficient utilization of water for multiple uses in the upper basin	Follow and engage with SEO regarding the nature and use of conserved water stored regionally for multiple uses	X	X	
		Engage the CWCB in discussions regarding enhancing scope and scale of instream flow evaluations in light of improved data collection and assessment methodologies – including existing and future instream flow rights	X	X	
Evaluate alternative fees for customers that reduce or eliminate lawn irrigation consumptive use	By eliminating or reducing outdoor consumption, augmentation water demands would decrease. Need to balance reduced cost with operational needs of the Upper District	Evaluate revised enrollment and annual fees as incentive		X	
		Establish “red-flags” associated with monthly reporting that would indicate non-compliance; and enforcement actions (fines, etc.)		X	
Continue current programs related to education, outreach and policy support		Water conservation tips on the Upper District website	X	X	X
		Website based evapotranspiration calculation tool	X	X	X
		Support to local and regional water education programs	X	X	X
		Studies on improving irrigation efficiencies (e.g., lease following pilot, interruptible water supply pilot, TR-21, etc.)	X	X	X
		COAGMET Data Collection and Transmission	X	X	X
		Development of decrees and leases that allow for operational flexibility in augmentation and Rule 14 replacements	X	X	X

## Implementation of the Plan

The implementation of the selected Plan elements presented in Table 6 will proceed based on a number of factors. The factors that will influence implementation include:

- Funding availability within the annual operating budget of the Upper District;
- Ongoing regional partnerships;
- Contractual obligations and requirements;
- Coordination with coordinating agencies and organizations; and
- Funding support from other parties relevant to large, shared projects.

Current funding levels within the Upper District will support all of the proposed projects, measures and programs listed in Table 6 except the development of the Trout Creek ASR project, since that project will require a new administrative structure and/or regional entity to issue bonds and pay debt, beyond the scope of what the Upper District can currently perform. Nonetheless, the Upper District has, and will continue to commit resources to evaluating the ASR project and supporting discussions within regional and statewide entities to help move the project forward.

Data collection related to the implementation of this Plan will essentially be the same as it currently is for the Upper District. Daily and monthly reporting to the Board and the State will remain the same, and those data will be used, as they are now, to track and quantify transit and evaporation related losses. Therefore, any progress that is made regarding the stated water conservation goals and improvements in water use efficiency is already incorporated into the data collection and management efforts of the Upper District.

Some of the benefits of the Upper District's efforts related to formalizing the implementation of this Plan will be how those efforts are incorporated into the Arkansas Basin Basin Implementation Plan. The nexus between the Upper District's regional efforts (projects and policy) and those of the Arkansas Basin Round Table will help to create a broader understanding and involvement of water interests and water agencies in critical policy discussions. The nexus will also help to link project and policy needs with CWCB funding through one of the grant programs that CWCB administers (e.g., Water Supply Reserve Account, Water Efficiency Grant Fund, etc.)<sup>18</sup>. Coordination of the Upper District's efficiency efforts with the Arkansas Round Table will also help to inform and support regional and basin wide water efficiency efforts.

### Updating the Plan

The Upper District's Plan will be reviewed and updated informally throughout the planning period (i.e., until the end of 2022). The Upper District may choose to formally update the Plan whenever it is valuable to the organization dependant on financial needs, and/or substantial changes to its current

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<sup>18</sup> Grant funding to support the implementation of the Upper District's Plan may include grants that are awarded to the Upper District, or are awarded to other groups of project participants of which the Upper District is either an active participant or collaborator.

operating conditions. At the very least, the Upper District will update this Plan in 7 years, or by the end of 2022.

### **Plan Public Review and Comment**

The Plan has undergone public review in accordance with the requirements of the State regulations for a period of 60 days – from June 11, 2015 to August 10, 2015. A notice of the public review was printed in the local newspaper (see Appendix B). A copy of the draft Plan was made available to the public at the offices of the District. During this period of time, no public comments were received.



## **Appendix A**

Colorado Revised Statute 37-60-126



*C.R.S. 37-60-126*

COLORADO REVISED STATUTES

\*\*\* This document reflects changes current through all laws passed at the First Regular Session of the Sixty-Ninth General Assembly of the State of Colorado (2013) \*\*\*

TITLE 37. WATER AND IRRIGATION  
WATER CONSERVATION BOARD AND COMPACTS  
ARTICLE 60. COLORADO WATER CONSERVATION BOARD  
PART 1. GENERAL PROVISIONS

C.R.S. 37-60-126 (2013)

37-60-126. Water conservation and drought mitigation planning - programs - relationship to state assistance for water facilities - guidelines - water efficiency grant program - repeal

(1) As used in this section and [section 37-60-126.5](#), unless the context otherwise requires:

(a) "Agency" means a public or private entity whose primary purpose includes the promotion of water resource conservation.

(b) "Covered entity" means each municipality, agency, utility, including any privately owned utility, or other publicly owned entity with a legal obligation to supply, distribute, or otherwise provide water at retail to domestic, commercial, industrial, or public facility customers, and that has a total demand for such customers of two thousand acre-feet or more.

(c) "Grant program" means the water efficiency grant program established pursuant to subsection (12) of this section.

(d) "Office" means the office of water conservation and drought planning created in [section 37-60-124](#).

(e) "Plan elements" means those components of water conservation plans that address water-saving measures and programs, implementation review, water-saving goals, and the actions a covered entity shall take to develop, implement, monitor, review, and revise its water conservation plan.

(f) "Public facility" means any facility operated by an instrument of government for the benefit of the public, including, but not limited to, a government building; park or other recreational facility; school, college, university, or other educational institution; highway; hospital; or stadium.

(g) "Water conservation" means water use efficiency, wise water use, water transmission and distribution system efficiency, and supply substitution. The objective of water

conservation is a long-term increase in the productive use of water supply in order to satisfy water supply needs without compromising desired water services.

(h) "Water conservation plan", "water use efficiency plan", or "plan" means a plan adopted in accordance with this section.

(i) "Water-saving measures and programs" includes a device, a practice, hardware, or equipment that reduces water demands and a program that uses a combination of measures and incentives that allow for an increase in the productive use of a local water supply.

(2) (a) Each covered entity shall, subject to [section 37-60-127](#), develop, adopt, make publicly available, and implement a plan pursuant to which such covered entity shall encourage its domestic, commercial, industrial, and public facility customers to use water more efficiently. Any state or local governmental entity that is not a covered entity may develop, adopt, make publicly available, and implement such a plan.

(b) The office shall review previously submitted conservation plans to evaluate their consistency with the provisions of this section and the guidelines established pursuant to paragraph (a) of subsection (7) of this section.

(c) On and after July 1, 2006, a covered entity that seeks financial assistance from either the board or the Colorado water resources and power development authority shall submit to the board a new or revised plan to meet water conservation goals adopted by the covered entity, in accordance with this section, for the board's approval prior to the release of new loan proceeds.

(3) The manner in which the covered entity develops, adopts, makes publicly available, and implements a plan established pursuant to subsection (2) of this section shall be determined by the covered entity in accordance with this section. The plan shall be accompanied by a schedule for its implementation. The plans and schedules shall be provided to the office within ninety days after their adoption. For those entities seeking financial assistance, the office shall then notify the covered entity and the appropriate financing authority that the plan has been reviewed and whether the plan has been approved in accordance with this section.

(4) A plan developed by a covered entity pursuant to subsection (2) of this section shall, at a minimum, include a full evaluation of the following plan elements:

(a) The water-saving measures and programs to be used by the covered entity for water conservation. In developing these measures and programs, each covered entity shall, at a minimum, consider the following:

(I) Water-efficient fixtures and appliances, including toilets, urinals, clothes washers, showerheads, and faucet aerators;

(II) Low water use landscapes, drought-resistant vegetation, removal of phreatophytes, and

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efficient irrigation;

(III) Water-efficient industrial and commercial water-using processes;

(IV) Water reuse systems;

(V) Distribution system leak identification and repair;

(VI) Dissemination of information regarding water use efficiency measures, including by public education, customer water use audits, and water-saving demonstrations;

(VII) (A) Water rate structures and billing systems designed to encourage water use efficiency in a fiscally responsible manner.

(B) The department of local affairs may provide technical assistance to covered entities that are local governments to implement water billing systems that show customer water usage and that implement tiered billing systems.

(VIII) Regulatory measures designed to encourage water conservation;

(IX) Incentives to implement water conservation techniques, including rebates to customers to encourage the installation of water conservation measures;

(b) A section stating the covered entity's best judgment of the role of water conservation plans in the covered entity's water supply planning;

(c) The steps the covered entity used to develop, and will use to implement, monitor, review, and revise, its water conservation plan;

(d) The time period, not to exceed seven years, after which the covered entity will review and update its adopted plan; and

(e) Either as a percentage or in acre-foot increments, an estimate of the amount of water that has been saved through a previously implemented conservation plan and an estimate of the amount of water that will be saved through conservation when the plan is implemented.

(4.5) (a) On an annual basis starting no later than June 30, 2014, covered entities shall report water use and conservation data, to be used for statewide water supply planning, following board guidelines pursuant to paragraph (b) of this subsection (4.5), to the board by the end of the second quarter of each year for the previous calendar year.

(b) No later than February 1, 2012, the board shall adopt guidelines regarding the reporting of water use and conservation data by covered entities and shall provide a report to the senate agriculture and natural resources committee and the house of representatives agriculture, livestock, and natural resources committee, or their successor committees, regarding the guidelines. These guidelines shall:



(I) Be adopted pursuant to the board's public participation process and shall include outreach to stakeholders from water providers with geographic and demographic diversity, nongovernmental organizations, and water conservation professionals; and

(II) Include clear descriptions of: Categories of customers, uses, and measurements; how guidelines will be implemented; and how data will be reported to the board.

(c) (I) No later than February 1, 2019, the board shall report to the senate agriculture and natural resources committee and the house of representatives agriculture, livestock, and natural resources committee, or their successor committees, on the guidelines and data collected by the board under the guidelines.

(II) This paragraph (c) is repealed, effective July 1, 2020.

(5) Each covered entity and other state or local governmental entity that adopts a plan shall follow the entity's rules, codes, or ordinances to make the draft plan available for public review and comment. If there are no rules, codes, or ordinances governing the entity's public planning process, then each entity shall publish a draft plan, give public notice of the plan, make such plan publicly available, and solicit comments from the public for a period of not less than sixty days after the date on which the draft plan is made publicly available. Reference shall be made in the public notice to the elements of a plan that have already been implemented.

(6) The board is hereby authorized to recommend the appropriation and expenditure of revenues as are necessary from the unobligated balance of the five percent share of the severance tax operational fund designated for use by the board for the purpose of the office providing assistance to covered entities to develop water conservation plans that meet the provisions of this section.

(7) (a) The board shall adopt guidelines for the office to review water conservation plans submitted by covered entities and other state or local governmental entities. The guidelines shall define the method for submitting plans to the office, the methods for office review and approval of the plans, and the interest rate surcharge provided for in paragraph (a) of subsection (9) of this section.

(b) If no other applicable guidelines exist as of June 1, 2007, the board shall adopt guidelines by July 31, 2007, for the office to use in reviewing applications submitted by covered entities, other state or local governmental entities, and agencies for grants from the grant program and from the grant program established in [section 37-60-126.5 \(3\)](#). The guidelines shall establish deadlines and procedures for covered entities, other state or local governmental entities, and agencies to follow in applying for grants and the criteria to be used by the office and the board in prioritizing and awarding grants.

(8) A covered entity may at any time adopt changes to an approved plan in accordance with this section after notifying and receiving concurrence from the office. If the proposed changes are major, the covered entity shall give public notice of the changes, make the

changes available in draft form, and provide the public an opportunity to comment on such changes before adopting them in accordance with subsection (5) of this section.

(9) (a) Neither the board nor the Colorado water resources and power development authority shall release grant or loan proceeds to a covered entity unless the covered entity provides a copy of the water conservation plan adopted pursuant to this section; except that the board or the authority may release the grant or loan proceeds notwithstanding a covered entity's failure to comply with the reporting requirements of subsection (4.5) of this section or if the board or the authority, as applicable, determines that an unforeseen emergency exists in relation to the covered entity's loan application, in which case the board or the authority, as applicable, may impose a grant or loan surcharge upon the covered entity that may be rebated or reduced if the covered entity submits and adopts a plan in compliance with this section in a timely manner as determined by the board or the authority, as applicable.

(b) The board and the Colorado water resources and power development authority, to which any covered entity has applied for financial assistance for the construction of a water diversion, storage, conveyance, water treatment, or wastewater treatment facility, shall consider any water conservation plan filed pursuant to this section in determining whether to render financial assistance to such entity. Such consideration shall be carried out within the discretion accorded the board and the Colorado water resources and power development authority pursuant to which such board and authority render such financial assistance to such covered entity.

(c) The board and the Colorado water resources and power development authority may enter into a memorandum of understanding with each other for the purposes of avoiding delay in the processing of applications for financial assistance covered by this section and avoiding duplication in the consideration required by this subsection (9).

(10) Repealed.

(11) (a) Any section of a restrictive covenant or of the declaration, bylaws, or rules and regulations of a common interest community, all as defined in [section 38-33.3-103, C.R.S.](#), that prohibits or limits xeriscape, prohibits or limits the installation or use of drought-tolerant vegetative landscapes, or requires cultivated vegetation to consist wholly or partially of turf grass is hereby declared contrary to public policy and, on that basis, is unenforceable. This paragraph (a) does not prohibit common interest communities from adopting and enforcing design or aesthetic guidelines or rules that require drought-tolerant vegetative landscapes or regulate the type, number, and placement of drought-tolerant plantings and hardscapes that may be installed on the unit owner's property or property for which the unit owner is responsible.

(b) As used in this subsection (11):

(I) "Executive board policy or practice" includes any additional procedural step or burden, financial or otherwise, placed on a unit owner who seeks approval for a landscaping change by the executive board of a unit owners' association, as defined in [section 38-33.3-103,](#)

C.R.S., and not included in the existing declaration or bylaws of the association. An "executive board policy or practice" includes, without limitation, the requirement of:

(A) An architect's stamp;

(B) Preapproval by an architect or landscape architect retained by the executive board;

(C) An analysis of water usage under the proposed new landscape plan or a history of water usage under the unit owner's existing landscape plan; and

(D) The adoption of a landscaping change fee.

(II) "Restrictive covenant" means any covenant, restriction, bylaw, executive board policy or practice, or condition applicable to real property for the purpose of controlling land use, but does not include any covenant, restriction, or condition imposed on such real property by any governmental entity.

(II.5) "Turf" means a covering of mowed vegetation, usually turf grass, growing intimately with an upper soil stratum of intermingled roots and stems.

(III) "Turf grass" means continuous plant coverage consisting of nonnative grasses or grasses that have not been hybridized for arid conditions which, when regularly mowed, form a dense growth of leaf blades and roots.

(IV) "Xeriscape" means the application of the principles of landscape planning and design, soil analysis and improvement, appropriate plant selection, limitation of turf area, use of mulches, irrigation efficiency, and appropriate maintenance that results in water use efficiency and water-saving practices.

(c) Nothing in this subsection (11) precludes the executive board of a common interest community from taking enforcement action against a unit owner who allows his or her existing landscaping to die or go dormant; except that:

(I) No enforcement action shall require that a unit owner water in violation of water use restrictions declared by the jurisdiction in which the common interest community is located, in which case the unit owner shall water his or her landscaping appropriately but not in excess of any watering restrictions imposed by the water provider for the common interest community;

(II) Enforcement shall be consistent within the community and not arbitrary or capricious; and

(III) In any enforcement action in which the existing turf grass is dead or dormant due to insufficient watering, the unit owner shall be allowed a reasonable and practical opportunity, as defined by the association's executive board, with consideration of applicable local growing seasons or practical limitations, to reseed and revive turf grass before being required to replace it with new sod.

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(d) This subsection (11) does not supersede any subdivision regulation of a county, city and county, or other municipality.

(12) (a) (I) There is hereby created the water efficiency grant program for purposes of providing state funding to aid in the planning and implementation of water conservation plans developed in accordance with the requirements of this section and to promote the benefits of water efficiency. The board is authorized to distribute grants to covered entities, other state or local governmental entities, and agencies in accordance with its guidelines from the moneys transferred to and appropriated from the water efficiency grant program cash fund, which is hereby created in the state treasury.

(II) Moneys in the water efficiency grant program cash fund are hereby continuously appropriated to the board for the purposes of this subsection (12) and shall be available for use until the programs and projects financed using the grants have been completed.

(III) For each fiscal year beginning on or after July 1, 2010, the general assembly shall appropriate from the fund to the board up to five hundred thousand dollars annually for the purpose of providing grants to covered entities, other state and local governmental entities, and agencies in accordance with this subsection (12). Commencing July 1, 2008, the general assembly shall also appropriate from the fund to the board fifty thousand dollars each fiscal year to cover the costs associated with the administration of the grant program and the requirements of [section 37-60-124](#). Moneys appropriated pursuant to this subparagraph (III) shall remain available until expended or until June 30, 2020, whichever occurs first.

(IV) Any moneys remaining in the fund on June 30, 2020, shall be transferred to the severance tax operational fund described in [section 39-29-109 \(2\) \(b\)](#), C.R.S.

(b) Any covered entity or state or local governmental entity that has adopted a water conservation plan and that supplies, distributes, or otherwise provides water at retail to customers may apply for a grant to aid in the implementation of the water efficiency goals of the plan. Any agency may apply for a grant to fund outreach or education programs aimed at demonstrating the benefits of water efficiency. The office shall review the applications and make recommendations to the board regarding the awarding and distribution of grants to applicants who satisfy the criteria outlined in this subsection (12) and the guidelines developed pursuant to subsection (7) of this section.

(c) This subsection (12) is repealed, effective July 1, 2020.

**HISTORY:** Source: L. 91: Entire section added, p. 2023, § 4, effective June 4. L. 99: (10) repealed, p. 25, § 3, effective March 5. L. 2003: (4)(g) amended and (11) added, p. 1368, § 4, effective April 25. L. 2004: Entire section amended, p. 1779, § 3, effective August 4. L. 2005: (11) amended, p. 1372, § 1, effective June 6; (1), (2)(b), and (7) amended and (12) added, p. 1481, § 1, effective June 7. L. 2007: (1)(a), (2)(a), (5), (7), and (12) amended, p. 1890, § 1, effective June 1. L. 2008: IP(4) amended, p. 1575, § 30, effective May 29; (12)(a) amended, p. 1873, § 14, effective June 2. L. 2009: (12)(a) amended, ([HB 09-1017](#)),



ch. 297, p. 1593, § 1, effective May 21; (9)(a) amended, (SB 09-106), ch. 386, p. 2091, § 3, effective July 1.L. 2010: (4)(a)(I) and (9)(a) amended and (4.5) added, (HB 10-1051), ch. 378, p. 1772, § 1, effective June 7; (12)(a)(III), (12)(a)(IV), and (12)(c) amended, (SB 10-025), ch. 379, p. 1774, § 1, effective June 7.L. 2013: (11)(a), (11)(b)(III), IP(11)(c), (11)(c)(I), and (11)(c)(III) amended and (11)(b)(II.5) and (11)(d) added, (SB 13-183), ch. 187, p. 756, § 1, effective May 10; (6) and (12)(a)(IV) amended, (SB 13-181), ch. 209, p. 873, § 24, effective May 13.

Editor's note: Subsection (12) was originally enacted as subsection (13) in House Bill 05-1254 but was renumbered on revision for ease of location.

Cross references: (1) In 1991, this entire section was added by the "Water Conservation Act of 1991". For the short title and the legislative declaration, see sections 1 and 2 of chapter 328, Session Laws of Colorado 1991.

(2) For the legislative declaration contained in the 2004 act amending this section, see section 1 of chapter 373, Session Laws of Colorado 2004.

## **Appendix B**

### Record of Public Notice



# CERTIFICATE OF PUBLICATION

STATE OF COLORADO } SS

County of Chaffee

I, MERLE J. BARANCZYK,

Being first duly sworn according to law, on oath depose and say, that I am, and at all the times herein mentioned, was the publisher of the Mountain Mail and that said Mountain Mail is a daily newspaper of general circulation, in said County and State, printed and published in the City of Salida, County of Chaffee and State of Colorado, and that copies of each number thereof are, and at all the times herein mentioned were, regularly distributed and delivered, by carrier or mail, to each of the subscribers said newspaper, in accordance with the customary method of business in newspaper offices.

That the annexed \_\_\_\_\_  
PUBLIC NOTICE \_\_\_\_\_  
BY \_\_\_\_\_  
THE UPPER ARKANSAS WATER CONSERVANCY DISTRICT \_\_\_\_\_


In the matter of \_\_\_\_\_  
WATER USE AND WATER RESOURCES MANAGEMENT EFFICIENCY \_\_\_\_\_  
PLAN \_\_\_\_\_  
60 DAY PUBLIC REVIEW/PUBLIC COMMENT \_\_\_\_\_

This is a true copy of the original, and the same was regularly published in the newspaper proper and not in a supplement, for the full period of \_\_\_\_\_  
ONE (1) INSERTION \_\_\_\_\_  
of said newspaper, and that the first publication was in the issue dated \_\_\_\_\_  
JUNE 11TH, 2015 \_\_\_\_\_  
and that the last publication of the same was in the issue dated \_\_\_\_\_  
JUNE 11TH, 2015 \_\_\_\_\_

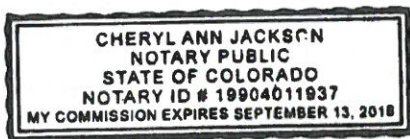
and the said Mountain Mail has been established, printed and published for the full period of fifty-two consecutive weeks, and continuously and uninterruptedly prior to the said date of the first publication of the notice aforesaid, in the City of Salida, County of Chaffee and State of Colorado, and is a newspaper duly qualified for the publishing of said notice within the meaning of an Act of the General Assembly of the State of Colorado, approved May 30th, 1923, and entitled "An act to Amend an Act Entitled 'An Act Concerning Legal Notices, Advertisements and Publications and the Fees of Printers and Publishers thereof, and to Repeal all Acts and Parts of Acts in Conflict with the Provisions of this Act'," and within the meaning of an Act amendatory thereof, approved May 18th, 1931 and entitled "An Act to Amend Section 4, of Chapter 139, Session Laws of Colorado, 1923, relating to Legal Notices and Advertisements," and within the meaning of any and all other Acts amendatory thereof or supplemental thereto. And further affiant saith not.



The above certificate of publication was subscribed and sworn to before me by the above named Merle J. Baranczyk who is personally known to me to be the identical person described in the above certificate, on the 11TH Day of JUNE, 2015 A.D. FEIN # 84-0718607



CHERYL ANN JACKSON, NOTARY PUBLIC-ID#19904011937  
STATE OF COLORADO/COUNTY OF CHAFFEE  
My Commission Expires: September 13<sup>th</sup>, 2018



## PROOF OF PUBLICATION

### PUBLIC NOTICE Upper Arkansas Water Conservancy District Water Use and Water Resources Management Efficiency Plan Available for Comment

The Upper Arkansas Water Conservancy District has completed a draft Water Use and Water Resources Management Efficiency Plan. The goal of the plan is to develop programs for efficient and sustainable water use. Before finalizing the Plan, the District welcomes comments from the public. The 60-day public review period begins the day of this notice, June 11, 2015 through August 10, 2015. A complete draft copy will be available at the District's Offices at 339 East Highway 50, Salida, CO for public review, Monday through Friday, between 9:00 am and 4:00 pm. The draft Water Use and Water Resources Management Efficiency Plan will also be posted on the web at [www.uawcd.com](http://www.uawcd.com). All written comments are due prior to 4:00 pm, August 10, 2015. Comments can be dropped off or mailed to UAWCD, P.O. Box 1090, Salida, CO 81201. Published in The Mountain Mail June 11, 2015.