ArkDSS Memorandum
Final

To: Bill Tyner and Kelley Thompson, Colorado Division of Water Resources

From: Wilson Water Group

Subject: Task 2.1 – Interview Water Users and Providers
Notes from Water District 79 Meeting

Date: February 2019

Introduction

This memorandum provides notes from the August 30, 2017 meeting with the Water District 79 Water Commissioner. Water District 79 encompasses the Upper Huerfano River basin upstream of the confluence with the Cucharas River (the boundary is about 4 miles upstream of the confluence). Meetings were held with Water Commissioners in each Water District in the ArkDSS study area. The objectives of these meetings were to 1) develop an initial basin understanding; 2) determine diversion and reservoir structures that should be included in future detailed modeling efforts, and 3) determine which reservoirs and diversions warrant more detailed investigation and technical documentation. These objectives support Task 3 Consumptive Use Analysis and Task 4 Surface Water Modeling. Information in this memorandum is believed to be accurate for water planning and modeling purposes; however this information should not be relied upon in any legal proceeding.

Approach

In preparation for the meeting, Water District 79 data were compiled and reviewed using the following procedure outlined in the ArkDSS Scope of Work:

1. Review the availability of diversion, reservoir storage, and streamflow data
2. Review historical call data and identify how it may vary from current call reporting standards.
3. Identify net absolute water rights for structures in each Water District. Review the irrigated lands master parcel set and ditch service to identify ditches with water rights and/or diversions records but for which irrigated areas have not been identified.
4. Develop an initial list of key structures and structures with acreage and water rights, but no diversion records to understand areas without records and how to estimate their use.

Maps were also developed displaying reservoirs, diversion headgate locations, and irrigated acreage of the Water District to facilitate the discussions.

The interview with the Water Commissioners and the Division Engineer was intended to determine structures that should be considered key based on seniority, water administration, or basin operations. Prior to the meeting, a brief description of the purpose and goals of the

interview was provided to the Water Commissioner. The following is a summary of the meeting agenda:

1. Review straight-line diagrams for accuracy
2. Develop a list of major projects, reservoirs, and ditches in the water district, including names of knowledgeable contact people
3. Gather information on dry-up points in the river, calling rights, augmentation plans, and administration specific to the water district
4. Gather general information on the preliminary list of irrigation diversions selected to include in future detailed modeling efforts (key structures), and solicit input on their final inclusion
5. Develop information on reservoirs, such as owner entities, ditches that get reservoir deliveries, assigned delivery losses, etc.
6. Correct irrigated acreage information

Meeting Attendance

The meeting was held at the Division of Water Resources (DWR) Office in Pueblo. The following people attended the meeting:

Steve Witte, DWR, Division 2 Engineer
Bill Tyner, DWR, Assistant Division 2 Engineer
John Van Oort, DWR, River Operations Coordinator
Lenna Rauber, DWR, Water District 79 Commissioner
Doug Brgoch, DWR, Southern Region Commissioner and Water District 16 & 18 Commissioner
Kara Sobieski, Wilson Water Group
Katie Birch, Wilson Water Group

Transbasin Diversions

Water District 79 receives imported supplies from the Rio Grande River basin via the Hudson Branch Ditch (7900851) and Medano Creek Ditch (7900968). Hudson Branch Ditch diverts water into North Muddy Creek and Medano Creek Ditch diverts water into South Bruff Creek. The transmountain diversions, constructed through Congressional authorization, divert a total of 15 cfs from May 1st through July 15th. An informal agreement allowed for an additional 3 cfs of diversions from September 1st through October 31st, however this was administratively vacated in 2007. Ditches receiving transmountain water use their native water in-priority first, then utilize transmountain supplies once their native water rights are out-of-priority. Refer to the Wolf Springs Ranch summary in the Tributary Specific Information section below for more information on how the transbasin diversions are used on the ranch. Records are available under the WDID for each structure in HydroBase.

Compacts and Agreements Affecting District 79 Administration

Water District 79 is subject to administration of the Colorado-Kansas Arkansas River Compact, including John Martin Reservoir storage calls which can extend into the Cucharas and Huerfano River basins. A noted exception, discussed in more detail below, is that Read water rights decreed on the Cucharas River and Huerfano River are senior and not subject to Arkansas River mainstem calls. The Huerfano River may operate under futile call conditions for a portion of the year. Note that an administrative tool is currently under development to assist Division 2 staff in determining futile call conditions using Lower Huerfano River streamflow and river call scenarios. Water District 79 is also subject to the Compact Rules Governing Improvements to Surface Water Irrigation Systems (Irrigation Improvement Rules).

Administration of Read, Killian, and Atwood Water Rights

Water administration in the Huerfano River and Cucharas River basins is primarily driven by three separate decrees, referred to by the judges that signed the decrees:

- **Read Adjudication** (June 12, 1889): Judge Read issued the first adjudication of the irrigation water rights and decreed the first 99 water rights in the Huerfano River basin and the first 70 direct water rights and 3 storage rights in the Cucharas River basin. The appropriation dates for the included water rights ranged from 1862 up to 1889. Judge Read numbered and prioritized the water rights in the decree based on appropriation date (e.g. Priority No. 1 reflects the most senior appropriation date in the decree).
- **Killian Adjudication** (February 23, 1898 continued to October 15, 1901): Judge Killian entered a "supplemental" decree for 225 direct water rights and 22 storage rights in the Huerfano River and Cucharas River basins. The proceedings were continued until 1901 and additional 30 water rights were added to the adjudication. Judge Killian also numbered and prioritized the water rights in the decree based on appropriation date (e.g. Priority No. 1 reflects the most senior appropriation date in the decree), creating the appearance of "competing" priorities with the Read Adjudication.
- **Atwood Adjudication** (October 3, 1921): Judge Atwood entered a "supplemental" decree (Case No. CA1414) for 199 direct rights and 89 storage rights in the Huerfano River and Cucharas River basins. This decree also numbered and prioritized the water rights in the decree based on appropriation date, however started after the last priority decreed in the Killian Adjudication.

Colorado Supreme Court Case No. 9055 (Field v. Kincaid) and No. 11557 (Huerfano County v. Hinderlider) held that:

- water rights in the Read Adjudication are senior to those decreed in the Killian Adjudication, citing the supplemental intent of the adjudication;

- Read water rights cannot be curtailed to satisfy a call on the Arkansas River[1];
- Killian and Atwood water rights are administered based on their appropriation date against calls on the Arkansas River; and
- Killian and Atwood water rights are administered based on their adjudication date within the Cucharas and Huerfano River districts.

Stream Gages

There are two active streamflow gages in Water District 79, operated by either the USGS or DWR. Division 2 staff added a gage at the I-25 crossing of the Huerfano River in 2018 (Huerfano River at I-25 (HUEI25CO). The gages, station IDs, and comments regarding the use or quality of the gage are summarized below. DWR staff indicated that additional streamflow gage data may be available from the Division 2 Hydrographer, Joey Talbott. Available data will be requested and incorporated with data available from HydroBase during the modeling phase.

Huerfano River at Manzanares Crossing, near Redwing, CO (07111000)

- Primary gage used for administration of the District
- Missing record for 1988-1994 period in HydroBase; information may be available from Division 2 Hydrographer
- Gage record is generally accurate with only sporadic issues

Huerfano River at Badito, CO (07112500)

- Secondary gage used for administration of the District.
- Gage record accuracy is fair because of a sandy channel composition at the measurement location. The accuracy has been improved since radar was installed in 2015, and there are additional plans to add a lined control channel to further improve accuracy.
- Significant data gaps throughout the 1925-2015 period of record; information may be available from Division 2 Hydrographer. Note that the gage was actually deactivated over the 1997 to 2005 period.
- Potentially combine with Huerfano River near Badito, CO (07112000) gage (POR 1941 – 1946) for a longer period of record. Note that the near Badito gage is upstream of South Oak Creek confluence with the Huerfano River and therefore may slightly under-represent the streamflow at the at Badito gage location if combined.

There are several other historical streamflow gages in the basin, including the Huerfano River at Huerfano, CO (07113000), Huerfano River near Mustang, CO (07113500), and Huerfano River at Malachite, CO (07111500), however available records are less than 5 years and ended prior to 1950.

[1] Read water rights cannot be curtailed to satisfy a call on the Arkansas River by virtue of the fact that the Read water rights were held as senior to Killian water rights, and the senior-most Killian water right is senior in priority to downstream Arkansas River mainstem water rights.

General Administration

The current Water Commissioner in 16 and 18, Doug Brgoch, has overseen administration in Water Districts 16, 18, and 79 since 1987. Doug is assisted by District 79 Water Commissioner, Lenna Rauber. Note that Apache Creek is administered by Steve Stratman, the Water Commissioner for Water Districts 14 & 15. Refer to the Water District 15 memorandum for more information on this tributary.

- Water users are primarily single or multiple private users.
- Ditches lower in the basin generally have recorders to measure diversions, whereas ditches diverting farther up in the District are generally observed monthly/daily.
- Multiple Colorado Water Conservation Board (CWCB) decreed minimum instream flow reaches are in the basin. There are nine reaches situated in the headwaters of the Upper Huerfano River and tributaries in the southwest corner of the district, and an additional decreed reach on the Upper Apache Creek. Most of the instream flow rights have a priority of 1979 with a more junior 2010 priority below the confluence of the Upper Huerfano tributaries and therefore only affect the priorities of very junior water rights.
- The Huerfano River generally operates under internal river calls (i.e. calls by water users on the Huerfano River). During average and wet years, however, Arkansas River mainstem calls impact the administration in the basin. Water District 79 is subject to calls from structures located downstream on the Cucharas River but administered in Water District 14, including the Huerfano Valley Ditch (1400657), Pryor Ditch (1400532), and Welton Ditch (1400661). The Welton Ditch is the senior downstream calling right (Killian water rights) and may irrigate year round if water is available. The Huerfano River and Cucharas River are basically administered as a single water district with respect to downstream calls.
- The duty of water is decreed as 1 cfs to 50 acres with some exceptions. The Killian water rights were allotted a minimum of 1 cfs even if the acreage was less than 50 acres and Montez Ditch (7900550) was decreed for 38 cfs for 3,000 acres or 1 cfs per approximately 79 acres.
- Canals in the district are generally relatively efficient on average.
- During average years, Read water rights senior to 1870 are generally in-priority through the irrigation season. More junior water rights tend to be in priority during the runoff season or longer in years with above-average streamflow.
- Water users generally flood irrigate in the basin, however a limited number of parcels are irrigated by center pivots. These pivots were in place before the Irrigation Improvement Rules went into effect, however the rules indicate that new improvements in the Huerfano and Cucharas River basins can receive exemptions, if requested.
- Grass hay is the dominant crop grown in the basin, with alfalfa interspersed throughout the basin.

Table 1 provides a normal year river call sequence:

Table 1
Normal Year Water District 79 River Call Sequence

April – June	The irrigation season starts April 1st in the lower Huerfano River and in mid-May for ditches in the upper Huerfano River reaches.
June – November	Significant curtailment of irrigation uses occurs around the 2nd week of July, when the senior water rights on the Lower Huerfano River become the controlling rights. Monsoonal rains allow more junior water rights to come back into priority in some years.
November – April	Historically, junior Killian water rights would come back into priority after the senior Read water rights stopped irrigating near the end of October. Currently, the Welton Ditch irrigates year round under a senior Read water right and is generally the calling right through the winter.

Municipal Use

The Town of Gardner is served by groundwater. The town currently has two wells; Gardner Water Well 3 (7905004) and Gardner Water Well A (7905005). An additional well, Gardner Water Well B (7905010) no longer exists and was transferred to Well A. Combined pumping from the wells averages 14 acre-feet annually. Augmentation of the wells is covered under Huerfano County Water Conservancy District's Rule 14 plan. The town's lagoon wastewaster treatment plant is located east of town upstream of the Williams Creek confluence with the Huerfano River.

Where to find more information:

- Additional information on augmentation is presented in the ArkDSS Huerfano County Water Conservancy District Operations memorandum.

Reservoir Specific Information

Orlando Reservoir (7903709) is an off-channel reservoir filled via Orlando Ditch No. 3 (7900553). The ditch diverts from the north bank of the Huerfano River one mile upstream of the I-25 crossing. Storage rights for the reservoir total 3,118 acre-feet, however recent reservoir contents reflect storage of 3,350 acre-feet based on a more recent survey and area/capacity table. Stored water is released back into the Huerfano River and used for irrigation. Recent operations reflect leased storage releases to the Welton Ditch (1400661), however historically the reservoir has also released to the Huerfano Valley Ditch (1400657). Evaluation following the passage of the Legacy Ditch bill indicated that development of use of water from Orlando Reservoir should be limited to only lands that can be directly served by the reservoir (developed in the first 50 years, but not irrigated in recent history) or under the Huerfano

Valley Ditch and that deliveries to the Welton Ditch should not be considered deliveries to historical lands as developed in the first 50 years of use of the water right.

Tributary Specific Information

The Upper Huerfano River and its tributaries upstream of the confluence with the Cucharas River (Water District 16) are encompassed by Water District 79. The Lower Huerfano River below the confluence with the Cucharas River is encompassed by Water District 14. The information presented below, specifically references to the "upper" and "lower" portions of the river, are relative to the Upper Huerfano River in Water District 79

The District can generally be divided into these sections for discussion purposes:

- The Huerfano River Headwaters includes the Huerfano River and tributaries located in the southwest portion of the District, upstream of the confluence with Muddy Creek.
- The Middle Huerfano River Valley includes Muddy Creek and the Huerfano River downstream of the confluence with Muddy Creek to the Badito gage.
- The Lower Huerfano River Valley includes the mainstem Huerfano River and tributaries from the Badito gage downstream to the Water District boundary.

Huerfano River Headwaters

The following summarizes any comments regarding diversion structures, reservoirs, or operations specific to the area. Irrigated acreage in the area is concentrated along the Huerfano River below the Redwing Gage downstream to the confluence with Muddy Creek.

- Nine CWCB instream flow reaches are situated in the headwaters of the Upper Huerfano River and tributaries in the southwest corner of the district, generally with a junior 1979 priority.
- Sierra Blanca Reservoir (7903755): a small reservoir filled from local runoff for fish/recreation purposes; was not historically administered but under active administration now.
- Wilson Reservoir (7903750): a small on-channel reservoir located on Sheep Creek; historically used for irrigation and now used for fishery, recreational, and fire protection purposes.
- Central Branch Ditch (7900736): historically irrigated under a junior water right, currently only fills a small stock pond.
- Mosca Ditch and Reservoir (7903751): historically diverted from the North May Creek for storage in Mosca Reservoir (aka Smith Reservoir) and to irrigate lands west of the Town of Gardner. Acreage was also served by a diversion off Pantleon Creek.
- No. 1 Irrigation Ditch (7900552) and Ramon Y Valdez Ditch (7900565): both divert off of the Huerfano River to irrigate land on the south side of the river. The No. 1 Irrigation Ditch is the upstream diversion point and canal and its return flows are collected in Ramon Y Valdez Ditch, which runs parallel but lower than the No. 1 Irrigation Ditch, and used as an irrigation supply. Due to the co-mingling of the return flows, the two ditches will be represented as a diversion system in the model. Note that a portion of Ramon Y

Valdez Ditch return flows collect in the Palmer Ditch, however the contribution is small relative to the Palmer Ditch diversions and a diversion system is not recommended.

- Upper Huerfano No. 3 (7900564): diverts off of the Huerfano River for irrigation using water rights under Rafael Garcia Ditch (7900522); represent as a diversion system in the model.
- Palmer Ditch (7900554): diverts off of the Huerfano River to irrigate land on the south side of the river. Limited return flows from the No. 1 Irrigation Ditch and Ramon Y Valdez Ditch do collect in the Palmer Ditch, but a diversion system is not recommended with these structures. Palmer 2nd Enlargement (1601006) is a historical structure that reflects diversion records for Palmer Ditch; combine these structures and records in a diversion system.
- Montez Ditch (7900550): diverts off of the Huerfano River for irrigation on over 400 acres and storage in JD Reservoirs No. 1 through No. 5 (7903702 – 7903705) on the north side of the river. Historically the ditch irrigated significantly more land near Pantleon Creek. Currently the ditch is able to convey approximately 10 cfs and can irrigate year-round. Ditch losses along the long canal are estimated to be 20 percent.
- Slough Ditch (7900788): diverts off of the Huerfano and historically irrigated acreage on the south side of the river and diverted for storage in Slough Pond (7903528). More recently the ditch had been collecting Palmer Ditch (7900554) return flows and piping them over the river to irrigate a parcel on the north side of the river. Those operations were stopped by DWR and the Slough Pond was voluntarily breached.
- Upper Huerfano No. 1 Ditch (7900532): diverts for irrigation on the north side of the river. The Upper Huerfano No. 1 Ditch shares a headgate location with the Riley Ditch (7900593), however the diversion records were historically measured separately and the Riley Ditch water rights were transferred to the Upper Huerfano No. 1 Ditch. Historical diversion records (pre-2001) at the Upper Huerfano No. 1 Ditch were included in the diversion records recorded for the Upper Huerfano Ditch (7900562); combine these structures and records in a diversion system.
- Meses Y Company Ditch (7900958) and Madrid Ditch (7900757): divert off of the Palo Duro Creek, a small tributary to Huerfano River. Meses Ditch serves irrigated acreage on the west side of the creek and Madrid Ditch serves irrigated acreage on the east side of the creek. Division 2 staff indicate that the diversion records have historically been combined under one structure; represent in the model as a diversion system. Note that water users on Palo Dura Creek operate under futile call conditions, rarely does streamflow reach the McIntire Ditch No. 1 (7900766) or Burns Ditch (7900781).
- Rahn Ditch (7900590) and Medina Ditch No. 2 (7900544) are the same ditch with information under two structures; combine diversion records and irrigated acreage under each structure into a diversion system.
- Lewis Ditch (7900725): diverts from Spring Branch Pass Creek to irrigate land on the west side of the creek. A portion of the water rights have been changed for use under the Paradise Acres Augmentation Plan and acreage has been dried up accordingly. The Paradise Acres Augmentation Plan (7907000) is used to augment evaporation from Houchin Pond (7903301) and approximately 70 residences.

Middle Huerfano River Valley

The following summarizes any comments regarding diversion structures, reservoirs, or operations specific to the area. Irrigated acreage in the area is concentrated in the headwaters of Muddy Creek and Turkey Creek and along the Huerfano River near the Badito gage. This area also benefits from two transmountain diversions, the Hudson Branch Ditch and Medano Creek Ditch.

- Wolf Springs Ranch. The 55,000 acre ranch is located in the headwaters of the Muddy Creek and irrigates over 1,000 acres of pasture land with multiple direct diversion rights, storage facilities, and transmountain diversions. The ranch was recently purchased by two buyers; 40,000 acres were purchased by a private owner and the remaining 15,000 acres are now owned by the Navajo Nation. The **Hudson Branch Ditch (7900851),** the smaller of the two transmountain diversions that deliver water from the Rio Grande River basin, delivers water to South Muddy Creek. These diversions are re-diverted directly or via exchange by several ditches along Muddy Creek including:
    - Bradford & Swire (7900661)
    - Glade Ditch (7900663)
    - Hornback Ditch (7900665)
    - Bott Ditch (7900660)
    - McCluer Ditch (7900668)
    - JM Murray Ditch (7900670)
    - WL Murray Ditch (7900671)
    - Road Ditch No. 1 (7900672)


Photo Credit: M4 Ranch Group

Ditches receiving transmountain water use their native water in-priority first, then utilize transmountain supplies once their native water rights are out-of-priority. The Glade Ditch irrigates a small pasture west of the creek and also fills McKinley Reservoir (7903880) for irrigation and stock purposes. The JM Murray Ditch irrigates a significant portion of the acreage on the ranch and also fills Murray Reservoir (7903730).

Lincoln Ditch No. 2 & Ditch No. 3 (7900657 & 7900658) divert native streamflow only and co-mingle their diversions to serve irrigated acreage on the ranch to the north of Muddy Creek; represent these structures as a diversion system. Lincoln Ditch No. 1 (7900667) irrigates acreage on the south side of the creek with native streamflow as well.

The Medano Creek Ditch (7900968) transmountain diversion delivers water to Bruff Creek which are then re-diverted directly or via exchange by the following ditches:

- Meadow Ditch (7900541)
- Caldwell Ditch (7900717)
- CW Ditch (7900718)

CW Ditch irrigates several parcels and pivots on the ranch with a junior water right and transmountain diversions; the ditch also delivers transmountain water only to Paul Wolf Reservoir (7903881). Direct diversions and releases of transmountain supplies from Paul Wolf Reservoir are then syphoned north under Bruff Creek to Creager Reservoir (7903729) and for additional irrigation. Creager Reservoir can release for irrigation or directly to Bruff Creek and the releases are generally re-diverted by Meadow Ditch. Meadow Ditch diversions are co-mingled with CW Ditch diversions and Paul Wolf Reservoir releases to irrigate the parcels south of Bruff Creek. CW Ditch, Meadow Ditch, and the reservoirs should be modeled together in a diversion system and/or reservoir aggregate. JM Ditch (7900752) diverts from Rio Alto Creek for irrigation on the ranch and for storage at JM Reservoir (7903742); this system does not receive transmountain supplies.

- Baker Rialto Ditch No. 2 (7900608) and Spider Web Ditch (7900775): divert from Rio Alto Creek to serve 50 or 60 acres; represent in the model as a diversion system.
- Baca Ditch (7900683) and Escobado & Wilburn Ditch (7900703): divert from Upper Turkey Creek to serve approximately 40 acres; represent in the model as a diversion system.
- Molla Ditch (7900548): was one of the most senior water users in the basin, but did not get it decreed and therefore has a more junior Killian water right. The ditch historically diverted from the Huerfano River for irrigation, but has not irrigated in several years. A portion of the water rights have been transferred to Burns Ditch No. 2 and Sanchez Ditch.
- Garcia Ditch No. 1 (7900520) and Garcia Ditch No. 2 Ditch (7900521): divert from the Huerfano River near the Turkey Creek confluence to irrigate several parcels on the south side of the river; represent in the model as a diversion system. Garcia Ditch No. 2 is an alternate point of diversion for Garcia Ditch No. 1 and diverts under No. 1 rights at a downstream headgate. This diversion system is often the calling right on the river.
- Piedras Amarillas Ditch (7900764): diverts from Piedras Amarillas Creek for irrigation and to fill the 60 acre-foot Yellowstone Reservoir (7903748) located in the middle of the pasture.
- Vigil Ditch (7900667) and Piedras Amarillos Ditch (7900780): divert from South Oak Creek to irrigate between 60 to 70 acres on the east side of the river; represent in the model as a diversion system.
- Laforet Ditch (7900688) and Sisneros Ditch (7900704): divert from Turkey Creek and co-mingle supplies for irrigation; represent in the model as a diversion system.

Lower Huerfano River Valley

The following summarizes any comments regarding diversion structures, reservoirs, or operations specific to the area. Irrigated acreage in the area is concentrated along the Huerfano River near the Badito gage downstream to Orlando Reservoir No. 2. Note that Apache Creek is administered by the Water District 14 & 15 Water Commissioner and therefore is not included in the discussion below.

- Badito & Martin Ditch 1 (7900503) and Ditch 2 (7900504) (aka Badito & Martin Consolidated): divert from the Huerfano River to irrigate acreage on the north and side south of the river; represent in the model as a diversion system. Shell Oil obtained a SWSP for 5 years to augment oil and gas depletions; they constructed ponds and an augmentation station on Ditch 1. The SWSP has now expired.
- Jose Maria (7900537) and Pino Ditch (7901106): are the same ditch with information under two structures; combine diversion records and irrigated acreage under each structure into a diversion system.
- Orlando Canal No. 3 (7900553): diverts from the Huerfano River only to fill Orlando Reservoir (7903709), it does not serve irrigated acreage directly. There are no water rights under the ditch, it diverts water under the reservoir's rights. Refer to the Reservoir Specific Information section for more information on the Orlando Reservoir.
- Butte Valley Ditch (7900509): is the last active irrigation structure on the Huerfano River in Water District 79. The ditch can serve as the calling right and has, more recently, irrigated year-round.

Where to find more information:

- Additional information on Apache Creek ditches and administration is presented in the ArkDSS Water District 15 Meeting Notes memorandum.