

SPDSS Memorandum Final

To: Ray Alvarado and Ray Bennett
From: LRE, Erin Wilson & Kara Sobieski
Subject: Task 3 – Identify Key Diversion Structures
Notes from Water District 23 Meeting
Date: December 7, 2004 – Revised August 28, 2007

Introduction

This memorandum provides notes from July 1, 2004 meeting with Water District 23 Water Commissioner. Meetings are being held with Water Commissioners in each Water District in the SPDSS study area. The objectives of these meetings are 1) to develop an initial basin understanding; 2) to determine what irrigation structures should be included as “Key Structures” in future detailed modeling efforts, and 3) to determine which reservoirs and diversions warrant more detailed investigation and technical documentation. These objectives support both Task 3 – Identify Key Diversion Structures and Task 5 – Identify Key Storage Reservoirs and Develop Operating Memorandum. Information in this memorandum is believed to be accurate. However, this information should not be relied upon in any legal proceeding.

Approach

Prior to the meeting, potential Key Structures for Division 23 were identified using the following procedure outlined in the SPDSS Scope of Work:

1. Identify net absolute water rights per structure. Select initial key structure cutoff value based on the 85 percent recommendation (SPDSS Feasibility Study, October 2001) for each water district.
2. Determine average annual diversion data for structures during three average hydrologic years, one year each during the 1950s, the 1970s, and the 1990s. Add additional structures to the key list that diverted an average of 1,000 acre-feet per year on the main stem during any of the representative years. Note that this step will allow the inclusion of larger diversion structures having active water rights during the earlier years of the study that were subsequently transferred to other ditches or other uses.
3. Review readily available straight-line diagrams and include additional structures as appropriate, based on water rights and location.

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 (including structures with supplemental reservoir water). Because most of the water rights in South Park have been transferred to municipalities, the interview also served to

determine structure combinations for modeling purposes. On-going Task 3 efforts include review of irrigated acreage, water rights, and diversion records. It is expected that the key structure list shown in Table 1 will be further refined during these, and model development, efforts.

Prior to the meeting, a brief description of the purpose and goals of the interview was provided to the Water Commissioner, Mike Eytel.

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 included 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.

David Ellington, Division 1, developed a preliminary straight-line diagram of Water District 23. In addition, LRE developed maps displaying reservoirs, diversion headgate locations, and canal layouts on a quad-sheet background of the water district facilitate the discussions.

Meeting Attendance

The meeting was held at the LRE office in Denver. The following people attended the meeting:

Jim Hall, Division 1 Engineer
Mike Eytel, District 23 Water Commissioner
Ray Bennett, Division of Water Resources
John Lochhead, Division of Water Resources
Dave Ellington, Division of Water Resources
Erin Wilson, Leonard Rice Engineers
Kara Sobieski, Leonard Rice Engineers

Meeting Notes

The meeting began with discussions regarding the major entities involved in transferring water out of Water District 23 (District) or utilizing transbasin diversions for municipal use. The major entities include:

- City of Aurora (Aurora): owns both Spinney Mountain and Jefferson Reservoirs for storage of transbasin and changed water in the Water District
- Denver Water Board (Denver): owns Cheesman, Antero and Elevenmile Reservoirs for storage of native and changed water in the Water District

- City of Englewood (Englewood): owns Boreas Pass Ditch for delivery of transbasin water

Transbasin Diversions

Homestake Pipeline (aka, Aurora Homestake Pipeline) - transports water from the Otero Pump Station in the Arkansas River Basin for both Aurora and Colorado Springs. The pipeline first delivers water to Spinney Mountain Reservoir for Aurora and then continues on to deliver water to Rampart Reservoir for Colorado Springs. The pipeline is jointly owned by the two cities. The Otero Pump Station and Homestake Pipeline were built in 1965.

Where to find more information:

- Physical information, operational information, and water rights specific to Homestake Pipeline are presented in the Homestake Pipeline Operating Memorandum prepared for SPDSS Task 4 – Key Transmountain Diversion Structures.

Originally, Homestake Pipeline discharged above Eleven Mile Reservoir, as reported at Station 07086300. With the completion of Spinney Mountain Reservoir in 1983, Homestake Pipeline was modified to discharge into Spinney Mountain Reservoir. With these system changes, the old station 07086300 was abandoned and a new station, HOMSPICO, Homestake Pipeline to Spinney Reservoir, was constructed. Accounting for Aurora also includes records for Homestake Pipeline diversions into Spinney Mountain Reservoir.

Boreas Pass Ditch - diverts water from the headwaters of Indiana Creek, a tributary of the Blue River, and delivers it into the headwaters of North Tarryall Creek. The ditch is owned by Englewood, which uses the water for municipal purposes. Boreas Pass Ditch diversions are recorded at the BORDITCO station (09046000), located near the outlet of the ditch into the North Tarryall Creek headwaters.

Where to find more information:

- Physical information, operational information, and water rights specific to Boreas Pass Ditch are presented in the Boreas Pass Ditch Operating Memorandum prepared for SPDSS Task 4 – Key Transmountain Diversion Structures.

Continental-Hoosier Diversion System - (aka Blue River Project) diverts water from the headwaters of the Blue River through Hoosier Pass Tunnel into **Montgomery Reservoir (2303962)**, located at the headwaters of the Middle Fork South Platte River. The reservoir is owned and operated by Colorado Springs and has an approximate capacity of 20,000 acre-feet. The end-of-month contents are provided to the Water Commissioner by Colorado Springs with their monthly accounting. The reservoir can also store Middle Fork diversions, although under a junior water right. The storage water is then conveyed to Colorado Springs from the reservoir via the Montgomery Pipeline. When full, the reservoir maintains the elevation and offsets evaporation and seepage with Hoosier Pass Tunnel water. No native inflows can be stored

unless the junior right (1953) is in priority. Icing problems restrict outlet releases. Water stored out of priority over the winter, generally less than 200 acre-feet, is released in the spring. The 1955 Blue River Decree (Consolidated Case Nos. 2782, 5016 and 5017) dictates the relative priorities of the storage rights and hydropower rights for Green Mountain Reservoir and the upstream rights at Dillon Reservoir and the Continental-Hoosier System. In this decree, Colorado Springs and Denver obtained the right to divert and store water at their upstream facilities on an out-of-priority basis, if it can be determined that Green Mountain Reservoir will likely fill. Denver and Colorado Springs have storage in the upper Blue River basin and below Green Mountain Reservoir, so they are in a position to repay diversions directly and by exchange if necessary.

Compacts and Agreements Affecting District 23 Administration

No compacts or agreements affect the administration of Water District 23, however the 1940 Agreement does affect the District's administration. The 1940 Agreement between Denver Water and the "Consolidated Ditches", which are most of the ditches in District 2. Prior to 1940, the State did not require that Denver Water replace evaporation from Cheesman, or Antero Reservoirs. Elevenmile had just been constructed. The Consolidated Ditches filed a suit and the resulting agreement (1940 Agreement) allowed Denver Water not to replace evaporation charges if they agreed not to re-use their transbasin water. Instead, the agreement stated that Cheesman and Antero would be administered by maintaining gage height and Eleven Mile would be administered based on equal inflow and outflow. The agreement stated that it would terminate "if any substantial part shall become impossible of performance by reason of enforceable order of governmental authority" Since the agreement, there have been two legal challenges to the agreement that have gone to the Supreme Court (Denver v. Fulton Irrigation Ditch Co and Denver v Consolidated Ditch Companies). The Supreme Court has found:

1. The 1940 agreement had not been terminated
2. The 1940 Agreement only applied to reuse of return flows derived from decreed water rights from Colorado River sources with appropriation dates preceding May 1, 1940, which included transmountain diversions from the Fraser and Williams Fork Diversion Project.
3. Denver Water could not "depart substantially from its practice during the past several years of returning water originating in the South Platte basin during the irrigation season."

Stream Gages and General Administration

Administration in the District consists of accounting for municipality water changed and transferred out of the District, accounting for the transmountain diversions owned by the municipalities, and administration of several smaller active diversions for irrigation, ranching and mining. Several small tributaries in the District provide for many active and inactive streamflow gages, some of which are used by the State and municipalities to account for the transferred water.

In general, the administration of the changed and transferred water for Aurora takes place at several “accounting gages” on the major tributaries, not at the historic diversion points. As decreed, if the streamflow is adequate at the gage to meet the transferred decreed rate and the water right is in priority, Aurora can “take” that water from the tributary to move it into storage or use throughout their system. With this method, several water rights are accounted for at each gage, and the number of administration points on each tributary is limited. As Denver has only transferred two major water rights out of the District, the administration of these water rights still takes place at the historic diversion point. If water is available at the historic diversion point and the water right is in priority, Denver can “take” their water to move it into storage or throughout their system.

Currently, Aurora owns and maintains all of the accounting gages. Only three out of nineteen accounting gages have historic streamflow records available in Hydrobase, although the State is looking into publishing this data annually. Historic streamflow records will need to be collected from Aurora to enable the modeling of the transferred water rights. All of the accounting gages, as shown in **Table 2** are provisional satellite gages with *real-time* records available from the State’s website.

Table 2
Streamflow Gages used for Municipality Accounting

Station ID	Abbrev.	Station Name	Historic Records Available in Hydrobase
09046000	BORDITCO	Boreas Pass Ditch at Boreas Pass ¹	☒
DIXCOMCO	DIXCOMCO	Dixon Flume on Holthusen Gulch	
FOUHARCO	FOUHARCO	Four Mile Creek near Hartsel	
FOUHIGCO	FOUHIGCO	Four Mile Creek at High Creek	
FRNCRKCO	FRNCRKCO	French Creek above Confluence with Michigan Creek	
06698000	JEFJEFCO	Jefferson Creek near Jefferson	
JEFSNYCO	JEFSNYCO	Jefferson Creek below Synder Creek	
06697450	MCHJEFCO	Michigan Creek above Jefferson	
MFKPRICO	MFKPRICO	Middle Fork South Platte at Prince	
MFKSTMCO	MFKSTMCO	Middle Fork South Platte at Santa Maria	
OHGJEFCO	OHGJEFCO	Ohler Gulch near Jefferson	
06694920	PLASPICO	South Platte River above Spinney Reservoir	☒
RCKTARCO	RCKTARCO	Rock Creek above Confluence with Tarryall Creek	
SCHFLMCO	SCHFLMCO	Schattinger Flume above Conf. with Michigan Creek	
SFKANTCO	SFKANTCO	South Fork of South Platte above Antero	
SPRBRNCO	SPRBRNCO	Spring Branch above Conf. with Middle Fork South Platte	
TARBORCO	TARBORCO	Tarryall Creek at Borden Ditch	
06696980	TARCOMCO	Tarryall Creek at Upper Station near Como	☒
TROGARCO	TROGARCO	Trout Creek near Garo	

Table 3 includes all of the active DWR or USGS streamflow gages with historic records available in Hydrobase, along with their period of records. Also indicated in the chart are those gages that are used by Aurora or Denver for accounting purposes.

Table 3
Active Streamflow Gages available in Hydrobase

Station ID	Station Name	Period of Record	Accounting Gage
06693800	Mosquito Creek near Alma	1998-2002	
06694920	South Platte River above Spinney Reservoir	1982-2002	☒
06695000	South Platte River above Elevenmile Reservoir	1939-2002	
06696000	South Platte River near Lake George	1929-2002	
06696980	Tarryall Creek at Upper Station near Como	1978-2002	☒
06697100	Tarryall Creek below Park Gulch near Como	1997-2001	
09046000	Boreas Pass Ditch at Boreas Pass	1932-2002	☒
HOMSPICO	Aurora Homestake Pipeline to Spinney Reservoir	1999-2002	

The transferred water rights in Water District 23 can be divided into two systems. The Tarryall System includes transferred rights for Tarryall Creek and its tributaries. The Spinney Reservoir System includes transferred rights on creeks tributary to the Middle and South Forks of the South Platte River above Spinney Reservoir. The systems include water rights transferred by Aurora, Denver, Centennial Water and Sanitation District, and Englewood. Note that some of the water rights were originally transferred by Thornton, but were later purchased by Aurora. **Table 4** lists the water rights under the Tarryall System and **Table 5** lists the transferred water rights under the Spinney Reservoir System. The following tables list accounting gages, the water right's associated ditch, the transferred water rights (ranch names), and the case number of the transferred right. Both of the systems are shown graphically in **Figures 1** and **2**, respectively.

Table 4
Tarryall System Transferred Water Rights

Accounting Gage Abbrev.	Ditch	Water Right Ranch Name	Case No.
DIXCOMCO	Hopson Ditch	Dixon	86CW223
	Holthusen D	Dixon	86CW223
	Holthusen Ditch	Dixon	
FRNCRKCO	Cincinnati Ditch	Schattinger	84CW055
JEFJEFCO	Burns Sessions Ditch	Janitell	W 7936
	Brubaker Ditch	Schattinger	84CW055
	Brubaker Ditch	Janitell	W 7936
	Brubaker Ditch	Steiner	93CW140
	Anchor Ditch	Janitell	W 7936
	W R Head Ditch	Johnson	92CW156
	W R Head Ditch 3	Johnson	92CW156
	Craig Ditch	Janitell	W 7936
	Litmer Ditch	Janitell	W 7936
	Ohler Ditch	Janitell	W 7936
JEFSNYCO	Crosier Hawxhurst Ditch	Rocker 7	84CW056

	Hawxhurst Ditch	Rocker 7	84CW056
	W R Head Ditch 4	Johnson	92CW156
	Snyder Creek Ditch	Rocker 7	84CW056
Johnson ¹	Baker Lilley Ditch 1	Johnson	92CW156
MCHJEFCO	Randall Nicholas Ditch	Janitell	W 7936
	Demick Ditch	Teter	86CW222
	Whitten Ditch	Michigan Creek	88CW263
	Whitten Ditch	Janitell	W 7936
	Sessions Ditch	Janitell	W 7936
	Skelton Ditch	Janitell	W 7936
	Demick Ditch	Teter	86CW222
	Lassell Ditch	Furman	88CW262
	Schattinger Ditch	Janitell	W 7936
	E.C. Whitten Ditch 2	Michigan Creek	88CW263
OHGJEFCO	Ohler Gulch Ditch	Janitell	W 7936
RCKTARCO	Ratcliff Ditch 1	Sibley	84CW057
	Rock Creek Ditch	Sibley	84CW057
	Ratcliff Ditch 2	Sibley	84CW057
	Ratcliff Ditch 3	Sibley	84CW057
	Lee Ditch 1	Sibley	84CW057
	Lee Ditch 2	Sibley	84CW057
	Rock Creek Ditch 1	Sibley	84CW057
	Ratcliff Ditch 4	Sibley	84CW057
	Ratcliff Ditch 5	Sibley	84CW057
	Ratcliff Ditch 6	Sibley	84CW057
	Ratcliff Ditch 7	Sibley	84CW057
	Ratcliff Ditch 9	Sibley	84CW057
	Ratcliff Ditch 8	Sibley	84CW057
	Lee Ditch 3	Sibley	84CW057
	Lee Ditch 4	Sibley	84CW057
SCHFLMCO	Lavack Ditch 2	Schattinger	84CW055
	Henry Ditch	Schattinger	84CW055
	Schattinger Waste Ditch	Furman	88CW262
TARBORCO	Wilkin Ditch	Sibley	84CW057
	Borden Ditch 2	Sibley	84CW057
	Mary G Borden Ditch	Sibley	84CW057
	McManus Ditch	Sibley	84CW057
	Borden Ditch	Sibley	84CW057
	Dunbar Ditch 3	Sibley	84CW057
	Dunbar Ditch 2	Sibley	84CW057
	Borden Ditch (Denver's WR) ²		CA1974
TARCOMCO	Dunbar Ditch	Collard	88CW228
	Dunbar Ditch	Cline	99CW199B
	Harland Ditch	Indian Mountain	84CW065
	O'Neil Ditch	Janitell	W 7936
	Peabody Ditch	Dixon	86CW223
	Slater Ditch	Indian Mountain	84CW065
	Packer Ditch	Michigan Creek	88CW263
	Peabody Ditch 2	Dixon	86CW223
	Dunbar Ditch 1	Collard	88CW228

Anderson Brewer	Cline	99CW199B
Dunbar Ditch 1	Cline	99CW199B
McCartney Seep Ditch	Michigan Creek	88CW263
Montag Truax Ditch	Cline	99CW199B
Peabody Ditch 3	Cline	99CW199B
Fremont Irrigation Ditch	Furman	88CW262

Notes ¹ The water right associated with the Johnson gage has not been diverted because the gage was not constructed.

² The Borden Ditch decree does not list TARBORCO as a measuring point for the transfer, however, the water commissioner accounts for the transfer at that gage. The Borden Ditch is the senior transfer, and allocated the first water available at the TARBORCO gage.

In general, transferred water rights in the Tarryall System are subject to a specific accounting practice, involving the accounting of consumptive use, delayed return flows and instantaneous return flows. The consumptive use and delayed return flow portion of the water right, as determined by the decree, is accounted for at the above listed gages. If the gage flow indicates adequate flow and the water right is in priority, the consumptive use and delayed return flow portions of the water right are “taken” at the accounting gage, and moved into storage or diverted downstream. Instantaneous return flows are “taken” at the accounting gage as well, but are returned to the river at a downstream gage. This allows for downstream water rights to take advantage of the instantaneous return flow portion of the water right while still accounting for a temporary loss to the river.

Table 5
Spinney Reservoir Transferred Water Rights

Accounting Gage Abbrev.	Ditch	Water Right Ranch Name	Case No.
FOUHARCO	Daniel Fyffe Ditch	Badger Basin	W 9234
	Donovan Ditch	Badger Basin	W 9234
	Harris Ditch	Badger Basin	W 9234
	Hartsel Four Mile Ditch	Badger Basin	W 9234
	Four Mile Ditch 2	Badger Basin	W 9234
	Four Mile Ditch 1	Badger Basin	W 9234
	High Creek Ditch 2	Badger Basin	W 9234
FOUHIGCO	Alden Milligan Ditch	High Creek	W 7931
	Milligan Ditch	High Creek	W 7931
	Beery Ditch (Denver’s WR) ¹		W 7739
	Four Mile Ditch (Denver’s WR) ¹		80CW0313
MFKPRICO	Prince Ditch	Augustine	3705
	Miller Chapman Ditch	Coil	W 9448
	Sigafus Ditch	Trout Creek	W 9242
	Anderson Ditch No. 3	Coil	W 9448
	Sigafus Ditch	Trout Creek	W 9242
	Anderson Ditch	Coil	W 9448
	Prince Ditch	Augustine	3705

	Miller Chapman Enlgmt.	Coil	W 9448
	Elisha Alden Ditch	High Creek	W 7931
	Rayner Edmondson Ditch 2	Platte Ansley	W 9242
	Anderson Ditch	Coil	W 9448
	D.F. Miller Ditch 1	Coil	W 9448
	Bonnell Ditch	Platte Ansley	W 9242
	Park Ditch	Coil	W 9448
	Rayner Edmondson Ditch 1	Platte Ansley	W 9242
	Rayner Edmondson Ditch 5	Platte Ansley	W 9242
	Rayner Edmondson Ditch 3	Platte Ansley	W 9242
	Rayner Edmondson Ditch 4	Platte Ansley	W 9242
MFKSTMCO	Guiraud Ditch 1	McDowell	W 8345
	Guiraud Ditch	McDowell	W 8345
	Small Ditch	McDowell	W 8345
	Canon Ditch	McDowell	W 8345
	Fehringer 1 Ditch	McDowell	W 8345
	Fehringer 2 Ditch	McDowell	W 8345
	Fehringer 2 Ditch	McDowell	W 8345
	Thompson Ditch	Badger Basin	W 9234
	Euhler Ditch	Badger Basin	W 9234
	First Field Ditch	Badger Basin	W 9234
	Three Mile Ditch	Badger Basin	W 9234
PLASPICO	Pruden Ditch	Huron	W 7595
	Sadler Ditch	Huron	W 7595
	Balm of Gilead Ditch	Huron	W 7595
	Foster Ditch	Huron	W 7595
	Hot Springs Ditch	Huron	W 7595
	Central Ditch	Huron	W 7595
	Fritz Ditch	Huron	W 7595
	Rogers North Ditch	Huron	W 7595
	Pierce Ditch	Huron	W 7595
	Western Ditch	Huron	W 7595
	Divine Hill Ditch	Huron	W 7595
	Harrington South Ditch	Huron	W 7595
	Harrington Rickards Ditch	Huron	W 7595
	Spinney Mtn. Reservoir	Huron	W 7595
	Spinney – Aurora	Spinney Reservoir	W-7395-77
SFKANTCO	Haver Ditch 1	Walker	79CW351
	Chapelle Ditch	McNulty	79CW274
	Kester Sweet Ditch	McNulty	79CW274
	Kester Sweet Ditch	High Creek	W 7931
	Parmelee Shoemaker Ditch 1	Walker	79CW351
	Hubbard Ditch	High Creek	W 7931
	Parmelee Shoemaker Ditch 3	Walker	79CW351
	Island Ditch	Walker	79CW351
	Haver Ditch 2	Walker	79CW351
	Parmelee Shoemaker Ditch 2	Walker	79CW351
	Franks Ditch	High Creek	W 7931
	Binkley Ditch 2	Black Mountain	84CW010
	Burlingame Ditch	McNulty	79CW274

	Burlingame Ditch	Black Mountain	84CW010
	Binkley Ditch	Black Mountain	84CW010
	Rodgers Ditch	High Creek	W 7931
	Haver Ditch 3	Walker	79CW351
	Souders Wolfe Ditch 6	Black Mountain	84CW010
	Weaver Ditch 3	McNulty	79CW274
	Burlingame Ditch 3	McNulty	79CW274
	Winkler Ditch	Black Mountain	84CW010
	Rogers Ditch	Black Mountain	84CW010
	Miller De Yarman Ditch	McNulty	79CW274
	Rogers Miller Ditch	Black Mountain	84CW010
SFKHARCO	Main or Hotel Ditch	Badger Basin	W9234
SPRBRNCO	Spring Branch Ditch	Platte Ansley	W9242
TROGARCO	Trout Creek Ditch	Trout Creek	W9242

Notes ¹ The Beery Ditch and Four Mile Ditch decrees do not list FOUHIGCO as a measuring point for the transfer. The Beery Ditch is the senior transfer, and can take up to 20 cfs in available flow available at the Beery Ditch headgate location. The water commissioner accounts for the Four Mile Ditch transfers at the FOUHIGCO gage.

Approximately half of the transferred water rights in the Spinney Reservoir System are subject to a specific accounting practice, which involves a release from Spinney Reservoir. Aurora must release from Spinney Reservoir a percentage of their total diverted amount, as calculated from approximately half the water rights. The percentage applicable to the total diverted amount is based on a monthly schedule, although releases are only required in the summer months to meet this requirement. The releases allow for a base flow in the South Platte River below Spinney Reservoir that can be diverted by downstream users, specifically Denver.

For accounting purposes, two gages in the Spinney Reservoir System have estimated flows. The South Fork River near Hartsel, CO (SFKHARCO) is calculated as the flow at PLASPICO gage less the flow at MFKSTMCO gage, and has one water right associated with the gage. The Middle Fork River near Garo, CO (MFKGARCO) is calculated as the flow at MFKSTMCO less a set diversion schedule. No water rights are associated with the MFKGARCO gage, it only accounts for diversions from the system.

Figure 1
Simplified Schematic of Proposed Modeling of Water District 23
Tarryall System

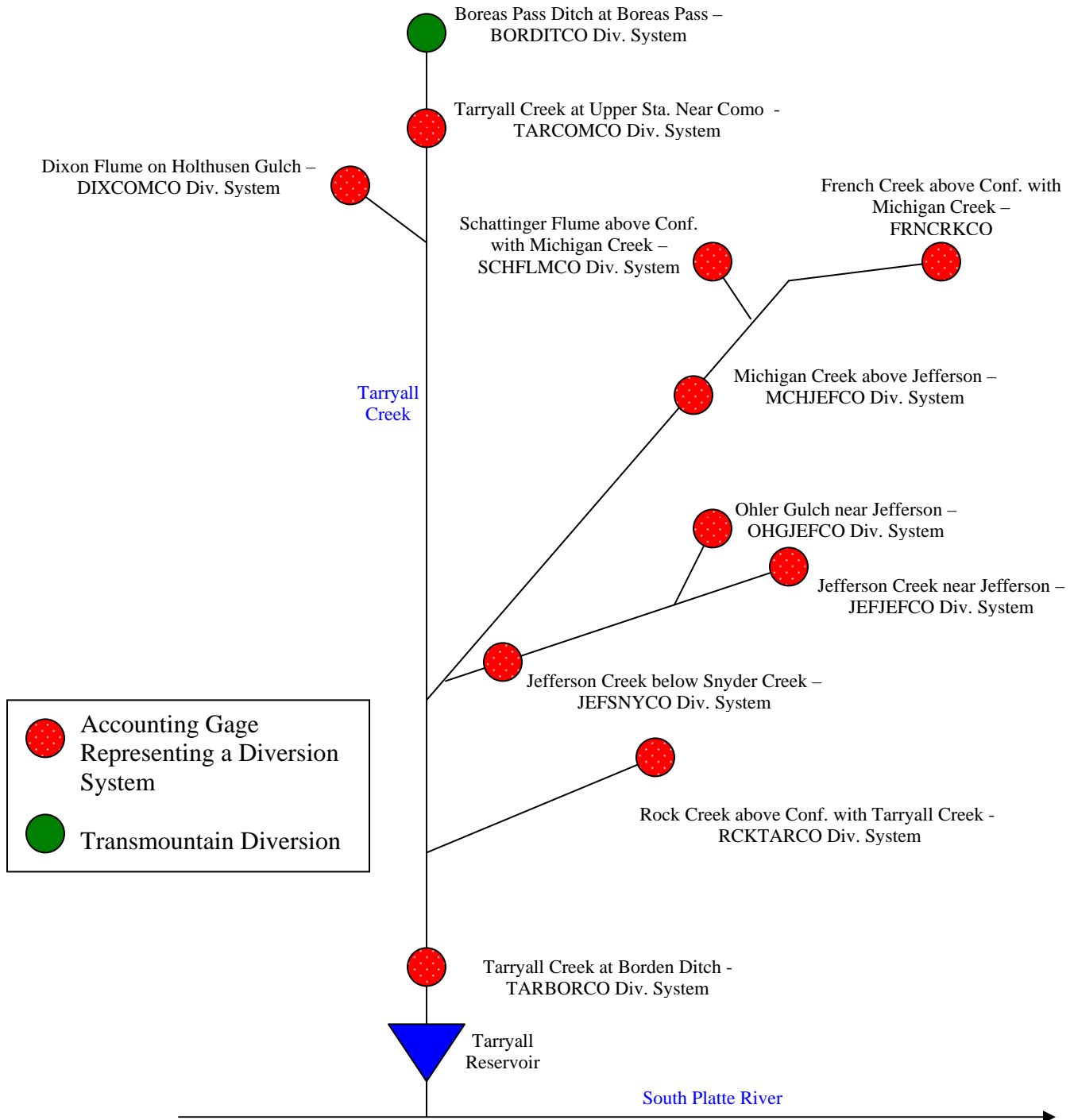
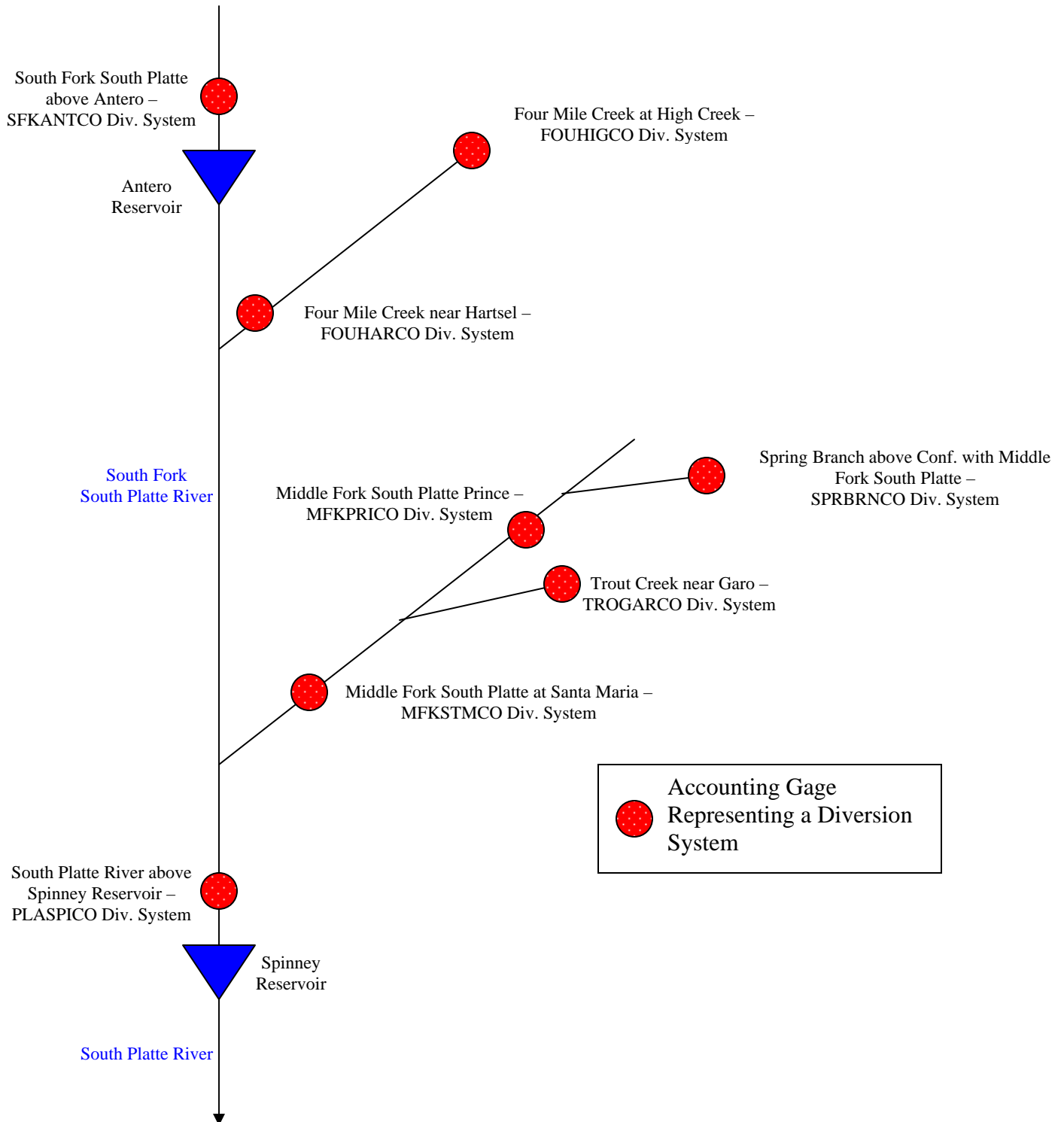


Figure 2
Simplified Schematic of Proposed Modeling of Water District 23
Spinney System



- The City of Aurora maintains and records measurements for all of the accounting gages (Table 2) and provides the streamflow measurements to the Water Commissioner with their monthly accounting.
- Aurora and Denver rarely take all the water that is recorded at the accounting gages, and by not placing a senior call, local senior diversions continue.
- Currently, accounting practices follow a tiered approach. For example, if the additive flow at tributary gages upstream of the Borden Gage is less than flow at the Borden Gage, then upstream diversions are limited by priority.
- Records for a number of the transferred diversions are available in Hydrobase (e.g. Beery Ditch Denver Tfr, ID 2302201). Although these diversion records were calculated at a specific accounting gage, the diversion records do not reflect the actual streamflow at the accounting gage due to adjustments made by each municipality to the diversion records.
- Many transferred ditches have irrigated land dry-up requirements, and sub-irrigation in many areas limits their use.
- The Tarryall Creek at Upper Station near Como (TARCOMCO) station (Table 2) is owned by Aurora and is located on Tarryall Creek near State Highway 285. Another TARCOMCO station owned by the City of Centennial is located upstream of the Aurora gage. Despite identical station names, Aurora uses their downstream station for accounting and Centennial uses the upstream station. The records from the two gages vary slightly due to the stream distance between them.
- As Aurora owns several transferred water rights in the District, many may be in priority at the same time. Aurora will choose to divert water rights that do not have delayed return flow requirements, and may not always divert those water rights with delayed return flow requirements despite the order of priority of all the water rights.
- Mike Eytel has been the Commissioner in Water District 23 since 1999.
- The available diversion records in Hydrobase of active rights reflect a combination of water user supplied records and diversion records as supplied by the Water Commissioner or a ditch rider.
- Beginning in 2003, the Water Commissioner kept separate records of his diversion readings and user supplied diversion readings for comparative purposes.
- There are no continuous records are active ditches in Water District 23. Observations are recorded weekly in easily accessible locations, with correspond to the larger diversions, and at least bi-monthly in more difficult locations by the commissioner.
- The Water Commissioner communicates the river call via telephone, after receiving information regarding downstream conditions.
- Losses against Aurora or Denver transferred diversions do not originate at the historic point of diversion. As decreed, Aurora's losses and immediate return flows are first assessed at either Borden Ditch for diversions from Tarryall Creek or Spinney Mountain Reservoir for diversions from all other tributaries. Denver's diversions originating from the transfer of water rights in Borden Ditch are not assessed any losses en route for storage in Strontia Springs Reservoir.
- Typically, active ranches are flood irrigated meadows, and there are significant surface returns.
- There are no irrigation wells or major mining wells in the District. Most smaller wells are exempt.

- **Table 6** provides a normal year river call sequence:

Table 6
Normal Year River Call Sequence

Winter	Cheesman Reservoir has a call on the river all winter – does not call out many water users because most upstream use is for irrigation.
Beginning of Irrigation Season to Mid July	Near the beginning of the irrigation season, a downstream call on the South Platte River will extend up to Water District 23 and call out some less senior local water users. This call will stay on until early July. Historically, Aurora placed a local call in the District senior to the South Platte River call, however that generally has not occurred in the last few years.
Mid July until End of Irrigation Season	A very senior local call (~1872) will typically be placed after the 4 th of July. Most users above the accounting gages on the Michigan, Jefferson and Tarryall Creeks will stay in priority, while most transferred water and active diversions lower in the District will be called out. By late July, many users stop diverting to allow their meadows to dry-up for cutting.

- Historically, Denver did not place a call on the river at Waterton because their rights weren't senior enough to call anyone out. Since Spinney Mountain Reservoir was built in 1983 however, Denver will place a call in the winter for either the Denver Intake or at Cheesman Reservoir to call out the junior Spinney Mountain Reservoir right.

Municipal and Domestic Use

There are no major municipal water systems in Water District 23.

- The Town of Fairplay historically diverted from the Middle Fork of Beaver Creek (1861 right), although now has an alternate point of diversion to 4 wells that supply the municipal demand. They still divert infrequently through the Town Ditch for outdoor use within the town.
- Mountain Mutual, a private company, provides augmentation water for mountain subdivisions dependent on wells in South Park. The augmentation plans include storage in both Lower Sacramento Creek Reservoir and Spinney Mountain Reservoir. The main augmentation source is a portion of the Garo 3T (2300679) for 60 cfs. Mountain Mutual provides annual accounting to the Water Commissioner.

Reservoir Specific Information

- **Jefferson Lake (2303981)** – located at the headwaters of Jefferson Creek. The lake was completed in 1898 and has an approximate storage capacity of 2,000 acre-feet behind the earthen dam. Jefferson Lake is owned by Aurora and managed by the U.S. Forest Service. The lake is filled by both native flow and exchanged water.
- **Spinney Mountain Reservoir (2304013)** – located just downstream of the confluence of Middle Fork South Platte with the South Platte River, the reservoir is an on-channel storage facility. The reservoir was completed in 1983 and has an approximately capacity of 54,000 acre-feet. The reservoir is owned and operated by Aurora. The reservoir is filled by direct flow from the Middle Fork South Platte, transbasin diversions via the Homestake Pipeline, and with transferred water rights. Through about 1999, the City of Thornton stored transferred South Park rights in the reservoir. Since about 1999, Thornton no longer owns water in South Park. An agreement, however, dictates that Thornton is the only entity that may store water in the reservoir other than Aurora. Evaporation charged to the reservoir is determined by measuring inflow and releasing the same amount. Due to an agreement with DOW, minimum flow of 10 cfs is maintained between Spinney Mountain Reservoir and Elevenmile Reservoir. During the winter, icing issues makes the release of native inflow difficult, therefore, out-of-priority storage, generally around 1,000 acre-feet, is released in the spring.
- **Tarryall Reservoir (2303977)** – located downstream of the confluence of Rock Creek with Tarryall Creek, the reservoir is an on-channel storage facility. The reservoir is owned and operated by the Department of Wildlife (DOW) as a State Recreation Area. Water rights on Tarryall Creek used to fill the reservoir are very junior and in recent years the reservoir has not stored water. Without any stored water, the DOW closes the recreation area to the public. In response to this, the DOW has made temporary agreements with Aurora and may make future agreements with Centennial and Aurora to store some of their water in the reservoir.
- **Antero Reservoir (2303904)** – located on the South Fork South Platte River upstream of the confluence with Fourmile Creek, the reservoir is an on-channel storage facility. The reservoir was completed in 1909 and purchased by Denver in 1924. The reservoir has an approximate storage capacity of 20,000 acre-feet and stores both Denver and Colorado Springs water. The Antero Feeder Ditch has rights to fill the reservoir from the Middle Fork. This feeder ditch historically conveyed water from the Middle Fork to Antero Reservoir, crossing Fourmile Creek en route. The feeder ditch is no longer used but is still maintained. The reservoir is generally operated at full level and utilized only during drought periods. Once evaporation is greater than inflow, the operational efficiency is greatly decreased and the remaining stored water is consolidated to downstream reservoirs. The reservoir was empty in 2003 due to the recent drought. The water rights associated with the reservoir are relatively junior (1907) and are decreed for agriculture. Because the water stored in the reservoir is not used for agricultural purposes, the reservoir does not fill under these rights. Rather, only water from free river conditions and exchanged water is stored. The reservoir is also managed as a DOW Recreation Area when the reservoir has water. The outlet works

and outlet ditch is capable of releasing 350 cfs. Denver is responsible for the accounting associated with the reservoir, and provides end-of-month contents (including losses) to the Water Commissioner. The 1940 Agreement discussed above applies to Antero Reservoir.

- **Elevenmile Reservoir (2303965)** – located on the South Platte River downstream of Spinney Mountain Reservoir, the reservoir is an on-channel storage facility. The reservoir was completed in 1932 and has an approximate capacity of 98,000 acre-feet. The reservoir is owned and operated by Denver, and it is also managed as a State Park. There is an internal policy to release a minimum flow. The downstream gage, South Platte River near Lake George, is a good gage with measurements taken from a 20' flume. Denver operates the reservoir in the same fashion as Antero during drought conditions, maintaining a full reservoir as long as feasible, then moving the stored water down the system. The 1940 Agreement discussed above applies to Elevenmile Reservoir.

Tributary Specific Information

The major diversions, and their respective diversion rates, that are still active in the District per the Water Commissioner are shown in **Table 7**.

Table 7
Significant Diversions still Active in Water District 23

Diversion Name	WDID	Water Source	Diversion Amount
Crosier Taylor Ditch	2300994	Michigan Creek	16 cfs
Taylor Ditch	2300991	Michigan Creek	18 cfs
Gibson Ditch	2300993	Michigan Creek	4.46 cfs
McCartney Seep Ditch	2300889	Tarryall Creek	32 cfs (only diverts 4-8 cfs)
Petrie Ditch	2300902	Tarryall Creek	26 cfs
Link Ditch	2300904	Tarryall Creek	19 cfs
Holst Ditch	2300922	Tarryall Creek	11.7 cfs
Holst Packer Ditch	2300923	Tarryall Creek	11.7 cfs
Holst Ditch 1	2300924	Tarryall Creek	8.78 cfs
Packer Bonis Ditch	2300926	Tarryall Creek	6.2 cfs
Platte Station Ditch	2300500	South Fork	12 cfs
Sacramento Ditch	2300760	Sacramento Creek	60 cfs

The diversions listed in Table 7 will primarily be modeled as explicit structures, whereas the diversions listed in Tables 4 and 5 will be modeled as aggregate structures in accordance with their accounting gages. Other diversions listed below, or discussed elsewhere in the document, were not selected as key diversions due to water rights or historic diversion records falling below the minimum criteria or based on the Water Commissioner's recommendation.

Jefferson Creek

- Sheep Rock Ditch (2301002), Lilley Harriman Ditch (2301005) and, Taylors Ditch (2301018) are still active on upper Jefferson Creek.

- Aurora transferred the water rights from the Steiner Ranch (2302267), but has not been able to dry up the ranch due to sub-irrigation. Sub-irrigation is problematic in the municipal dry-up efforts along a majority of Jefferson Creek and Snyder Creek.

Michigan Creek

- WH Miller Ditch and WH Miller Ditch 2 (2300996 & 2300997), owned by the Circle Ranch, are still active diversions, although they are operated infrequently.
- The “Wahl Deal”, including Michigan Ditch (2301000) and Sessions Ditch (2300986) on Michigan Creek and Tarryall Ditch (2300908) and McCartney Seep Ditch (2300889) on Tarryall Creek, is currently in the process of being sold to Eagle Rock.
- Centennial recently purchased Randall Ditch (2300987) and is interested in an agreement with DOW for storage in Tarryall Reservoir.
- There are two reservoirs on upper Michigan Creek (Michigan Res Lower – 2303403 and Michigan Res Upper – 2303908) with a combined decreed capacity of around 40 acre-feet.

Tarryall Creek

- All of the historic diversions on Rock Creek, a small tributary to Tarryall Creek, have been dried up and transferred to municipal use.
- One of the major Denver transfers out of the South Park area is the Borden Ditch (2302246), which was located on Tarryall Creek. The transferred water is accounted for at the Tarryall Creek at Borden Ditch (TARBORCO) gage and stored in Strontia Springs Reservoir.
- The Packer Bonis Ditch (2300926), with relatively senior water rights, is owned by the DOW and diversions are used to irrigate land in the Wildlife Refuge around Tarryall Reservoir. The Holst Packer Ditch is owed jointly by Eagle Ranch and DOW.
- Slater Ditch (2300892) is located upstream of the State Highway 285 crossing and is partially owned by Aurora, who uses diversions for its municipal supply. The remainder is diverted to fill Tarryall Ranch Reservoir, an augmentation pond.

Middle Fork South Platte River

- The Middle Fork South Platte River above Fairplay gage is no longer operational.
- Snowstorm Placer Mine uses water from several ditches that were transferred to alternate points.
- The only active diversion point from downstream of Fairplay to the confluence with the South Platte River on the Middle Fork is the Fehringer No. 2 (2300691) for 3.2 cfs on approximately 100 acres. The Fehringer No. 2 headgate is located just downstream of Trout Creek confluence with the Middle Fork.
- Columbia Placer 1 and the Columbia Placer Alt Pt (2300651 & 2300674, respectively) actively divert from the Middle Fork for mining use with senior rights. Columbia Placer 1 is decreed for 60 cfs with the alternate point decreed for 5 cfs. The ditches however, have a total capacity of 40 cfs. This is generally a non-consumptive use.
- Hock Hocking Mine and London Butte Mine are both located on Mosquito Creek, a small tributary to the Middle Fork. Both of the mines’ discharge is decreed non-tributary and is reused for a variety of downstream purposes, mostly in the Denver Metro Area.
- Sacramento Creek is a small tributary to the Middle Fork with three active and administered ditches:
 - Sacramento Ditch (2300760)
 - Trevan Lower Ditch (2300763)
 - Platte City Placer Mine (2300764)

Fourmile Creek

- High Creek Fen, a pristine wet meadow marshland primarily fed by groundwater, is located at the most downstream end of High Creek, a small tributary to Fourmile Creek. The Nature Conservancy acquired the fen area in 1991 and operates the area as a wetland bank whereby tax credits are giving for helping in the protection of the area.
- The only active diversion left on Fourmile is the High Creek Placer Ditch (2300592) located just downstream of the Fourmile Creek near Fairplay gage. The ditch typically diverts once every couple of years with a decreed rate of 1 cfs.
- One of the major Denver transfers out of the South Park area is the Beery Ditch (2302201), which was located on Fourmile Creek.

South Fork South Platte River

- There are approximately 10 active diversion headgates above Antero Reservoir
- 12 Mile Fishing Club includes Souders Wolfe Ditches 2 through 5.
- Mikles Ditch (2300564) and Redmon Ditch (2300502) are owned by the same individual and are still actively diverted.
- Sub-irrigation is problematic in the municipal dry-up efforts along a majority of the Upper South Platte.
- Weaver Ditches 1, 2 & 3 (ID's 516, 518 & 519) were recently transferred by Aurora. Only a few acres and two ponds were not transferred over to municipal use.
- The decree for Elevenmile Lakes, which include Lidderdale Reservoir (734 acre-feet) and Lake George Fish Pond (7 acre-feet), allows the choice of on-channel or off-channel status for administration each year. The Elevenmile Ranch is the only user of the reservoirs.
- Spring Creek, a small tributary to the South Fork, has three active diversions and is typically not administered. The three active diversions may be owned by Denver.
 - Edmiston Ditch (2300582)
 - Jackson Ditch (2300583)
 - Spring Ditch (2300587)

Twin Creek

- Small tributary to the South Platte River mainstem with the confluence near Lake George
- There are three active and administered ditches on this tributary
 - Upper Wilson Ditch (2301138)
 - Wilson Ditch (2300866)
 - Sisler Ditch (2301140)

Fish Creek

- There are four small active diversions on this creek. The creek generally goes dry prior to reaching Twin Creek.

South Platte Mainstem

- Sportsmen's Ditch (2300777), located downstream of Lake George, is owned by the Sportsmen's Paradise Fishing Club. The club uses diversions to freshen fishing flows within the boundaries of the club, augmented by Mountain Mutual water.

- Eleven Mile Canon Ditch (2300740) is still an active diversion located just downstream of Lake George on the mainstem.

Recommended Detailed Documentation

More detailed information should be developed and included in the Basin Information Report for the following canals, reservoirs, or entities. Note that reservoirs are generally recommended to be included with the entity system operating memoranda, and not as stand-alone memoranda.

- Denver Water Board System (includes Antero and Elevenmile Reservoir)
- City of Aurora System (includes Spinney Mountain Reservoir)
- Homestake Pipeline
- Boreas Pass Ditch