

DROUGHT MANAGEMENT IN NORTHEASTERN COLORADO

Darell D. Zimbelman*

ABSTRACT

The Northern Colorado Water Conservancy District (the District) has established a set of policies and procedures and constructed a water storage and distribution system that allows for the effective and efficient transfer of water, on an annual rental basis or on a permanent basis, to meet changing demands or climatological conditions, including drought. In fact, the District was created and the Project designed during and following the drought of the 1930's. The District operates and maintains the Colorado-Big Thompson Project, which captures runoff from the head waters of the Colorado River on the West Slope of the Rocky Mountains. The stored water is then transferred to storage reservoirs on the East Slope of the mountains, for subsequent delivery to District allottees. The District delivers an annual average of 240,000 acre-feet to supplement the runoff of six East Slope drainages, namely the Cache la Poudre River, the Big Thompson River, the Little Thompson River, and St. Vrain River, Left Hand Creek, and Boulder Creek. The amount of water delivered by the District is directly related to the anticipated runoff from the East Slope drainages, and in most years can offset the impact of below normal runoff. Approximately 30 percent of the deliveries are for municipal and industrial uses, with the remainder being for agricultural uses.

The District's policies and procedures allow water to be transferred from one allottee to another on an annual rental basis, without regard to type of use or location, simply by filling out a post card type form and mailing it to the District offices. This is a powerful management system which allows water transfers to be made on an annual basis to the individual or entity with the "greatest" demand. Water can also be transferred permanently. While administratively a permanent transfer is a bit more lengthy, it allows water to be transferred to meet the overall changing demands of the area, namely from agriculture to municipal use. These transfers can occur without being encumbered by the very lengthy, and on occasion costly, process placed on other water supplies by the Colorado water rights system. The Colorado water rights system is a judicial process in which

*Associate General Manager, Northern Colorado Water Conservancy District, Loveland, Colorado

a transfer in water right must be submitted to the water court along with necessary legal and engineering reports which demonstrates that senior water rights holders will not be adversely impacted by the transfer. Since this process is open to legal objection, it can, if the transfer is protested, result in a substantial delay in time and a significant commitment of funds to complete the transfer. Ultimately it may result in less water being transferred than was desired.

INTRODUCTION

The Northern Colorado Water Conservancy District (the District) was formed in 1937 under the Conservancy District Act for the purpose of being the local sponsor and contractor with the U.S. Bureau of Reclamation, Department of the Interior, for the operation, maintenance and repayment of the water storage and delivery features of the Colorado-Big Thompson (C-BT) Project. Farming on the high plains of northeastern Colorado began in the late 1800's as miners, who had come to the Colorado Rocky Mountains in pursuit of gold and silver, diverted their livelihood from mining to providing food and fiber for the miners and their animals, and for the U.S. Cavalry. Annual precipitation on the high plains, which averages less than 12 inches, was inadequate, so the farmers banded together to construct diversion structures and storage reservoirs which captured the spring runoff from the local stream and diverted it to their farm and reservoirs. The reservoirs were needed to provide water during July, August, and September when many of the natural streams dried up. As the agricultural economy grew with additional lands being put under cultivation, and with the advent of the drought in the early 1930's, it became obvious to many agricultural leaders that a supplemental water supply was needed to stabilize and augment the native stream runoff. Former state engineer, Royce J. Tipton, had studied the possibilities of diverting water from the wetter western slopes of the Colorado Rocky Mountains to provide additional water to the streams originating in the mountains on the eastern slope. In fact, some of the more visionary water leaders and their irrigation and reservoir companies had already developed the Grand River Ditch transbasin diversion. The agricultural leaders in northeastern Colorado banded together as the "Northern Colorado Water Users Association" to actively promote the construction of a transbasin project in order to stabilize and supplement their water supplies. The U.S. Bureau of Reclamation agreed to construct the proposed project but required that a local entity, who had the ability and authority to be the local sponsor of the

project and to sign a repayment contract, had to be identified. To meet this requirement, the state legislature passed the Conservancy District Act in 1937. The District was organized under this act following almost immediately on the heels of the enactment of the Conservancy District Act.

The Project that was finally settled upon is known as the Colorado-Big Thompson Project. The C-BT Project transports water from the Colorado River watershed on the West Slope of the Colorado Rocky Mountains, under Rocky Mountain National Park, and introduces that water into the watersheds on the eastern slope of the Rocky Mountains. The western slope of the Rocky Mountains receives more precipitation than does the eastern slope because moisture from the Pacific Ocean is deposited on the western slopes as the moisture laden air raises up over the Rocky Mountains and the Continental Divide.

The water storage components of the C-BT Project consist of Willow Creek and Granby Reservoirs on the West Slope and Horsetooth, Carter and Boulder reservoirs on the East Slope. Water is delivered from the three East Slope reservoirs during the summer months to supplement the flows of the six East Slope streams, namely the Cache la Poudre River, the Big Thompson River, Little Thompson River, St. Vrain Creek, Left Hand Creek and Boulder Creek. Water is transferred from the West Slope to refill the East Slope reservoirs during the winter months. The West Slope reservoirs are refilled by the spring runoff.

WATER ALLOTMENT POLICIES AND PROCEDURES

It was originally calculated that the C-BT Project would be able to store and deliver an annual average of 310,000 acre-foot. It was decided to create 310,000 acre-feet units. During the construction phase of the Project, all 310,000 units were allotted to individual water users and municipalities located within the seven front range counties of Larimer, Boulder, Weld, Morgan, Washington, Logan, and Sedgwick, which are all in the South Platte River Basin downstream from the Denver metropolitan area. These units are allotted through an allotment contract, which is a "contractual right of use". The District has a contractual obligation to deliver an amount of water to each unit, which is 1/310,000 of the total amount of water declared available for delivery by the District's Board of Directors.

The District's Board of Directors set the annual amount of water available for delivery in April of each year. This annual amount is expressed in terms of a "quota" which

represents the percentage of an acre-foot per unit which will be available for delivery. An 80 percent quota means that each allottee will have available to them eight tenths of an acre-foot for each unit allotted to them. The quota has ranged from a maximum of 100 percent to a low of 50 percent, with the average for the thirty two years of operations of the Project being 75 percent.

The Board of Directors takes into consideration a broad range of issues and data as a part of establishing the quota, including:

1. The water currently in storage in the C-BT system and the amount of runoff forecasted to enter the system during the runoff season;
2. The water currently in storage in the East Slope reservoirs and the amount of runoff forecasted to be available for diversion from the East Slope streams;
3. The forecast for temperatures and precipitation in the irrigated area of the District;
4. The forecasted amount of carry-over water which will be in storage, both in the C-BT Project and in East Slope reservoirs, at the end of the current water year;
5. The status of the crops already planted and the need for irrigation water to insure adequate moisture for germination;
6. The general economics of irrigated agricultural products.

Once the quota has been set, each allottee's account is credited with their proportionate volume of water and the allottee is free to request delivery. Account balances are maintained by the District to ensure that delivered amounts do not exceed entitlement.

Control of the allotment contracts rest with the District Board of Directors. The District staff is responsible for administering the contracts in accordance with the rules, policies, and procedures established by the Board.

The allotment contracts associated with agricultural use must be attached to a parcel of land to which the water can be delivered. Since the C-BT water is a supplemental supply, the parcel of land to which the units are to be attached must have been previously irrigated. To discourage speculation,

the District staff physically inspects each parcel and makes a determination of the amount of water which can reasonably be used on that parcel based on soil type, land slopes, cropping patterns, etc. The difference between the yield provided by non C-BT supplies and the total amount which can reasonably be used establishes the limit on the number of units which can be attached to an individual parcel.

For municipal and industrial purposes, the Board of Directors allows the entity responsible for providing the water to accumulate twice their demonstrated need, which is established based on existing demand pattern plus an allowance for planned developments. The difference between demand and the yield from non C-BT supplies represent their demonstrated need. That need in acre-feet divided by two establishes the limit for C-BT units. This policy ensures that municipal and industrial needs are satisfied even when the Board sets a 50 percent quota. This recognizes that municipal demands are less able to deal with drought related shortages than are agricultural users.

TRANSFERS

In order to enhance water management, District policies and procedures allow water to be transferred between allottee accounts. On an annual basis, allottees who have "more" water than they need will "rent" water to those allottees who need additional water. An informal network exists amongst the allottees, through which allottees can find the names of other allottees who have water to rent or need to rent water. The two allottees agree on a price for the water to be rented. Once that financial transaction has been agreed to, the renter of the water is required to submit a post card sized form to the District. The District then debits the account of the renter by the amount transferred and credits the account of the rentee by a like amount. The District does not share financially in the transaction nor does the District charge an administrative fee for making the transfer. Of the 240,000 acre-feet delivered on an annual average, approximately 50 percent is transferred on an annual rental basis. The District does not monitor or control the volume of water transferred to any individual account during the water year.

The allotment contracts can also be transferred permanently; however this is less effective in meeting the changes in demand from year-to-year in reaction to actual runoff, including drought.

WATER MANAGEMENT BENEFITS

The allotment contracts and the associated administrative procedures are a very powerful and viable water management policy. It allows water on a yearly basis to be efficiently and effectively transferred from an entity or individual who has more water than needed to an entity or individual who needs the water. It also allows the Board of Directors to set the quota based on district wide conditions, but allows the water to be transferred from a watershed where the runoff that year is above "normal" to a watershed that is below "normal". This situation happened in 1987 when the Boulder Creek basin had above normal runoff, but the Cache la Poudre basin was well below normal. In that year, allottees in the Boulder Creek basin transferred water to the Cache la Poudre basin allottees. This can be an effective drought management alternative.

The Board's policy of permitting municipal water suppliers to acquire twice as many units as their acre-feet demands results in municipalities having the water they need regardless of the quota. In any year when the quota is above 50 percent, the municipalities generally have more water than they need. This unneeded water is generally leased to agriculture.

This is an economical benefit to irrigated agriculture because the municipalities have to pay the annual fixed cost for carrying the water in their portfolio, but the irrigators can use it in most years. By renting water on an annual basis, the irrigator is able to adjust his available water supplies to more closely meet his individual demands taking into account cropping patterns, weather etc. In 1988 municipal and industrial allotments were 30 percent of the total allotments. Actual deliveries for municipal and industrial use for 1986 through 1989 averaged 23 percent. The difference between water allotted for municipal needs less actual deliveries is available for lease to agriculture. Again, this allows the municipalities to have the water they need in drought years, while at the same time in non-drought periods the water is put to beneficial use elsewhere.

SUMMARY

The Northern Colorado Water Conservancy District has developed a water storage and distribution system and a set of policies and procedures which allows water to be transferred easily and conveniently to meet changing demands. By allowing and promoting the transfer the water supplies made available to water users within the District boundaries, the management of the area's water resources is enhanced for the benefit of all.