



— BUREAU OF —
RECLAMATION

Annual Operating Plans

Sixty-ninth Annual Report Colorado – Big Thompson Project And Western Division Systems Power Operations

**Water Year 2020
Summary of Actual Operations**

**Water Year 2021
Annual Operating Plans**

July 2020: Section of Cottonwood Siphon Liner

**Eastern Colorado Area Office
Missouri Basin Region**

Mission Statements

The Department of the Interior (DOI) conserves and manages the Nation's natural resources and cultural heritage for the benefit and enjoyment of the American people, provides scientific and other information about natural resources and natural hazards to address societal challenges and create opportunities for the American people, and honors the Nation's trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities to help them prosper.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Sixty-ninth Annual Report Colorado – Big Thompson Project And Western Division Systems Power Operations

**Water Year 2020
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Preface

The purpose of the Annual Report for the Colorado – Big Thompson Project (C-BT) is to inform interested parties of the coordinated operation of the project. The report has two main parts. The first describes the actual operation of the project during the previous water year and the plan of operation for the upcoming water year. The second presents the hydropower operations for the previously completed water year and the forecast for the next.

This report in part fulfills requirements included within decree stipulations. These include the Stipulation dated October 5, 1955, as amended October 12, 1955, and filed with the United States District Court for the District of Colorado in Civil Action Nos. 2782, 5016, and 5017 for an annual report of the Green Mountain Reservoir Operations and the Agreements in the Stipulation and Agreement of the Orchard Mesa Check Case (Colo. Water Div. 5, 91CW247) dated September 6, 1996, to produce a Historic Users Pool (HUP) Annual Operating Plan (AOP).

Executive Summary

Collection System and East Slope Reservoirs started Water Year 2020 (WY 2020) with greater than average storages and ended WY 2020 with slightly less than average storage. Snowpack was generally less than average for the water year and runoff mirrored snowpack. Peak runoff was normal in magnitude, but much earlier later than typical. Daily air temperatures were generally higher than average throughout the water year, except for part of October 2019 and February 2020, when temperatures were below average. Precipitation was marginally below average by end the water year. October 2019 through January 2020 precipitation was average; February and March 2020 precipitation was above average; April through July was slightly less than average; August and September precipitation was significantly less than average.

C-BT diversions totaled 210,954 acre-feet (AF) through Adams Tunnel for WY 2020. Deliveries of C-BT water totaled 227,198 AF. Water deposited in east slope reservoir storage the previous WY and delivered in WY 2020 accounts for the difference. Green Mountain Reservoir delivered a total of 107,143 AF from storage in WY 2020.

The natural inflow to Lake Estes reached its WY 2020 peak flow with a daily average flow of 880 cubic feet per second (cfs) on June 1. The maximum mean daily release from Olympus Dam was 868 cfs, also occurring on June 1.

Green Mountain Reservoir achieved a physical fill in WY 2020. Granby Reservoir was 8,287 AF short a fill in WY 2020. Carter Lake and Horsetooth Reservoirs achieved fills in WY 2020. Carter Lake Reservoir was filled once in WY 2020. Sufficient storage in Carter Lake and Horsetooth Reservoirs existed to satisfy all demands for WY 2020.

Grand Lake clarity goals were generally not met for the 2020 clarity season, although the Shadow Mountain Reservoir dissolved oxygen goal was met for the season.

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General Description of the Colorado-Big Thompson Project

The Colorado-Big Thompson Project (C-BT) is one of the largest and most complex natural resource developments undertaken by the Bureau of Reclamation. It consists of over 100 structures integrated into a trans-mountain water diversion and delivery system which provides water and power benefits across the state of Colorado from the Nebraska to the Utah state lines. The project was authorized for construction in the 1930's and completed in the 1950's.

C-BT project facilities span over approximately 100 miles within north-central Colorado. The project stores, regulates, and diverts water from the Colorado River west of the Continental Divide to provide supplemental irrigation water for 615,000 acres of land east of the Rocky Mountains. It supplements municipal and industrial water supply while providing water-oriented recreation for a growing population of just more than 1 million residents in Northeastern Colorado. Approximately 3,000 feet of elevation drop allows for hydroelectric generation of the electricity required for project pumping and produces enough surplus electricity for nearly 68,000 households. Additionally, the project provides water storage within the upper Colorado River basin for agricultural, municipal, industrial, recreation, and environmental uses. Major features of the C-BT include dams, dikes, reservoirs, powerplants, pumping plants, pipelines, tunnels, transmission lines, substations, and other associated structures.

Historically, the C-BT diverts approximately 230,000 acre-feet (AF) of water, annually, (310,000 acre-feet maximum) from the Colorado River headwaters on the western slope to the South Platte River basin on the eastern slope, for distribution to project lands and communities. The Northern Colorado Water Conservancy District (Northern Water) apportions the water used for irrigation to more than 120 ditches and 60 reservoirs. Twenty-nine communities receive municipal and industrial water from the C-BT. The Western Area Power Administration (WAPA) markets and transmits the electric power produced at the six powerplants associated with the project.

Collection System and East Slope Colorado-Big Thompson Project

Overview¹

The C-BT is often grouped by which side of the Continental Divide a sub-system is located. Facilities within the Colorado River Basin (on the west slope) include a replacement and compensatory storage reservoir and a water collection and diversion system. East slope facilities are located within the South Platte River Basin and include a power and delivery system and a water distribution system.

Green Mountain Reservoir provides replacement water for out-of-priority collection system diversion and storage water for other beneficial uses. Green Mountain Reservoir is located on the

¹ A diagram and map of the C-BT system can be found in Appendix C.1 and Appendix C.2.

Blue River, a tributary of the Colorado River approximately 30 miles southwest and downstream of the collection system. This reservoir allows for year-round diversion at the collection system by providing replacement water during periods when senior downstream water users would otherwise require the collection system to bypass inflow. Green Mountain Reservoir also provides water storage for the benefit of water users within the Colorado River basin. Green Mountain Dam includes a powerplant for hydropower generation.

The Colorado River collection and diversion system captures snowmelt runoff from the high mountains and diverts water to the eastern slope. The system stores, regulates, and conveys Colorado River water through Grand Lake to a trans-mountain diversion tunnel for delivery to the east slope. This system includes three reservoirs, two pumping stations, conveyance canals and the trans-mountain diversion tunnel.

Authorization of the project included improvements and operational requirements to mitigate anticipated lower flows downstream of the collection system. The project included installation of pumping systems for existing irrigators upstream of the Blue River confluence. The project also required a release schedule downstream of the collection system in order to maintain the Colorado River fishery downstream of Granby Dam.



Figure 1: A summer release through the spillway at Green Mountain Dam and Reservoir. Green Mountain Powerplant, located just below the dam, is also generating power.

The west slope water collection system for the project is comprised of three reservoirs (Lake Granby, Willow Creek and Shadow Mountain Reservoirs), one natural lake (Grand Lake) and two pumping plants (Farr and Willow Creek Pumping Plants). Lake Granby Reservoir is located on the Colorado River and is the largest reservoir within the C-BT. Lake Granby provides multi-year storage of Colorado River water. The Farr Pumping Plant lifts water from Lake Granby to Shadow Mountain Reservoir. Shadow Mountain Reservoir impounds the Colorado River upstream of Lake Granby and allows for gravity conveyance of Colorado River water through Grand Lake to the Adams Tunnel. The largest natural lake in Colorado, Grand Lake is hydraulically connected to

Shadow Mountain Reservoir. The two are operated as a single regulatory reservoir. Willow Creek Reservoir is used to regulate and divert water from Willow Creek, a tributary of the Colorado River. Willow Creek Pumping Plant lifts water diverted from Willow Creek Reservoir for storage in Lake Granby.

Completed in 1950, Granby Dam is located on the upper Colorado River. The dam's river outlet is comprised of a 30-inch jet valve and a 12-inch gate; and has a combined capacity of 430 cubic feet per second (cfs). The dam spillway is controlled by two radial gates with a combined total release capacity of 11,500 cfs. The reservoir stores the flow of the Colorado River and water pumped from Willow Creek Reservoir. The reservoir has a total storage capacity of 539,800 acre-feet.

Farr Pump Plant lifts water from Lake Granby to Granby Pump Canal for conveyance to Shadow Mountain Reservoir. The Farr Pump Plant has three 6,000 horsepower units with a combined installed capacity of 600 cfs when lifting the maximum head of 186 feet. The lifting head depends upon the storage level in Lake Granby and ranges between 88 feet to 186 feet. The combined lifting capacity for the 88 feet head differential is 1,200 cfs. The Granby Pump Canal conveys pumped water 1.8 miles to Shadow Mountain Reservoir and has a maximum capacity of 1,100 cfs.

Completed in 1953, Willow Creek Dam is located on Willow Creek, a tributary to the Colorado River below Lake Granby Willow Creek Dam stores and diverts water to Lake Granby Reservoir. The dam has a river outlet with a capacity of 2,080 cfs, a diversion outlet capacity of 400 cfs and an uncontrolled spillway located on the left abutment with a maximum flow capacity of 3,200 cfs. The reservoir has a total storage capacity of 10,600 AF. The Willow Creek Pumping Plant has two 5,000 horsepower units that lift water 175 feet with a combined capacity of 400 cfs.

Completed in 1946, Shadow Mountain Dam impounds the Colorado River upstream of Lake Granby. The dam has an outlet with 50 cfs capacity and a radial gate controlled spillway with a capacity of 10,000 cfs. The reservoir provides regulatory storage and the hydraulic head necessary for gravity conveyance to the Adams Tunnel. The reservoir has a total storage capacity of 18,400 acre-feet including 1 foot of regulatory storage in Grand Lake. The dam maintains the reservoir water surface elevation well within the historic water surface elevation of Grand Lake as required under the project authorization.

Completed in 1947, the Adams Tunnel was constructed to divert water from the Colorado River watershed to the Big Thompson River watershed. The 13.1 mile, 9.75 foot diameter tunnel is concrete lined with a capacity of 550 cfs. Tunnel flow is control by a radial gate inlet at a diversion structure called Adams Tunnel West Portal on the east end of Grand Lake. The tunnel passes under the Continental Divide and Rocky Mountain National Park and daylights at East Portal Reservoir approximately 4.5 miles southwest of Estes Park.

The east slope power and delivery system includes four regulatory reservoirs, five powerplants, one pumping station, multiple conveyance and diversions structures and two terminal storage reservoirs². The system is typically divided into three components including an Upper Power Arm above Olympus Dam, a Lower Power Arm above Flatiron Dam and the terminal storage reservoirs. Water

² Significant delivery occurs from these terminal storage reservoirs through various Colorado-Big Thompson Project transferred works. These transferred works are operated and cared for by Northern Colorado Water Conservancy District and are not a focus of this operational report.

delivery may occur at multiple delivery points between Adams Tunnel and the two terminal storage reservoirs. Primary delivery to the terminal reservoirs occurs through the power arms.

The Upper Power Arm begins at the Adams Tunnel East Portal and ends at Olympus Dam. East Portal Dam is constructed on Wind River. It directs a portion of the natural runoff from Wind River and C-BT water exiting Adams Tunnel into a siphon under Aspen Creek and a tunnel under Rams Horn Mountain. Below Rams Horn Tunnel a penstock conducts pressurized flow to Marys Lake Powerplant and Marys Lake.

Marys Lake Powerplant and Marys Lake is the first powerplant and regulatory reservoir on the Upper Power Arm. The powerplant has a single generator with a nameplate capacity of 8.1 megawatts at 210 feet of head. The powerplant is a “run-of-the-river” type generator that follows flow diverted at East Portal Dam between 200 cfs and 550 cfs. All flow bypasses the powerplant over a flip-bucket spillway when generation is not available or when flows are below generation capacity of Marys Lake Powerplant. Marys Lake is a natural lake that was enhanced by construction of dikes. Marys Lake has a storage of 927 AF and regulatory capacity of 593 AF. The outlet has a capacity of 1,300 cfs and no spillway. The reservoir serves as the afterbay for Marys Lake Powerplant and the forebay for Estes Park Powerplant. Prospect Mountain Conduit and Tunnel convey water from Marys Lake to Estes Park Powerplant.



Figure 2: Marys Lake Penstock (left), Powerplant (center) and Marys Lake (background).

Estes Park Powerplant and Lake Estes is the second powerplant and regulatory reservoir on the Upper Power Arm. The powerplant has three generators with a combined nameplate capacity of 45 megawatts at 572 feet of head. The powerplant is a “peaking plant” which allows load demand following by balancing storage contents between Marys Lake and Lake Estes. Olympus Dam impounds the Big Thompson River east of the town of Estes Park to form Lake Estes. Olympus Dam includes a gated river outlet, a gated diversion outlet and radial-gated spillway. Lake Estes has a

total capacity of 3,100 AF and a regulatory capacity of 740 AF. The reservoir regulates discharge from Estes Park Powerplant and natural runoff from the Big Thompson River and Fish Creek. Olympus Dam diverts up to 550 cfs to the Lower Power Arm via Olympus Tunnel and controls release to the Big Thompson River.



Figure 3: Olympus Dam and Lake Estes, along with the Big Thompson River gage below Olympus Dam. Part of the Town of Estes Park and Rocky Mountain National Park can be seen in the background.

The Lower Power Arm begins at Olympus Dam and ends at Flatiron Reservoir. Water from Lake Estes and the Big Thompson River is conveyed by Olympus Siphon and Tunnel to Pole Hill Tunnel and Canal and on to the Pole Hill Powerplant forebay.

The Pole Hill Powerplant is the first powerplant in the Lower Power Arm. The powerplant is a single unit with a net head of 815 feet. The unit nameplate generation is 33.25 megawatts. The powerplant discharges into a small afterbay that diverts water into Rattlesnake Siphon and Tunnel to Pinewood Reservoir. The powerplant forebay has no storage, and generation follows release from Olympus Dam to Olympus Tunnel. When required, flow from the Pole Hill forebay can bypass the powerplant by falling into Little Hell Creek Canyon where it flows until it is re-diverted to the Pole Hill Afterbay.

Rattlesnake Tunnel conveys water from the Pole Hill Afterbay to Pinewood Reservoir. Rattlesnake Dam impounds water from Rattlesnake Tunnel in Pinewood Reservoir. The reservoir has a storage capacity of 2,180 AF with regulatory capacity of 1,422 AF and provides regulatory storage for Flatiron Powerplant. Rattlesnake Dam has an outlet for releasing native flow to Cottonwood Creek and an uncontrolled spillway. The Bald Mountain Pressure Tunnel inlet supplies water from Pinewood Reservoir to the two Flatiron Penstocks and Flatiron Powerplant.

Flatiron Powerplant is the second powerplant on the Lower Power Arm. The powerplant includes three units. Two units have nameplates of 31.5 Megawatts with a maximum head of 1,118 feet. They receive water from Pinewood Reservoir. The two turbines discharge into Flatiron Reservoir. Flatiron Powerplant Unit 1 and 2 are operated as load-following generators. The third unit is a pump-

generator connected to Carter Lake Reservoir and has a 13 KHp motor with a maximum lift of 297 feet. When generating, Unit 3 is rated at 8.5 megawatts.

Flatiron Reservoir is a regulatory reservoir that controls flow to the Charles Hansen Feeder Canal and maintains head as an afterbay for Flatiron Powerplant generation and a forebay for Unit 3 pumping to Carter Lake Reservoir. Flatiron Dam impounds Chimney Hollow and the ephemeral tributary of Dry Creek. The reservoir stores 760 AF of water with 399 acre-feet of regulatory storage. The dam has an uncontrolled spillway with 23,600 cfs capacity and an outlet to the Charles Hansen Feeder Canal with a design capacity of 930 cfs.

The terminal storage and delivery component of the C-BT conveys water for user delivery and provides water storage for high demand periods. The two terminal reservoirs that have not been transferred to Northern Colorado Water Conservancy District are Carter Lake Reservoir and Horsetooth Reservoir. Under typical operation they receive water from Flatiron Reservoir. Carter Lake Reservoir supplies water to the project service area south of the Big Thompson River. Horsetooth Reservoir supplies water to the Cache La Poudre River project service area. The Charles Hansen Feeder Canal conveys water to Horsetooth Reservoir and delivers water to the Big Thompson River at the mouth of the Big Thompson Canyon and water users along the canal.

The Dille Diversion Dam and Tunnel, located one mile upstream from the Big Thompson Canyon mouth, provides a redundant feature for diverting project water from the Big Thompson River when the Lower Power Arm is unavailable. Additionally, non-project water from the Big Thompson River can be diverted into the tunnel. Tunnel water is conveyed to the Charles Hansen Feeder Canal and used for power generation at Big Thompson Powerplant or conveyed by the Charles Hansen Feeder Canal toward Horsetooth Reservoir.

Carter Lake Reservoir is impounded by three dams on ephemeral streams. Carter Lake Reservoir has a storage capacity of 112,200 AF with an active capacity of 108,900 AF. Carter Lake Reservoir receives water either from Flatiron Powerplant Unit 3 or a bypass gravity conduit. Deliveries are made through outlet works located in Dam number 1 to the Saint Vrain Supply Canal or to Flatiron Reservoir through the Flatiron Powerplant.

The Charles Hansen Feeder Canal (CHFC) transports water from Flatiron Reservoir to the Big Thompson River and Horsetooth Reservoir. CHFC has a nominal capacity of 930 cfs from Flatiron Reservoir to the Big Thompson River (930 Section). The CHFC can make water deliveries at the Big Thompson River and several turnouts along the canal. Deliveries from the canal to the river are made through a controlled wasteway or the Big Thompson Powerplant. The CHFC has a nominal capacity of 550 cfs from the Big Thompson River to Horsetooth Reservoir (550 Section).

Big Thompson Powerplant is the last federal powerplant in the C-BT system. The powerplant is used to make deliveries from the CHFC or to return non-project Big Thompson River water, obligated to users downstream of the Big Thompson Powerplant and used for non-consumptive power generation known as “skim” power operations, to the river. The powerplant’s nameplate is 4.5 megawatts with an operational head of 183 feet. The powerplant has a maximum flow rate of about 400 cfs. The CHFC wasteway makes river deliveries when demand exceeds 400 cfs or when the powerplant is unavailable. It has a maximum flow rate of 600 cfs and is also used to deliver water to users between the wasteway outfall and powerplant tailrace. Big Thompson Powerplant is typically operated only during the snowmelt runoff and delivery season.

Horsetooth Reservoir is located west of Fort Collins, Colorado. The reservoir includes four dams and a dike with a storage capacity of 151,800 AF and an active capacity of 143,500 AF. Outlet works are located in two of the dams, Horsetooth Dam and Soldier Canyon Dam. Dixon and Spring Canyon Dams and Satanka Dike do not have outlet works. The reservoir has no spillway. The Soldier Canyon Dam outlet supplies water to the city of Fort Collins, three rural water districts, Colorado State University, and the Dixon Feeder Canal for irrigation. Horsetooth Dam outlet discharges to the Charles Hansen Supply Canal for water delivery to the Cache la Poudre River and water users north of the Cache la Poudre River.

Additional water delivery and power transmission features were constructed under the project authorization. These features include supply canals, diversion structures, transmission lines and substations. All water delivery features below Horsetooth Reservoir and Carter Lake Reservoir were transferred to Northern Water Conservancy District upon repayment. Northern Water maintains and operates these features. Power transmission features are maintained and operated by WAPA. These features are not further described in this document.

Planning and Control

The C-BT was authorized, constructed and is operated to provide supplemental municipal and industrial water supply, irrigation water supply, and hydroelectric power production.

The integrated operation of the C-BT is planned and coordinated by the Water Resources Group at Eastern Colorado Area Office (ECAO) in Loveland, Colorado. Staff collects and analyzes information daily and makes the decisions necessary for successful operation of the C-BT. This continuous water management function involves coordination between the Colorado Division of Water Resources, Northern Water, WAPA, U.S. Bureau of Reclamation's Upper Colorado and Missouri Basin Regions, other U.S. Bureau of Reclamation groups, and many other local, state, and Federal agencies.

Experience has proven that proper use of the available water resource in a multi-purpose project, such as the C-BT, can be achieved only through careful budgeting and management of the anticipated water supply. One product of this budgeting and management process is an Annual Operating Plan (AOP).

The C-BT water operations are routinely planned on a 12-month basis. The first AOP of the new WY is prepared in early October and covers the October 1 to September 30 period. AOPs are prepared for reasonable maximum, most probable and reasonable minimum runoff conditions of water supply and associated requirements. The C-BT is operated to optimize the most probable water supply, without jeopardizing the operational position should either the reasonable maximum or the reasonable minimum water supply conditions occur. The plan is reviewed and revised monthly, or as needed during the year as new information becomes available or conditions change. Computer programs and models are used by ECAO to develop the AOPs and water supply forecasts. Tables B-5, B-6 and B-7 include the first AOP for the upcoming WY for the most probable, minimum reasonable and maximum reasonable plans, respectively. Appendix B-8 also provides a summary view of particular features of interest within the project for the planned C-BT operations in the upcoming WY.

Irrigation Requirements

The amount of C-BT water made available each water year (WY) for irrigation is determined by Northern Water. This determination is subject to change by agreement throughout the remainder of the irrigation season. Adaptations may occur as a result of substantial changes in the prevailing climatic demand or operational conditions. Irrigation requirements for the three runoff conditions; 1) most probable, 2) reasonable maximum and 3) reasonable minimum, are estimated by analyzing actual use under a variety of actual runoff conditions.

Estimated supplemental irrigation deliveries from Green Mountain Reservoir to irrigators in the Colorado River Basin are included in the release from Green Mountain Reservoir, according to the "Operating Criteria for Green Mountain Reservoir".



Figure 4: North Inlet near Grand Lake. Stream gaging house is shown on left side of photo.

East Slope Diversion Operations

Olympus Dam, East Portal Dam and the Dille Diversion Dam can divert Big Thompson River watershed flows for beneficial use. These operations include carriage contracts for decreed water, diversion and storage of decreed east slope project water and non-consumptive diversion for power generation. Carriage contracts allow for the project to divert and deliver decreed water for water users when unused capacity within the system is available. The C-BT will divert and store Big Thompson water rights when those rights are in priority as long as doing so does not adversely impact attainment of the project's objectives. The project also diverts Big Thompson River watershed flow that is obligated downstream of the Big Thompson Powerplant for non-consumptive power generation. This diversion operation is referred to as a "skim" operation. Big Thompson River water availability for diversion depends on the flow in the Big Thompson River

and its tributaries above Lake Estes, C-BT water diverted through the Adams Tunnel, and its power arm capacity. Skim operations and determination of unused system capacity is managed according to the AOP and as prescribed by the ECAO Water Resources Group staff.

Flow Requirements Below Project Facilities

Many of the C-BT dams include downstream flow recommendations or requirements. Release of water from project dams for maintaining downstream river flow was one of the primary purposes included within the project authorization and a stipulation of the project's water rights. This obligation for instream flow requirements preceded recognition of instream flow as a beneficial use within the State of Colorado. Granby Dam, Green Mountain Dam, Willow Creek Dam, Shadow Mountain Dam, East Portal Dam and Olympus Dam operations include some guidance or actual obligations for meeting stream flow targets.

The Secretary of the Department of Interior issued a release schedule for Granby and Willow Creek dams to define monthly flows for the time of the year, location and hydrology. This schedule, titled "Principles to Govern the Release of Water at Granby Dam to Provide Fishery Flows Immediately Downstream in the Colorado River," was signed on January 19, 1961, by the Secretary of the Department of the Interior as directed by the project authorization. During the irrigation season, a Colorado River target flow is maintained downstream of senior irrigation diversions below Granby Dam. During the remainder of year, the target flow is maintained immediately below Granby Dam. Scheduled flows for the Colorado River range between 20 cfs and 75 cfs. Willow Creek Dam only releases water for this purpose during the non-irrigation season, between October and April. Willow Creek Dam release is limited to the lesser of 7 cfs or reservoir inflow. The schedule also allows for flow adjustments based on revised forecasts and consideration of actual flows during May through July. A copy of the document is included in the Standard Operating Procedures (SOP) for Granby Dams and Reservoir, as Appendix A, Exhibit 4 in the SOP.

In accordance with the SOP for Shadow Mountain Reservoir, Chapter 4 Section D, minimum releases from Shadow Mountain Reservoir are to be whichever is less between inflow and the following seasonal flows: September through October -- 35 cfs; November through December -- 45 cfs; January through May -- 20 cfs; June through July -- 50 cfs; and August -- 40 cfs. The purpose of these flows is to maintain the fishery within the Colorado River above Granby Reservoir.

The Green Mountain Reservoir minimum release is determined by senior adjudicated water rights downstream from the reservoir. Inflow to Green Mountain Reservoir is released, as required, to meet these downstream rights. The State of Colorado has established instream flow rights for the Blue River downstream of Green Mountain Dam including a 60 cfs flow from May 1 through July 15 and an 85 cfs flow from July 16 through April 30. Instream flow rights are junior to the Project. The State Engineer has determined that Green Mountain Reservoir must bypass 60 cfs to meet downstream senior irrigation water rights during the irrigation season from May 1 through October 31.

The United States Fish and Wildlife Service and the State of Colorado Department of Natural Resources, Parks and Wildlife Division have recommended a minimum release schedule for Lake Estes, shown in Table 1 below. Although no official decision record (i.e. contract, memorandum of understanding, intergovernmental agreement) is available, Reclamation has cooperatively adopted the recommendations when inflow to Lake Estes meets or exceeds these values. Releases in excess of inflows are not required. When the minimum release objective conflicts with service of Carriage

Contracts, recent practice has prioritized meeting the minimum release flows over diverting water into Olympus Tunnel in service of the contracts. Likewise, diversion of flows from the Big Thompson River at Olympus Dam for power production (skim operation) is of lower priority than meeting the recommended minimum flows.

Table 1: Recommended minimum release schedule for Lake Estes. Recommended by the U.S. Fish and Wildlife Service and the Colorado Department of Natural Resources, Parks and Wildlife Division.

Period	Minimum Releases (cfs)
November 1 - April 15	25
April 16 - April 30	50
May 1 - May 15	100
May 16 - August 15	125
August 16 - August 31	100
September 1 - September 15	75
September 16 - October 31	50

Annual Operating Plan

Beginning each WY, the C-BT Most Probable Annual Operating Plan (AOP) is developed considering the effects of historical average runoff values, the expected demands and depletions of Northern Water and Denver Water, the project’s initial states (e.g. pool levels/reservoir storages), other average values, special operations such as previously planned system outages and maintenance schedules, and an assumed Northern Water quota for their water users of 70 percent.

The operations at Granby Reservoir are highly dependent on the runoff conditions on both sides of the Continental Divide. The conditions on the east slope have a direct effect on the diversions through the Adams Tunnel. The diversions through the Adams Tunnel affect the pumping operations at the Farr Pump Plant, and consequently the reservoir levels at Granby Reservoir.

The Green Mountain Reservoir operational plan was developed considering the effects of upstream operations at Dillon Reservoir, forecasted depletions provided by Denver Water and Colorado Springs Utilities, average runoff values, anticipated system outages and planned special operations.

Green Mountain Reservoir

Green Mountain Reservoir Operation References

1984 Operating Policy for Green Mountain Reservoir, Colorado - Big Thompson River Project. (1983, December 22). Federal Register, Vol 48, No. 247.

Consolidated Cases 2782, 5016 and 5017 (commonly referred to as the "Blue River Decrees"). (1955, 1964, 1978).

Consolidated Cases: Stipulation and Decree (October 12, 1955).

Consolidated Cases: Stipulation and Decree (April 16, 1964).

Consolidated Cases: Supplemental Judgement and Decree (February 9, 1978).

Director, Secretary of Interior. (1964, December 15). Certain Green Mountain Reservoir Storage, Colorado - Big Thompson Project. *Reservation for Silt Project, Colorado Storage Project*. Federal Register Document 64-12867, Filed.

Green Mountain Administrative Protocol. (2013, February 22).

Manner of Operation of Project Facilities and Auziliary Features (Senate Document 80). (1937, June 15). *Senate Document No. 80, 75th Congress, 1st Session* .

Recovery Implementation Program. (1996, October 15). *Recovery Action Plan, Colorado Endangered Fish Recovery Program*.

Shoshone Outage Protocol (ShOP). (2016, June 27). *Agreement Number 13XX6C0129*.

Stipulation and Agreement, 91CW247 (Orchard Mesa Check Case) and attached Historic Users Pool Operating Criteria (Colorado Water Division 5 September 4, 1996).

Reservoir Administration

Provisions guiding Green Mountain Reservoir operations are contained within multiple contractual and legally binding documents (referenced cited above). The documents include the following:

Paragraph 6 of the October 1955 Decree (Consolidated Cases: Stipulation and Decree, 1955) stipulates that Reclamation periodically develop operational plans for Green Mountain Reservoir. This report partially fulfills this requirement.

Colorado Springs Utilities and Denver Water Board (Cities) have water projects upstream of Green Mountain Reservoir that substantially influence the timing and volume of reservoir filling and water available for power generation. The Denver Water Board's water project includes 255 thousand acre-feet (KAF) Dillon Reservoir and a trans-basin diversion tunnel. Colorado Springs Utilities' project includes a direct-flow collection system, small regulatory reservoirs and a trans-basin diversion tunnel. Combined, the Cities divert approximately 80 KAF annually from the basin which would otherwise be available for Green Mountain Reservoir storage and power generation. The right for these water projects to divert against Green Mountain Reservoirs senior water rights and how the Cities compensate the Project for diversions junior to the Project is stipulated within the Project's and Cities water rights (Consolidated Cases 2782, 5016 and 5017 (commonly referred to as the "Blue River Decrees"), 1955, 1964, 1978). The Cities and the Project have established agreements to fulfill these stipulations. Stipulated agreement to how the Cities repay water owed to Green Mountain Reservoir is included within the Green Mountain Administrative Protocol (Green Mountain Administrative Protocol, 2013).

Green Mountain Reservoir was authorized and constructed to store and deliver two pools of water. Senate Document 80 (Manner of Operation of Project Facilities and Auziliary Features (Senate Document 80), 1937) identified a 52,000 acre-foot pool designated for the singular purpose of replacement of water diverted or stored out-of-priority by the Colorado River Collection System. The remainder of reservoir storage and refill storage are designated as the "100,000 acre-foot power pool". This pool is primarily for power generation and can be delivered for the beneficial use of water users located within the Upper Colorado River basin above the confluence with the Gunnison River in Grand Junction. The Project water rights include these two pool within the decree (Consolidated Cases 2782, 5016 and 5017 (commonly referred to as the "Blue River Decrees"), 1955, 1964, 1978).

Additional agreements and directives have further sub-divided the "100,000 acre-foot power pool". The sub-divisions include, replacement losses for Green Mountain Reservoir (Manner of Operation

of Project Facilities and Auxiliary Features (Senate Document 80), 1937), a 5,000 acre-foot allocation for the Silt Project replacement (Director, Secretary of Interior, 1964), the HUP and contract allocations (1984 Operating Policy for Green Mountain Reservoir, Colorado - Big Thompson River Project, 1983), and storage available for Shoshone Powerplant outage operations (Shoshone Outage Protocol (ShOP), 2016).

The Colorado State Engineer has administered Green Mountain Reservoir water rights in accordance with the Green Mountain Administrative Protocol since 2014 (Green Mountain Administrative Protocol, 2013). This protocol is currently under review by the Colorado State Water Court.

Green Mountain Historic Users Pool and the Orchard Mesa Check Case Settlement

Green Mountain Reservoir's largest single purpose allocation is the Historic User Pool (HUP) and is designated for Upper Colorado River Basin beneficiary use. The HUP allocation is composed of 66,000 acre-feet of the "100 KAF Power Pool". This allocation is defined within the 1984 Operating Policy (1984 Operating Policy for Green Mountain Reservoir, Colorado - Big Thompson River Project, 1983). The intent is that the HUP allocation is delivered in most years.

The HUP operating criteria is stipulated under the 1996 Orchard Mesa Check Case Decree (Stipulation and Agreement, 1996). The stipulations include a variety of criteria for how and when Green Mountain Reservoir can deliver HUP. The operating criteria also identifies a group of irrigation, state and federal stakeholders responsible for cooperative manage the HUP allocation. The HUP Managing Entities include Orchard Mesa Irrigation District, Grand Valley Irrigation Company, Grand Valley Water Users Association, the Colorado Water Conservation Board, the Colorado State Engineer, the U.S Fish and Wildlife Service and the Bureau of Reclamation. Regular meetings for cooperatively managing the HUP are a requirement of the operating criteria.

A primary purpose of the HUP allocation is to provide replacement water and irrigation water for HUP beneficiaries. This water is provided at no cost from the HUP allocation. In dryer years nearly the entire HUP allocation is delivered during the irrigation season. This delivery may include both replacement water for consumptive use by a beneficiary or delivered directly to Grand Valley irrigators. 500 acre-feet of the HUP allocation is reserved for consumptive use replacement during the non-irrigation season.

Providing water for supporting the recovery of Colorado River endangered fish is a secondary beneficial use of the HUP allocation. In most years the entire HUP allocation is not required for irrigation and replacement. In these years the HUP managing entities can declare that surplus HUP allocation is available (Recovery Implementation Program, 1996). The managing entities will collaboratively determine the timing and volume of water for delivery to the 15 mile Colorado River reach between the Grand Valley Irrigation Company diversion dam and the confluence with the Gunnison River.

The HUP managing entities have established standing weekly conference call meetings for coordination of Colorado River operations. These meeting are open to the public and provides a forum for coordination of reservoir and diversion operations within the Colorado River basin. Regular participants on the call include: the HUP managing entities, Denver Water, Northern Water, Colorado River Water Conservation District, the National Weather Service, Colorado Basin River Forecast Center and others.

Reservoir Operation

Green Mountain operations are controlled by water rights administration, authorizing documentation, litigation stipulations, agreements, facility limitations and safety of dam directives. Normal reservoir operations generally focus on three goals: not harming downstream senior water rights, maximizing power generation and conserving and enhancing the beneficial use of the waters of the Colorado River.

Reservoir operations frequently occur in response to administrative calls from senior downstream water rights. Reservoir storage is largely allocated for replacement water for consumptive use of junior water right users. Junior water diversion operations would be curtailed without this replacement water. Reservoir replacement releases cover out-of-priority diversion of the Colorado River Collection System, HUP beneficiaries, Silt Project, Green Mountain Reservoir evaporative losses and most contract release. The storage release flow rate is dependent upon the priority and location of the calling right. In addition, Green Mountain reservoir is obligated to bypass reservoir inflow as needed to not harm the senior calling right.

The reservoir is operated in a manner to maximize the power generation through Green Mountain Powerplant. The powerplant is the principal mechanism for release of all stored water and bypass of inflow. Storage releases for generation often provide other beneficial uses and include Shoshone Outage Protocol operations and direct delivery of HUP water for irrigation and HUP surplus delivery to the 15-Mile Reach for the benefit of Colorado River Endangered Fish recovery efforts. Powerplant releases are scheduled to control reservoir fill rate and minimize the volume of water that will bypass the powerplant. Coordinated Reservoir Operations (CROs) are designed to reshape powerplant release to help enhance river peak flow for the benefit of Colorado River Endangered Fish recovery efforts. The Green Mountain Powerplant direct flow water right places an administrative call on upstream water users most of the year.

Conserving and making use of Colorado River water to create the greatest benefit is one of the primary purposes of the Project. Reservoir operations are planned in a manner that increase the probability that Green Mountain Reservoir's first-fill storage water right will refill each year. In drier years this may require reduction of reservoir release below the powerplant capacity. In addition, operations avoid reservoir release exclusive for power generation.

Administration of water rights dictates reservoir operations throughout most of the year. This results in three typical operational seasons: Winter Delivery (November-April), Spring Runoff / Fill (April-August) and Irrigation Delivery (August-October).

During the Winter Delivery Season, Green Mountain Reservoir storage decreases as releases are made to avoid harming downstream senior water rights. Native winter flow within the Colorado River is typically less than the Shoshone Powerplant senior water right of 1,250 cfs. During this period reservoir storage releases replace water for the Project, HUP beneficiaries, and most Green Mountain Reservoir contractors. On average, Green Mountain Reservoir delivers 23 KAF from storage during the winter season while passing all reservoir inflow. Storage release for Colorado River Collection System Replacement constitutes the largest portion of winter storage delivery.

The Spring Runoff / Fill Season normally begins when river flow exceeds plant capacity at the Shoshone Powerplant. Colorado River flow typically exceeds 1,250 cfs between the last week of March and the second week of April. On average, Green Mountain reaches a minimum fill of 64

KAF in mid-April. Green Mountain Reservoir will exercise storage rights and adjust operation to maximize stored water while optimizing power generation once the Project water rights come into priority. Green Mountain Reservoir normally reaches its maximum fill during the first two weeks of July. After replenishing Green Mountain Reservoirs Senior Storage water right, refill storage rights and power generation direct flow rights will be used to maintain reservoir storage until an administrative call is placed on the Colorado River. A Colorado River administrative call typically occurs between the third week of August and the second week of September. Colorado River administrative calls may occur in June during drier years. Placement of an administrative call ends the Spring Runoff / Fill Season.

Irrigation Delivery Season begins once Colorado River flows decrease below water rights administrative levels. The calling right may be at the Shoshone Powerplant, a Grand Junction Area irrigation water right or both. During Irrigation Delivery Season, Green Mountain Reservoir delivers approximately 20 KAF per month. HUP deliveries constitute the largest portion of the storage releases during the Irrigation Delivery Season. Irrigation Delivery Season ends with the ceasing of irrigation operations around October 31.

Operational Summary: Water Year (WY) 2020

Summary of System-wide Conditions

Last water year's AOP was summarized in the previous Annual Operating Report of the Colorado-Big Thompson Project³. The following four sub-sections summarize actual operational results for WY 2020.

Weather and Inflow Hydrology

Precipitation was about average to slightly greater than average over the mountains for October 2019, slightly less than average through January 2020, greater than average through April 2020 and then generally less than average through the end of the WY. Precipitation in August 2020 was substantially less than average. The monsoonal season in the Northern Colorado Mountains near Granby and the east slope of the project area was below normal. The monsoonal season for Green Mountain was also below normal for 2020. Total precipitation for the WY ended slightly less than average.

Snow accumulation at the start of WY 2020 was near normal to slightly above normal until February 2020 at which point accumulations generally increased to mildly above normal. March and April accumulations were normal, but the remainder of the season saw very little additions to snowpack. The Big Thompson River drainage, Granby Reservoir drainage and Willow Creek Reservoir drainage were all slightly above average snowpack by the start of March 2020. The Green Mountain Reservoir drainage remained near average for snow accumulation for entire the season. Melt was early in WY 2020 with all drainage's snow accumulation reporting less than the long-term average by mid-May. The area surrounding the C-BT project largely followed the same pattern of snow accumulation. Generally, snowpack was above the median for much of the area by April 1, but accumulation rates slowed to below normal from the last week of April through the remainder of the season.

Table 2 provides an overview of the snowpack condition on April 1, 2020, for some of the contributing watersheds within the C-BT project system. The first column in Table 2 is the average Snow Water Equivalent (SWE) of the snow telemetry (SNOTEL) sites contributing to each reservoir on April 1, 2020. For a historical comparison to the April 1, 2020 condition, the average April 1 SWE of the same SNOTEL sites for the 1985-2019 period was calculated to create a combined site average for those locations. The runoff forecast for April 1, 2020, was mildly above the typical condition from the last 33 years for most locations within the C-BT region.

³ Available online at https://www.usbr.gov/gp/aop/cbt/19cbt_20forecast.pdf (accessed February 25, 2021)

Table 2: Snow-Water Content for April 1, 2020

Watershed	Snow-Water Content		
	2020 (In.)	Avg. (In.)	Percent of Avg.
Green Mountain Reservoir	17.4	16.0	109
Willow Creek	11.9	9.7	115
Lake Granby	16.1	13.3	121
Lake Estes	20.1	16.8	119

Table 3 displays the April 1, 2020 runoff forecasts for several C-BT facilities across intervals of predicted probabilities of occurrence. Coronavirus disease 2019 (COVID-19) pandemic travel restrictions were in place by early March 2020 and snow course data were not available for the April, May and June 1 forecasts. Snow course data provide valuable runoff forecasting information for the ECAO forecasting models. The prediction intervals were wider than previous years because the forecast uncertainty was greater due to a lack of snow course data availability for the ECAO forecast models.

Table 3: Reclamation Runoff Forecast for C-BT Locations

Forecast Point	Chance of Exceeding					50 percent Most Probable (percent of avg runoff)
	90 percent Reasonable Min ¹	75 percent	50 percent Most Probable	25 percent	10 percent Reasonable Max ¹	
Green Mtn. Res	246	269	320	347	398	114
Willow Crk. Res	34.5	40.0	52.7	64.9	70.4	105
Lake Granby	155	174	216	260	280	103
Big Thompson River Above Lake Estes	50.2	58.1	74.9	93.8	102	104
Big Thompson River at Canyon Mouth	54.9	66.6	92.1	119	131	102

¹ The probability is estimated to be 8 chances in 10 that the actual volume will fall between the reasonable minimum and reasonable maximum.

The coldest temperatures in the project area were recorded during the first half of February 2020 (Figure 5). Temperatures, when compared to the thirty-year average, saw part of October 2019 and early February 2020 slightly below average. For the rest of the entire WY, temperatures were slightly to considerably higher than the thirty-year average. By mid-April the area temperatures began to rise rapidly, and snow at lower elevations began to melt. The Northern Mountains of Colorado showed signs that runoff had begun earlier than normal. Most locations began to experience rising inflows by the middle part of April. By mid to late May 2020, the snowpack at higher elevations began to melt. Willow Creek Reservoir reached peak runoff by the middle of May, while inflows to Lake Estes, Granby and Green Mountain reached their peaks during the first days of June. The peaks were about average to slightly less than average in magnitude and earlier than usual. The runoff season for 2020 was shorter in duration than typical.

Most Northern Colorado reservoirs throughout the spring season had below average storage content. By the end of May many approached but never quite achieved fill. The dry and hot weather from mid-July through September put pressure on those reserves reducing storages well below 50 percent of capacity. Most reservoirs in the area ended the WY much lower than they did the previous year.

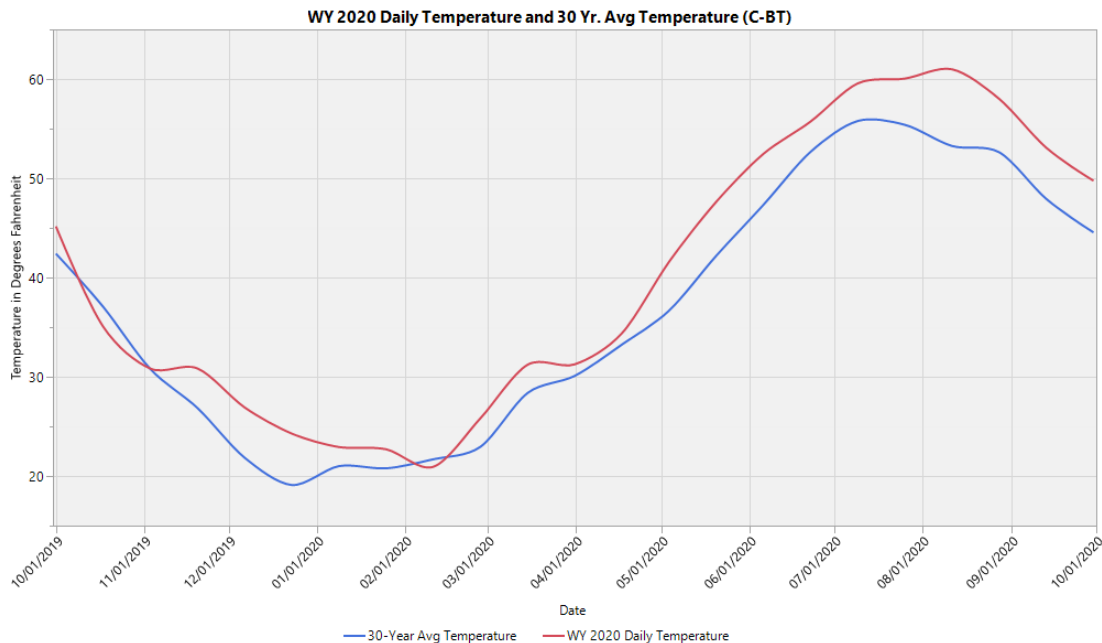


Figure 5: WY 2020 air temperature and 30-year average air temperature. (Daily data were smoothed for display purposes).

System Demands and Deliveries

Northern Water established a quota of 50 percent in October 2019, and then revisited that quota in April 2020, increasing it by 20 percent. The lower than expected runoff and a forecast for a hot, dry summer, motivated a third and final increase in June 2020 to an 80 percent quota which held throughout the remainder of the water year. The quota assumed for the AOP 2020 prepared in October 2019 was 70 percent and no adjustments were made throughout the monthly updates to the AOP 2020 until June, when the quota was increased to 80 percent.

During WY 2020, two major projects in the C-BT impacted the operations, demands and deliveries; the Cottonwood Siphon relining project that started on July 15, 2020 and, at the end of the WY, the Soldier Canyon Dam outlet works project at Horsetooth Reservoir.

An accounting summary of the C-BT west slope collection system in WY 2020 shows there were 212,088 acre-feet made available for diversion to the east slope. Adams Tunnel diversions were 210,954 acre-feet, a difference of 0.53 percent when comparing available collection system diversions versus reported diversions. That percent difference was well within the errors associated with the various measurements for the data used to create the accounting terms summarized in Table 4. The formula for determining the collection system volume available for diversion to the east slope is shown below:

$$\begin{aligned}
 & \textit{West Slope Collection Made Available for Diversion} \\
 & = \textit{Natural Inflow (Granby, Shadow Mountain and Grand Lake) + Windy Gap Pumping} \\
 & + \textit{Willow Creek Pumping} - \textit{Change in Storage (Granby, Shadow Mountain, Grand Lake)} \\
 & - \textit{Granby Spill} - \textit{Granby Releases} \\
 & - \textit{Net Evaporation (Granby, Shadow Mountain, Grand Lake)} - \textit{Granby Seepage}
 \end{aligned}$$

The Granby Release term (above) includes both scheduled releases plus any over-releases reported as release operations attempted to meet downstream flow targets.

Table 4: C-BT West Slope Collection Water Balance. Volume Available for Diversion from West Slope Collection System and Reported Diversions through Adams Tunnel for WY 2020.

Calculation Term	WY 2020 (acre-feet)
Combined 3 Lakes Natural Inflow	219,107
Willow Creek Pumping	33,467
Windy Gap Pumping	0
Combined 3 Lakes Change in Storage	-10,663
Granby Spill	0
Granby Releases	31,581
Combined 3 Lakes Net Evaporation	15,052
Granby Seepage	4,516
Volume Available for Diversion	212,088
Reported Adams Tunnel Diversion	210,954
Percent Difference	0.53%

On the east slope, total supplies were compared to total deliveries for WY 2020. Total supplies were calculated to be 253,476 acre-feet and total deliveries were calculated to be 240,129 acre-feet (Table 5). The percent difference was 5.6 percent. This is similar to previous years and can be explained by delivery system transit losses and measurement error of the terms that went into the calculations. The formula for determining total east slope supplies is shown below:

East Slope Supplies

- = Adams Tunnel diversions + East Slope Priority Water*
- Net Evaporation (Carter and Horsetooth Reservoir)*
- End of WY East Slope Reservoirs' Change in Storage*
- Tridistrict Excess Capacity Account Change in Storage at Horsetooth*
- Predetermined CBT River Delivery Losses*

During the Cottonwood Siphon relining project from in mid-July 2020 through the end of the WY, C-BT River and CHFC 550 Section demands were met via a release to the Big Thompson River from Olympus Dam. A predetermined delivery loss is applied when that method of delivery occurs. The 'Predetermined C-BT River Delivery Losses' term in the supplies equation (Table 5) includes any assigned delivery losses in the east slope system. For WY 2020, a 2.1 percent delivery loss was established for those Big Thompson River deliveries. Supply releases had to be greater than the requested deliveries by 2.1 percent to offset the loss and that known difference was subtracted from the supply term in Table 5.

The formula for determining total deliveries is as follows:

$$\textit{Total Deliveries} = \textit{Total CBT Deliveries} + \textit{Total Windy Gap Deliveries} + \textit{Eureka Replacement Delivery}$$

The results of the supplies versus east-slope deliveries are shown in Table 5 below.

Table 5: C-BT East Slope Water Balance Volume Available for Supply vs. Reported East Slope Deliveries for WY 2020

Calculation Term	WY 2020 (acre-feet)
Adams Tunnel Diversion	210,954
East Slope Priority Water	0
Carter Lake + Horsetooth Reservoir Net Evap	8,041
Total East Slope Reservoir Change in Storage	-51,585
Tridistrict Excess Capacity Change in Storage	175.1
Predetermined C-BT River Delivery Loss	372
Total Supply	254,301
Total C-BT Deliveries ⁴	227,198
Total Windy Gap Deliveries	12,751
Eureka Replacement Water	180
Total Deliveries	240,129
Percent Difference (of Total Supply)	5.6%

⁴ Includes non-charge water delivered, which was zero AF in WY 2020.

Maintenance and System Outages

Two major projects in the C-BT impacted the typical operations during part the WY:

1. the Cottonwood Siphon relining project on the CHFC 930 Section that started in mid-July 2020 and;
2. at the end of the WY, the Soldier Canyon Dam outlet works project at Horsetooth Reservoir.

In addition to those two major projects, many normally scheduled inspections took place at different facilities during the fall maintenance outage period from late October through early December 2019. Water diversions from the west slope were suspended for about five and a half weeks from late October through early December 2019 to accommodate these activities. West slope diversion through Adams Tunnel began earlier than typical in 2019, starting on December 8. Full capacity diversions began on December 18, 2019, thanks to the speed and efficiency of the fall maintenance work in WY 2020.

Estes Powerplant personnel conducted annual maintenance for Marys Powerplant for the upcoming WY 2020 season during the fall outage. The Lake Estes Powerplant units #1, #2 and #3 had their annual maintenance performed in succession from January 6 through May 1, 2020. Two units were always available for generation during the Estes Powerplant annual maintenance period.

The Flatiron Powerplant crew completed the annual maintenance of the Pole Hill Powerplant unit during November 2019 through mid-December 2019. Annual maintenance of Flatiron Powerplant unit #3 was completed by mid-October 2019 and resumed maintenance again during WY 2020 in early September 2020. The annual maintenance of Flatiron Powerplant units #1 and #2 was to occur in succession starting in mid-February 2020 and ending in mid-May 2020. Only unit #1 maintenance was complete during the WY. Unit #2 annual maintenance was cancelled in late March 2020 due to staffing issues associated with the COVID-19 restrictions in place by early March 2020. The CHFC trifurcation wasteway and Big Thompson Power Plant were winterized during the first week of November 2019. The annual maintenance of the CHFC 930 and 550 Sections took place in late October 2019 through early November 2019 and again for the CHFC 550 Section in the last half of September 2020. The Cottonwood Siphon relining project outage started in mid-July and ended in mid-October 2020, a month ahead of schedule. The Cottonwood Siphon outage afforded CHFC 930 Section maintenance during that period in WY 2020.

C-BT water deliveries were met throughout WY 2020 in coordination with outage work. Fall 2019 deliveries to the CHFC continued as planned, only using water from Carter Lake Reservoir seven times during the five-and-a-half week fall maintenance season to refill Flatiron Reservoir to meet canal demands during the outage. C-BT demands along the river during the Cottonwood Siphon relining project's outage were met by C-BT water releases from Olympus Dam to the Big Thompson River. All opportunities to divert those C-BT releases through Dille Tunnel and generate power at the Big Thompson Powerplant were used during the Cottonwood Siphon relining project.

Operations and Outcomes

Typically, starting around the middle of December after fall annual outages are lifted, the project begins to divert water through Adams Tunnel at full capacity to refill Carter Lake and Horsetooth Reservoirs for the upcoming season. The refill is planned prior to spring runoff when skim and priority water usually become available in mid to late May through late June to maximize use of skim

and priority water by the project. In most cases, some space is reserved in Horsetooth Reservoir to store unanticipated priority water that may become available at Dille Diversion on the Big Thompsons River. This operation was implemented as planned in WY 2020. Carter Lake Reservoir was first filled in early April 2020 and came just short of second fill by early July 2020. Horsetooth Reservoir was filled at the end of June 2020, although no east slope priority water was ever available for the project in WY 2020.

April 1, May 1 and June 1 runoff forecasts were rapidly downgrading runoff volumes for the season. By early June, even with slightly higher than average end of WY carryover storage at Granby Reservoir it was becoming increasingly evident that the potential for a spill at Granby Reservoir was decreasing. By July 5, it was clear a spill would not occur at Granby.

Carter Lake Reservoir was initially filled on April 5, 2020. Pumping to Carter resumed on May 28 and continued until September 8; a second fill of Carter Lake Reservoir was not planned for WY 2020 and, although storage at Carter began to approach a second fill in early July, by July 11 demands on Carter exceeded the pumping rate and reservoir elevations declined throughout the remainder of the WY. Adams Tunnel diversions were decreased with the first fill of Carter Lake Reservoir to maximize east slope skim throughout seasonal runoff. Adams Tunnel diversions increased with the May 28 resumption of pumping to Carter, but sufficient space remained available in Olympus Tunnel to take advantage of skim water during most of the period. At the end of the fall maintenance period in early December 2019, Horsetooth Reservoir only had about 25,000 AF of available storage space. It was within 10,000 AF of fill by January 19. From that point, Horsetooth Reservoir was slowly filled to the top of its operational pool by June 29 and then was allowed to draw down toward the planned target elevation (5,388 feet) for the October 2020 Soldier Canyon outlet works outage. The Cottonwood Siphon rehabilitation project started on July 15. From that time, the CHFC 930 Section between Flatiron Reservoir and the Dille Tunnel junction was under clearance through the remainder of the water year.

C-BT operations and the skimming of water from the Big Thompson River through Olympus Tunnel kept daily mean releases from Olympus Dam to the Big Thompson River at or below 868 cfs during runoff. Figure 6 illustrates how Olympus Dam instantaneous releases were managed during the runoff period from May through August 2020. The peak instantaneous release from Olympus Dam was 889 cfs and occurred on June 1, 2020. As the start of the Cottonwood Siphon project on July 15 approached, C-BT water was released from Olympus Dam down the Big Thompson River and then rediverted at the Dille Diversion to meet Charles Hansen Feeder Canal 550 Section demands. During that period, all opportunities to redivert C-BT river demand releases from Olympus Dam through Dille for generation at the Big Thompson Powerplant were utilized. This operation is illustrated in Figure 6 where Olympus Dam releases exceed the gaged natural inflows above Lake Estes during the Cottonwood Siphon relining project period starting in mid-July.

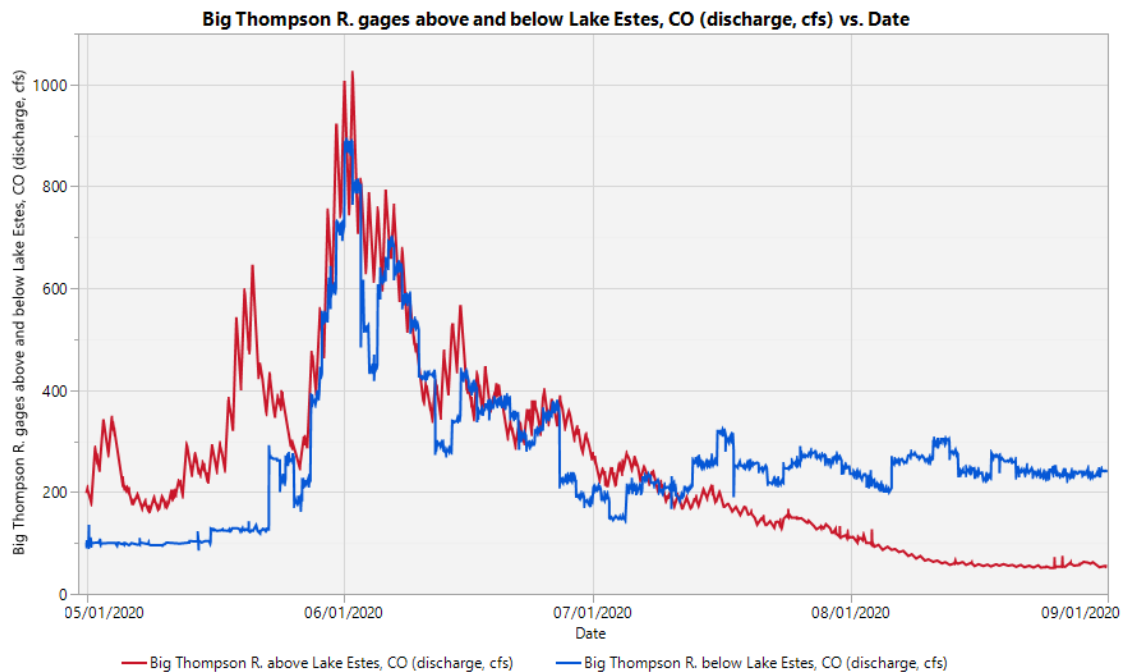


Figure 6: Big Thompson River gages above and below Lake Estes: May through August 2020.

C-BT Operations by Facility

Collection System

Willow Creek Reservoir

October through March: Figure 7 shows snow accumulation in the Willow Creek basin was slightly above average until February, at which point snowpack was above average until early May. However, for March through early April, the marginal snow accumulation was less than average.

Reservoir operations followed standing operating procedures. Due to the April 1 forecast of greater than average runoff for WY 2020 and higher than normal initial Granby Reservoir storage at that point WY 2020, a total of 3,720 AF at Willow Creek Reservoir was preemptively released from April 30 through June 4. Once the June 1 runoff forecast was available, which was 14.2 thousand AF (KAF) less than the April 1 forecast, preemptive releases were immediately discontinued. Except for the preemptive release period noted, winter reservoir release was maintained at 7 cfs for Colorado River fishery maintenance as directed by the Secretary of Interior schedule of release.

April: The first signs of runoff in the Willow Creek watershed began in early April 2020 (Figure 8). Pumping to Granby also began in early April 2020.

May: The WY 2020 computed peak inflow of 492 cfs was reached on May 20, 2020 (Figure 8). With the exception of two days in late May 2020, the Willow Creek Pump Canal ran continuously from May 1 to June 16. During May, 18,618 AF was pumped from Willow Creek Reservoir to Granby Reservoir.

June: Willow Creek pumping continued through June 16 and then once again starting on June 29 for a monthly total volume of nearly 7,940 AF for June. Early runoff and less than average snow accumulation in April and May reduced the total volume of water pumped to Granby Reservoir for WY 2020 compared to previous years.

July 2: Willow Creek pumping discontinued to Granby Reservoir due to lack of available inflow to Willow Creek Reservoir.

July 2 through September: Willow Creek elevation remained between 8,123 feet and 8,127 feet throughout the remainder of the WY. Pumping operations ended for the WY on July 2.

The observed April-July runoff to Willow Creek Reservoir was approximately 38.5 KAF. The April 1 most probable forecast (Table 3 above) was 52.7 KAF. May 1 most probable forecast was 49.0 KAF and June 1 most probable forecast matched the observed April-July runoff of 38.5 KAF.

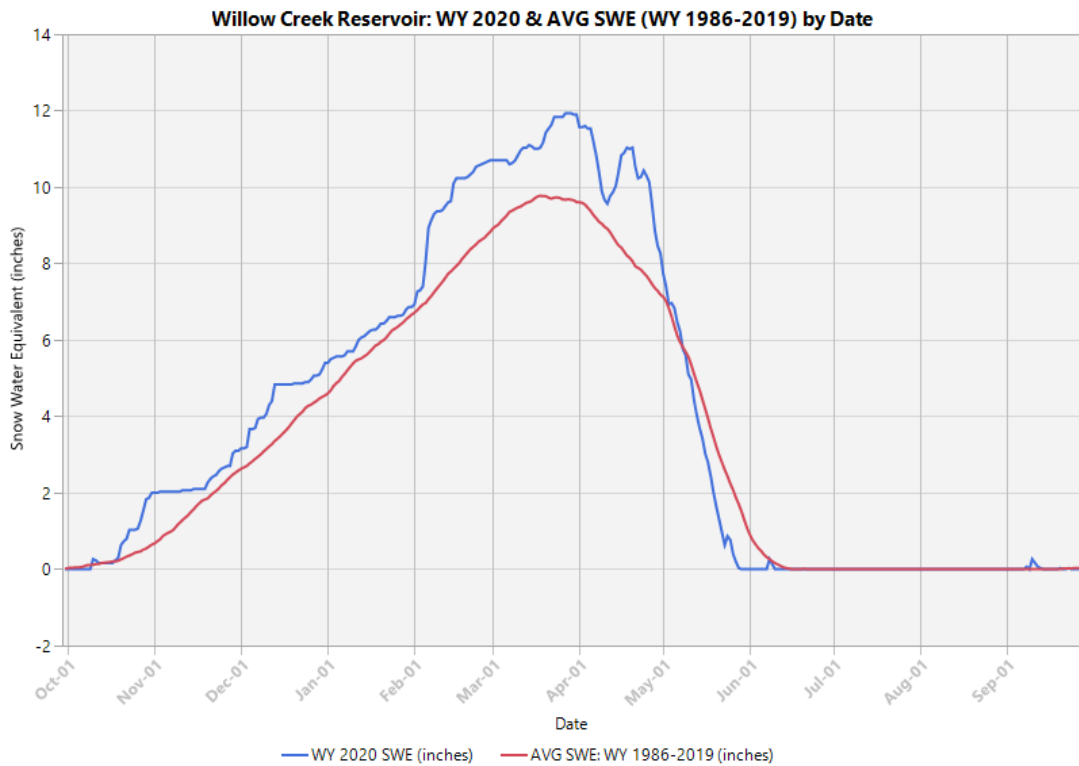


Figure 7: WY 2020 and 35-year average SWE for the Willow Creek Reservoir drainage area.

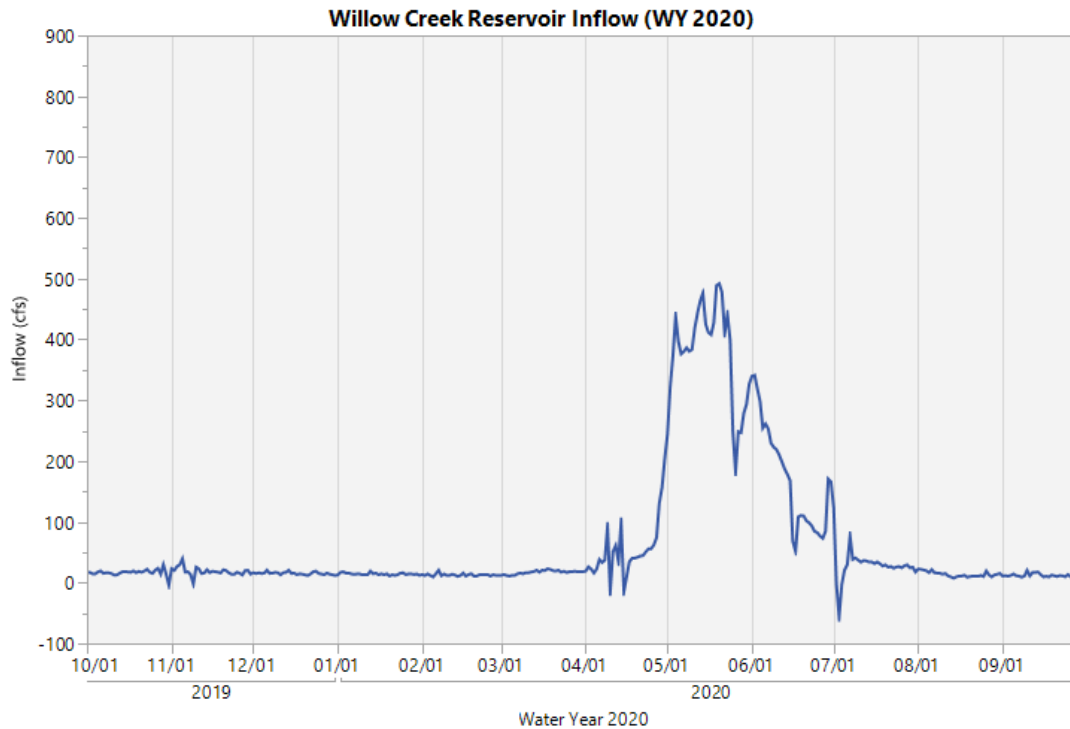


Figure 8: Computed Inflow to Willow Creek Reservoir during WY 2020.

Granby Reservoir and Shadow Mountain Reservoir/Grand Lake

Granby Reservoir, Shadow Mountain Reservoir, and Grand Lake are located on the Upper Colorado River. Grand Lake and Shadow Mountain Reservoir are hydraulically connected and function as a single body of water with the water surface elevation controlled by Shadow Mountain Dam. Operations maintain water surface elevation between 8,366 and 8,367 feet. The two water bodies provide approximately 1,700 acre-feet of regulatory storage and function as the forebay for Adams Tunnel and an afterbay for the Farr Pump Plant. The Farr Pump Plant moves water from Lake Granby Reservoir to Shadow Mountain Reservoir as needed to augment Adams Tunnel diversion of Shadow Mountain Reservoir and Grand Lake native flow. During spring runoff, native flow usually exceeds Adams Tunnel diversion and excess water is released to the Colorado River for storage within Granby Reservoir. During WY 2020, Shadow Mountain Dam maintained minimum flows to the Colorado River and maintained water surface elevation as described within the Standing Operating Procedures.

Unless otherwise noted, the balance of this section emphasizes Granby Reservoir operations which are considerably more variable, and therefore, of more operational interest than Shadow Mountain Reservoir and Grand Lake.

October 2019 through February 2020: The carryover content from WY 2019 for Granby Reservoir was 485,699 acre-feet, 116 percent of the thirty-year average (416,750 acre-feet). At full capacity Granby Reservoir storage is 539,758 acre-feet. The reservoir content remained above the thirty-year average content until February 29, 2020. As diversions through the Adams Tunnel resumed in the second week of December 2019, Granby Reservoir content began to fall steadily. Figure 9 shows snow accumulation in the Granby Reservoir basin was slightly above average until

February, at which point snowpack was above average and remained above average until early to mid-May.

March through April: In March through early April, the marginal snow accumulation was less than average. Adams Tunnel diversions continued from mid-December at about sixty percent of capacity until the first fill of Carter Lake Reservoir on April 6. Full Adams Tunnel diversion was not needed during the winter months of WY 2020 because Horsetooth Reservoir storage content carryover from WY2019 was so large (within 10 KAF of fill by mid-January 2020).

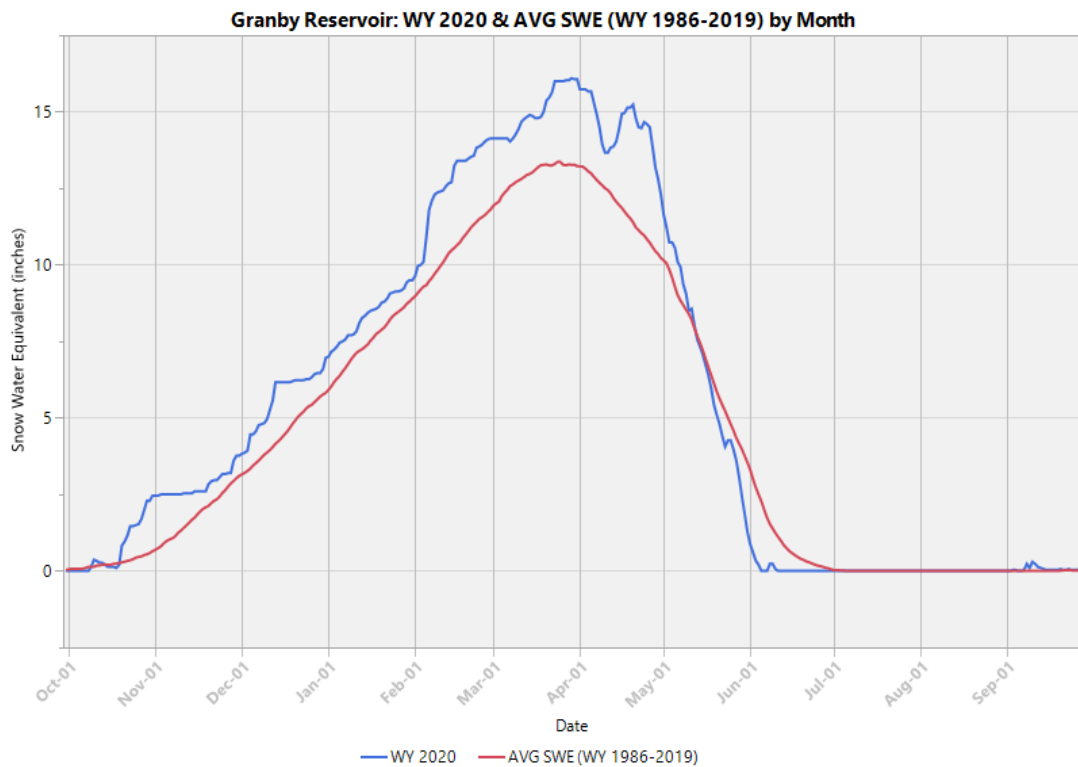


Figure 9: WY 2020 versus 35-year average SWE for the Granby Reservoir drainage area.

April/May through early July: Throughout April, conditions for both the west and east slopes indicated that the potential for a spill at Granby was high. Snow accumulation was mildly above average by the end of April and the carryover content from WY 2019 of Granby, Carter Lake and Horsetooth Reservoirs was greater than average. Although there was very little additional snow added in May, by June 1 Granby, Horsetooth and Carter Lake Reservoirs' combined storage was 734 KAF, more than 142 KAF greater than the average combined storage for the preceding 30 years. This storage condition continued to indicate a spill at Granby was likely. Slightly warmer than average temperatures in April and even warmer than average in May coupled with little additional snow in May caused an early runoff peak. Computed mean daily natural inflow to Granby Reservoir which peaked on May 30 was 1,307 cfs. Adams Tunnel diversions increased in late May to support pumping to Carter Lake Reservoir which resumed on May 28.

The June 1 runoff forecast was the first indication that there might not be a spill at Granby in WY 2020. In June 2020, Northern Water increased their C-BT quota from seventy percent to eighty percent in response to a hot, dry irrigation season outlook and poor precipitation on the east slope

through the first week of June. Adams Tunnel diversions were increased to capacity by June 7 and remained at or near capacity throughout much of June to enhance Carter Lake and Horsetooth Reservoirs' storage to meet the increased demands.

With the early runoff peak at Granby, coupled with the increase in Adams Tunnel diversions in June 2020, the rate of Granby fill began to decline. By the end of June, it was clear there would be no spill at Granby in WY 2020. Granby reached its WY maximum storage of 531,513 AF on July 2, 2020. That storage was 8,245 AF short of fill.

The observed April-July runoff to Granby and Shadow Mountain Reservoirs and Grand Lake was approximately 189.3 KAF. The April 1 most probable forecast (Table 3 above) was 216 KAF. May 1 most probable forecast was 218.6 KAF and June 1 most probable forecast was 180.2 KAF.

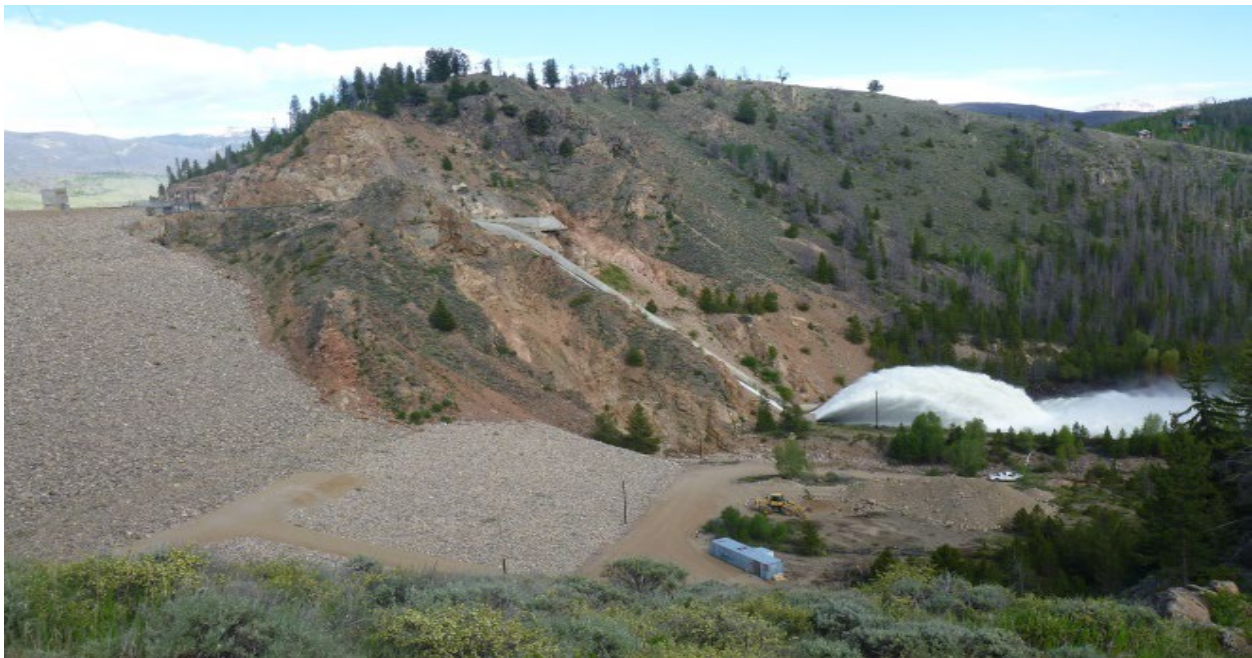


Figure 10: Granby Reservoir spill; approximately 2,400 cfs, June 13 through June 21, 2015.

Early July through September: Adams Tunnel diversions were reduced in mid-July to match Big Thompson River demands and the pumping to Carter Lake Reservoir which started in late May and continued through early September. On July 15, a clearance was placed on CHFC 930 Section for the Cottonwood Siphon relining project. Horsetooth Reservoir demands from mid-July through the end of the WY were met from storage. The Soldier Canyon Dam outlet works project at Horsetooth Reservoir for the end of WY 2020 required a target elevation of less than 5,388 feet. Only enough flow, which was released from Olympus Dam to the Big Thompson River and then diverted through Dille Tunnel due to the CHFC 930 Section outage, was provided in the CHFC 550 Section from mid-July to the end of WY to meet canal demands plus some minimal push water.

Grand Lake Water Clarity operational plan for WY 2020 was similar to the successful 2018 and 2019 plans. The initial operation plan included a pre-clarity operation in late June to reduce Adams Tunnel diversions to slightly less than Grand Lake natural inflow in an attempt enhance the settling of total suspended solids in the water column and minimize introduction of Shadow Mountain

Reservoir water into Grand Lake. Unfortunately, the earlier than expected and reduced runoff, coupled with the quota increase in June to eighty percent, precluded the project's ability to implement the first phase of the plan. To meet the quota's enhanced demands from Carter Lake and Horsetooth Reservoirs, Adams Tunnel diversions had to be increased to near capacity in early June and flows from Shadow Mountain into Grand Lake followed suit. The initial operation plan also included weekly cycling of Adams Tunnel diversion during the clarity period. During the workweek, Adams Tunnel diversions were maintained at system capacity. During the weekend, diversions decreased to approximately 220 cfs. The cycling operation was also consistent with the successful operation executed during the 2018 and 2019 clarity seasons. However, the west portal trash rack had what seemed to be more issues with clogging than typical during the 2020 clarity season. Clogging appeared to be primarily from aquatic vegetation entrained in the water column and made achievement of the planned maximum diversion during the workweek impossible as the clarity season progressed. To offset the loss of flow in Adams Tunnel during the workweek and continue to supply pumping to Carter Lake Reservoir and river demands on the east slope, the planned reduction in diversions on weekends had to be increased above the planned 220 cfs. The flow-cycle operation was designed to increase power generation benefit and create a less stable aquatic environment which is theorized to impede favorable conditions for blue-green algae growth in Shadow Mountain Reservoir and Grand Lake. Both the minimum clarity of 2.5 meters and the running average clarity of 3.8 meter goal qualifiers were not met during Grand Lake Clarity operations in WY 2020. Shadow Mountain Reservoir dissolved oxygen goals were met for the clarity season.

A full description of the planned clarity operations and actual operations for the WY 2020 clarity period can be found in the 2020 Grand Lake Clarity Adaptive Management Final Report.

September: As the end of clarity season approached, pumping to Carter Lake Reservoir ceased and diversions through Adams Tunnel were reduced to meet river demands and maintenance flows in the CHFC 550 Section. This operation continued throughout the last weeks of the WY. Granby Reservoir finished WY 2020 with 475,524 acre-feet of water in storage. Granby Reservoir storage remained above the thirty-year average storage for all of WY 2020 (Figure 11).

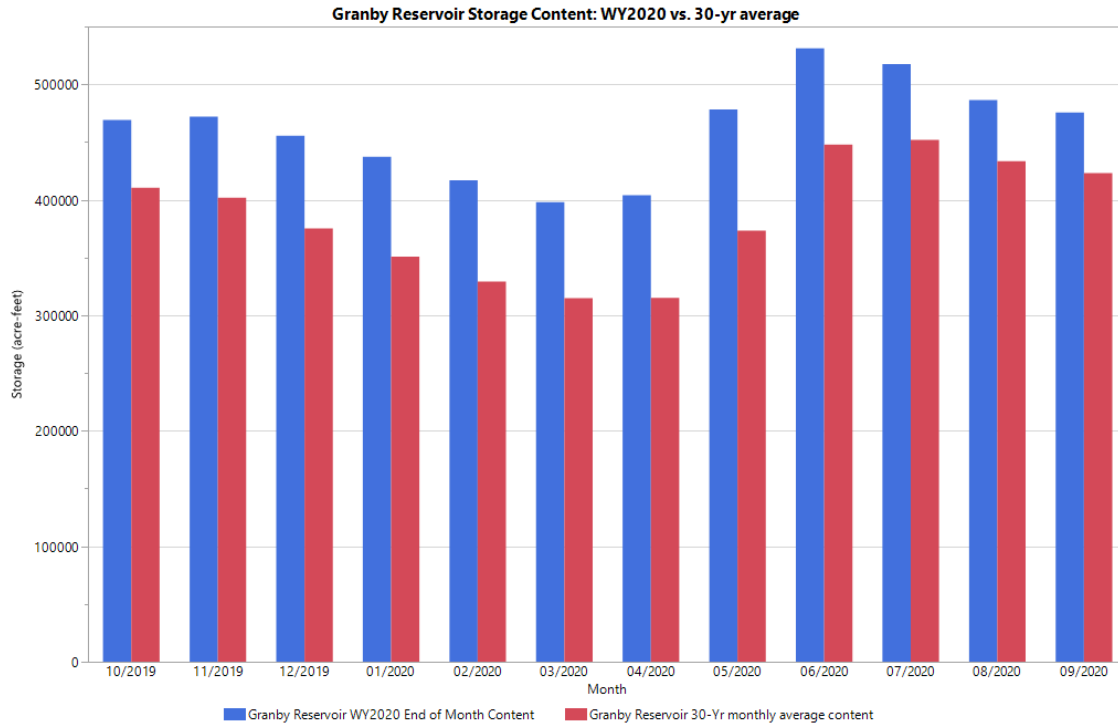


Figure 11: Granby Reservoir storage content, WY 2020 versus the 30-year average storage content.

East Slope

Adams Tunnel, Marys Lake and Lake Estes

November-December 2019: Like previous years, the months of November and December 2019 brought multiple inspections and maintenance projects for the C-BT. All maintenance and inspection work were completed within the outage time requested. Marys Lake Powerplant Unit 1 underwent its annual maintenance and Adams Tunnel had its annual inspection.

December 8: Water began to flow through the Adams Tunnel once again to refill Marys Lake and Lake Estes prior to operation of the upper power arm.

December 10: The elevation at Lake Estes reached normal operational pool and generation began for the season at Estes Powerplant.

December 12: The elevations at Marys Lake reached normal operational pool and generation at Marys Powerplant began for the season.

December 16: The C-BT maintenance season came to an end as Adams Tunnel flows reached 524 cfs. Flatiron Unit 3 pumping to Carter Lake Reservoir began at 0800 hours. Diversions through the Adams Tunnel continued at or near capacity until December 22, 2019, when Flatiron Unit #3 unexpectedly shut down. The issue was quickly identified and materials for repair were ordered and installed by mid-January 2020. Project water was sent to Horsetooth Reservoir during the interim.

January-March 2020: The snowpack above Olympus Dam started the water year slightly above average. Snowfalls in February pushed accumulation mildly above average. The marginal snowpack

accumulation for March was near average maintaining the mildly above average snowpack (Figure 12). Estes Powerplant units #1, #2 and #3 annual maintenance started in early January and ended the first of May. Two units were always available for generation during the period.

January 6: The annual maintenance of Estes Powerplant unit #1 began.

January 16: Pumping to Carter Lake Reservoir resumed for the season at 0800 hrs. Adams Tunnel diversions averaged 375 cfs until early April with the first fill of Carter Lake Reservoir. Horsetooth Reservoir storage carryover from WY 2019 was so large a full Adams Tunnel was not necessary to position Horsetooth Reservoir for its target storage prior to spring runoff in WY 2020.

February 7: Annual maintenance of Estes Powerplant unit #1 was completed.

February 17: Annual maintenance of Estes Powerplant unit #2 began.

March 20: Annual maintenance of Estes Powerplant unit #2 was completed.

March 30: Annual maintenance of Estes Powerplant unit #3 began.

April: A mild warming trend in the last half of April 2020 (Figure 5 above) began to melt some of the snow at lower elevations. The inflow to Lake Estes gradually increased during the same period (Figure 14). On April 6, the first fill of Carter Lake Reservoir was completed for the WY. Due to Horsetooth Reservoir target elevations having been previously achieved by mid-March, Adams Tunnel diversions were reduced to a demand-maintenance level for the CHFC 550 Section, averaging about 50 cfs from April 7 through May 20.

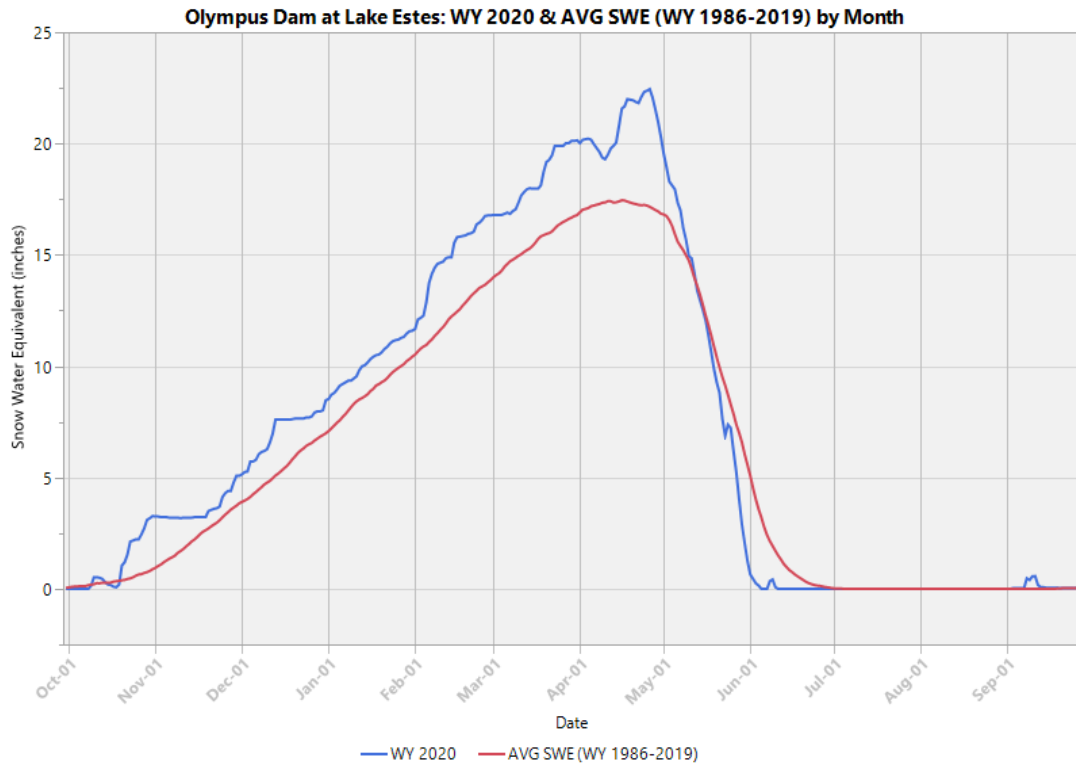


Figure 12: WY 2020 and 35-year average SWE for the Olympus Dam drainage area.

May: Mean daily temperatures over the Front Range were four to five degrees above normal in May. Very little new snow was added to the melting snowpack during the month (Figure 12). The natural inflow to Lake Estes continued to increase throughout the month.

May 1: Wind River skim operations began for the water year. A total of 525 acre-feet for the WY was skimmed for power generation at Marys and Estes Powerplants between May 1 and July 7, 2020.

May 28: Pumping to Carter Lake Reservoir resumed on May 28 which increased Adams Tunnel diversions to near capacity at the end of May. Diversions averaged 462 cfs until September 9 when pumping to Carter Lake Reservoir ended for the WY.

June: Mean daily temperatures over the Front Range remained slightly above normal during June 2020 with monthly precipitation slightly below normal. Big Thompson River above Lake Estes flows peaked about ten days earlier than the fifteen-year average. The C-BT never came into priority on the east slope in WY 2020.

June 1 and 2: Mean daily flow for the Big Thompson River above Lake Estes peaked at 880 cfs on June 1. The instantaneous peak flow was recorded on June 2 of 1,020 cfs. The maximum mean daily release to the Big Thompson River below Lake Estes occurred on June 1 of 889 cfs.

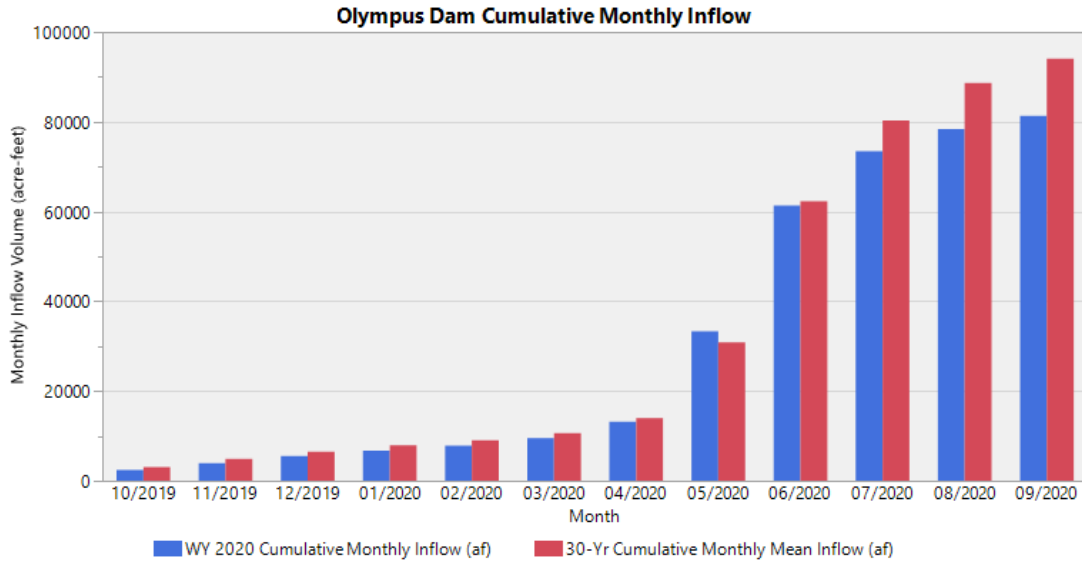


Figure 13: Computed cumulative native inflow for Lake Estes during WY 2020 versus 30-year average.

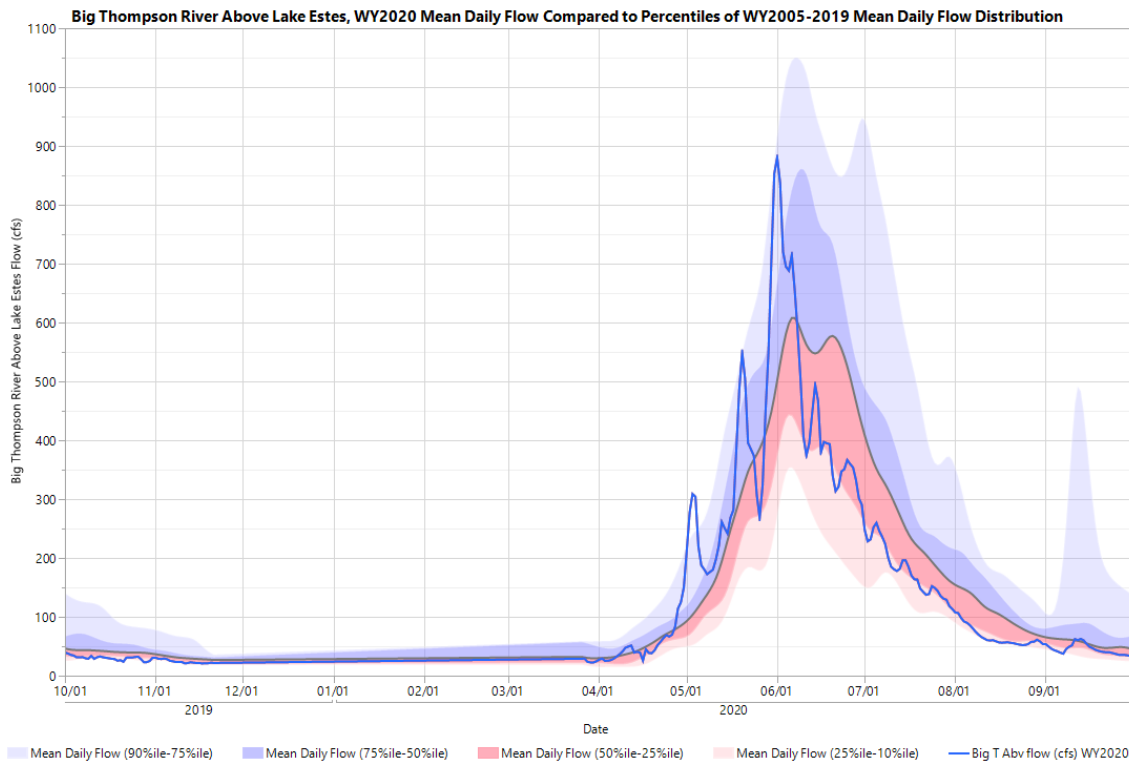


Figure 14: Big Thompson River above Lake Estes, WY 2020 gage flow vs. distribution of 15-year daily flows.

June 11: The Northern Water Board of Directors voted to increase the quota declaration from 70 percent to 80 percent, citing lower than expected runoff, a relatively hot, dry May and the forecast for continued hot, dry conditions over the next three months. The quota increase put additional demands on C-BT terminal reservoirs that were not part of the monthly AOPs to date. Adams

Tunnel diversion were increased slightly from an average of 450 cfs in the first part of June to an average of 500 cfs through mid-July to fill Horsetooth by early part of July and enhance supplies for the demand increase.

July-September: Adams Tunnel diversions averaged about 450 cfs for July through September 8 as pumping to Carter Lake Reservoir continued during the period. Big Thompson inflows to Lake Estes dropped and stayed below the 30-year median inflows (Figure 14).

The observed April - July runoff to Lake Estes was approximately 64 KAF. The April 1 most probable forecast (Table 3 above) was 74.9 KAF. May 1 most probable forecast was 77.8 KAF and June 1 most probable forecast was 63.9 KAF.

Lower Power Arm, Carter Lake and Horsetooth Reservoir

November 2019: The Big Thompson Powerplant and Trifurcation Wasteway were winterized in late October 2019, just prior to the annual maintenance season which began for the Lower Power Arm on November 4, 2019. Pole Hill Powerplant underwent its annual maintenance in November through mid-December. Flatiron Unit 3 was run seven times in generation mode to refill Flatiron Reservoir so water would remain available for the CHFC to meet C-BT demands and maintain sufficient flows to keep the canal from freezing during the outage season.

December: The Pole Hill Powerplant annual maintenance was completed on schedule and its functional tests were performed on December 12. Generation began for the water year at 1500 hours on December 12.

December 16: Pumping to Carter Lake Reservoir from Flatiron Powerplant unit #3 commenced at 0800 hours. Both Adams Tunnel diversions and Olympus Tunnel were set to capacity on the same date.

December 22: Flatiron Powerplant unit #3 tripped offline. The issue was quickly diagnosed, and replacement parts were ordered. Adams and Olympus Tunnel diversion were reduced to slightly more than 400 cfs for the remainder of the month as project water was sent to Horsetooth Reservoir.

January and February 2020: The annual Horsetooth Reservoir fill was substantially ahead of the operational plan. As a result, for the first half of January, Adams and Olympus Tunnel diversion were reduced to 220 cfs, the minimum flow to maintain generation at all powerplants on the upper and lower power arms. Flatiron Powerplant unit #3 was repaired and pumping to Carter Lake Reservoir resumed in mid-January. Adams and Olympus Tunnel diversion were increased to approximately 415 cfs for the last half of January and February to supply pumping to Carter Lake Reservoir and a reduced rate of fill to move back toward the planned Horsetooth Reservoir fill rate. Flatiron unit #1 annual maintenance began as scheduled in mid-February.

January 16: Flatiron unit #3 pumping to Carter Lake Reservoir resumed for the winter.

February 18: Flatiron unit #1 annual maintenance began.

March and April: Diversions from the west slope and Olympus Tunnel were slowly reduced to match the pumping rate of Flatiron unit #3 to Carter Lake Reservoir plus the Horsetooth Reservoir

fill rate was slowed even further as it was brought back to the operationally planned rate for the period.

March 23: The annual maintenance for Flatiron Powerplant unit #2, scheduled from mid-April through mid-May, was canceled due to staffing issues tied to the COVID-19 restrictions in place by early March.

March 26: Functional testing, following the annual maintenance of Flatiron Powerplant unit #1, was complete and the unit was brought back into service.

April 6: Carter Lake Reservoir filled and Flatiron Powerplant unit #3 pumping ceased. Adams Tunnel diversions were reduced to about 48 cfs for the remainder of the month as the Horsetooth Reservoir fill was brought back to the operationally planned fill rate.

April 9: C-BT skim operations for the Lower Power Arm began for the WY diverting skim water into Olympus Tunnel.

In WY 2020 the United States formally secured water rights supporting Skim Water Hydropower Operations in the C-BT on the Big Thompson River. Case No. 2016CW3193 has been signed by Colorado State Water Judge James F. Hartman and recorded January 22, 2020 (text of Decree provided in Appendix C-3).

April 29: Dille Tunnel diversion of Big Thompson River skim water started for the WY. The Big Thompson Powerplant came online at 1400 hours the same day.

May: Olympus Tunnel skim of excess Big Thompson River flows continued through May. In fact, except for a few days during May cold snaps and in the middle of July as the CHFC 930 Section was prepared for the Cottonwood Siphon relining project, generation at the Big Thompson Powerplant continued from late April through early September during the WY.

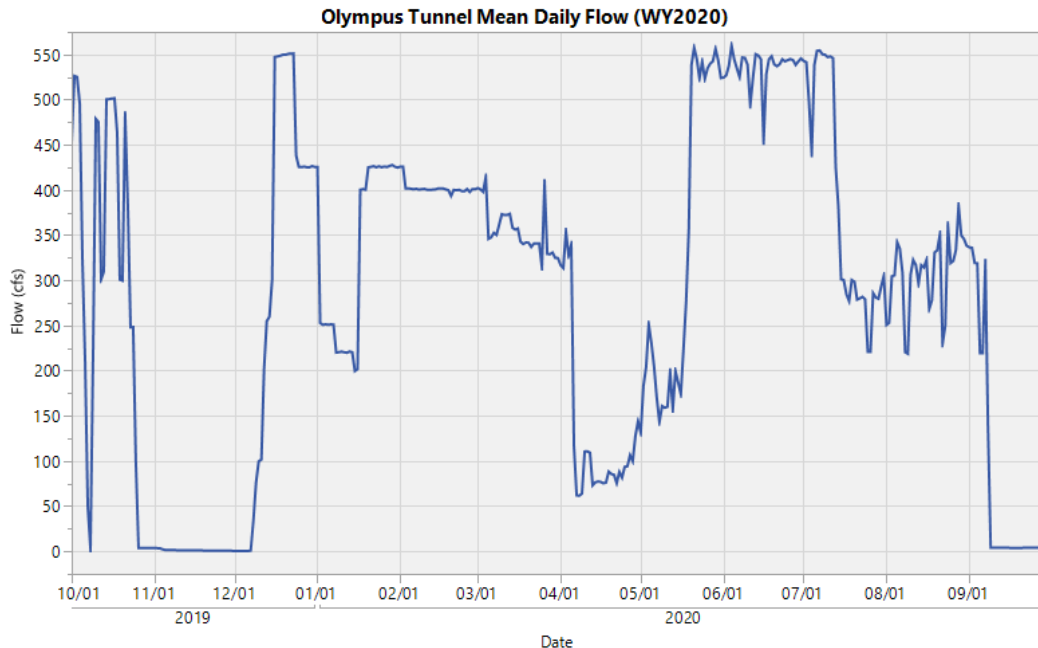


Figure 15: Olympus Tunnel mean daily flow during WY 2020.

May 28: Pumping to Carter Lake Reservoir resumed. The Adams Tunnel diversions were increased to near capacity and generally remained near capacity until the Cottonwood Siphon project started on July 15.

June: Pumping to Carter Lake Reservoir continued throughout the month and only ended as the Grand Lake Clarity season wound down in the second week of September. A second fill of Carter Lake Reservoir was not planned; operationally, the intent was to start pumping at point in time where the pumping could occur continually throughout the end of clarity season in September. Horsetooth Reservoir was filled by the last week of June and operations continued to maintain fill as long as possible. Demands from Horsetooth exceeded available flows in the CHFC at the end June and storage declined.

June 11: The Northern Water Board of Directors voted to increase the C-BT quota declaration from 70 percent to 80 percent. Operations commenced to complete the fill Horsetooth Reservoir began near that same time.

June 25: Horsetooth achieved operational fill for the WY. Demands would draw the reservoir down to the Soldier Canyon Outlet Works project target elevation by the end of the WY.

July-September: Pumping to Carter Lake Reservoir continued. Flow in the CHFC 930 Section was reduced as the Cottonwood Siphon relining project approached. Diversions at Dille were temporarily halted so stoplogs could be placed in the CHFC 930 Section immediately above the confluence of the canal and Dille Tunnel so CHFC 550 Section demands could be met during the Cottonwood Siphon project via diversion of C-BT water at Dille. In addition, the stoplogs allowed continued Big Thompson Powerplant generation as Dille skim water and water released from Olympus Dam to the Big Thompson River for river demands was diverted through the powerplant during the Cottonwood Siphon relining project. Over 40 KAF was diverted through the Big

Thompson Powerplant during the WY with over fifteen percent of that volume occurring from mid-July to mid-September. Due to the early and lower than normal runoff volume plus the hot, dry conditions that were experienced from late July through the end of the water year, Dille skim operations largely ceased during the first week of August. Olympus Tunnel skim operations ended a few days before the Cottonwood Siphon project began as the CHFC 930 Section was shut down in preparation for outage.

July 10: Carter Lake Reservoir achieved its volumetric peak for the July-September period (109,008 AF). Demands exceeded pumping from that point through the end of pumping for the season in early September.

July 12: Olympus Tunnel skim operations ended for the WY as the CHFC 930 Section flow was drawn down prior to the Cottonwood Siphon project.

July 15: The Cottonwood Siphon relining project began.

August 5: Dille skim operations essentially ceased for the WY. Only 103 AF were skimmed after August 5; 20,675 AF were skimmed prior to that point.

Throughout WY 2020: Carter Lake and Horsetooth Reservoirs elevations supported all boat ramps during the recreation season. Sufficient supplies met all water deliveries for the WY. A total of 110,666 acre-feet were delivered to Carter Lake Reservoir during the WY; 85,158 acre-feet were provided to Horsetooth Reservoir and customers along the CHFC 550 Section. Carter Lake Reservoir ended the WY with 85,432 acre-feet in storage, higher than average. Horsetooth Reservoir had 75,951 acre-feet in storage at the end of the WY. The storage at Horsetooth Reservoir was lower than normal but was required for the Soldier Canyon Dam outlet works project starting early in WY 2021.

For WY 2020, a total of 14,957 acre-feet were skimmed through Olympus Tunnel for generation on the Lower Power Arm of the project before being returned to the Big Thompson River, primarily through the Big Thompson Powerplant. A total of 20,778 acre-feet were skimmed through Dille Tunnel for generation at the Big Thompson Powerplant. After the July 15 Cottonwood Siphon project began, an additional 4,526 AF of C-BT water released from Olympus Dam for river demands was also diverted at Dille for generation at the Big Thompson Powerplant before being returned to the river.

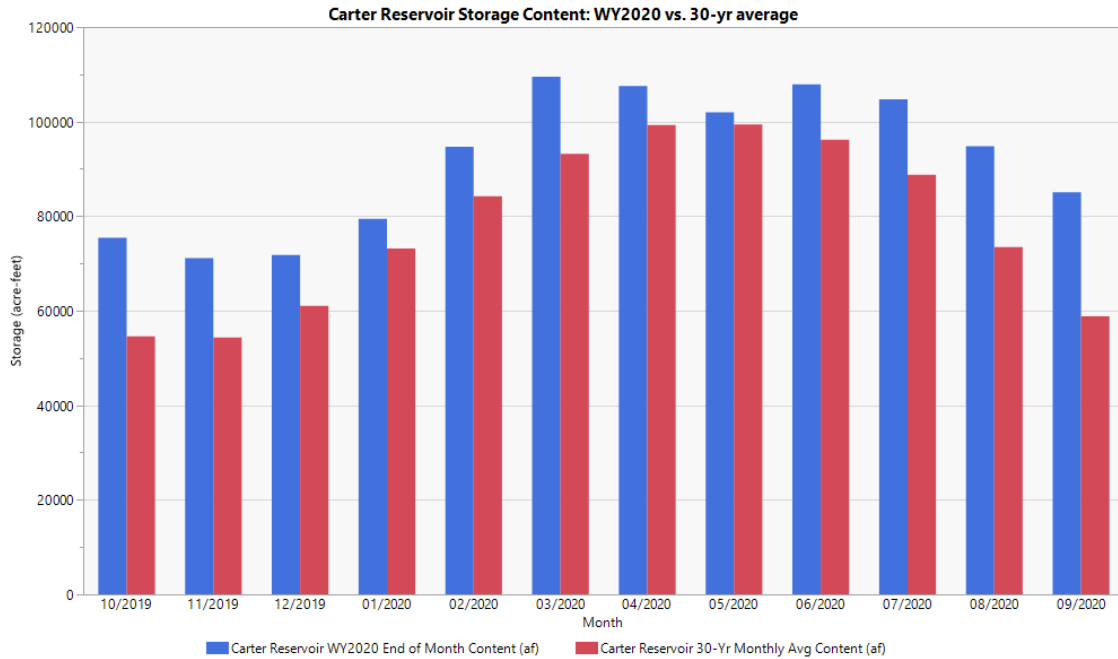


Figure 16: Carter Lake Reservoir storage content during WY 2020 versus its 30-year average.

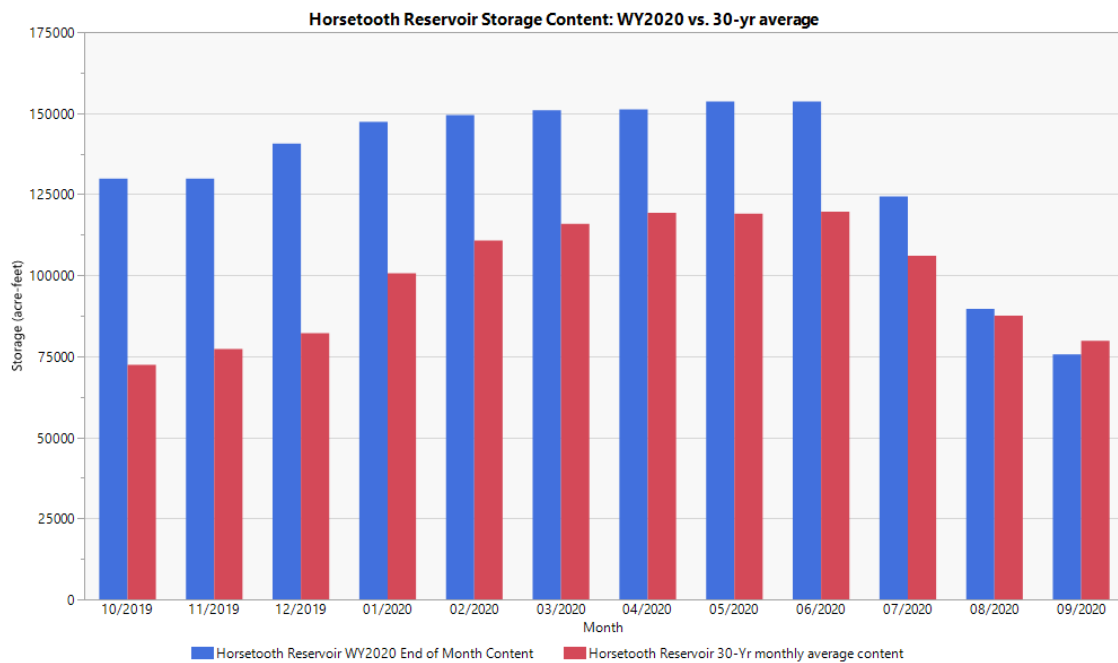


Figure 17: Horsetooth Reservoir storage content during WY 2020 versus its 30-year average.

Green Mountain Reservoir

Climate and Hydrology WY 2020: Hydrologic conditions within the Upper Colorado River basin were fairly normal for Green Mountain Reservoir operations during the winter delivery season.

Average precipitation fell from October 2019 through January 2020 followed by three months of slightly above to near average precipitation. Main stem Colorado River flow remained near normal

from October through March. Peak snow accumulation occurred on April 28, 2020, approximately 115 percent above the seasonal average accumulation by that date. The April 1 runoff forecast projected an undepleted runoff volume to Green Mountain Reservoir of 320 KAF, approximately 114 percent of normal.

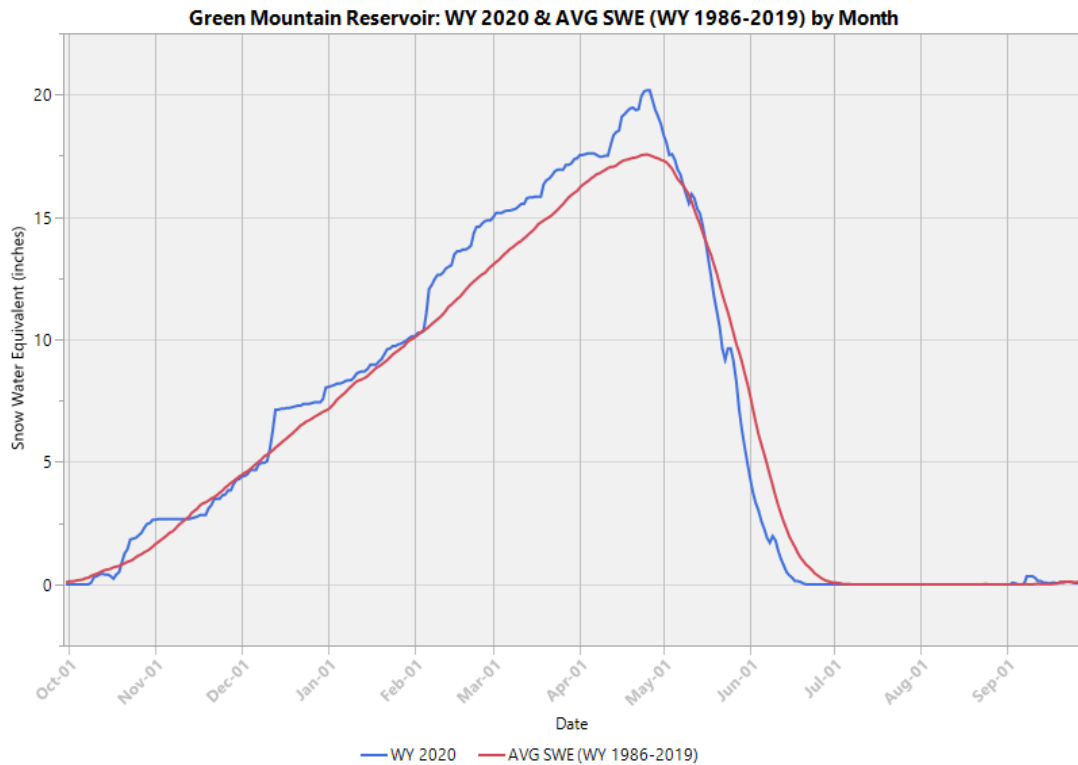


Figure 18: WY 2020 and 30-year average SWE for the Green Mountain Reservoir drainage area.

Above normal temperatures and below normal precipitation in May and June resulted in earlier than normal runoff. Snow water equivalent remained slightly above normal until May 10, but rapidly declined to below normal for the remainder of the runoff season. Average daily inflow to Green Mountain Reservoir peaked at 2,227 cfs on June 2, 2020, a month earlier and nearly 900 cfs less than the peak in WY 2019. The total observed April-July runoff was 248 KAF, 22 percent less than the April 1 forecast for the most probable plan. Total April-July runoff volume was 88 percent of the median April-July runoff volume.

Below average early summer precipitation, available storage and warmer early summer temperatures within the south Platte basin east slope increased demand for Blue River water provided by Denver Water and Colorado Springs Utilities. South Platte Basin snow accumulation peaked at 140 percent of seasonal average accumulation. Dillon Reservoir carry over storage was well above average and obtained a fill by storing 23.5 KAF. Colorado Spring Utilities April-July east-slope diversion was 9.1 KAF, 160 percent of normal. Denver Water’s Roberts Tunnel diversion was 33.5 KAF, 260 percent of normal.

Similar to 2018, abnormally dry and warm climate conditions during the late spring and summer affected stream hydrology and snow-melt runoff in the upper Colorado River basin. In spite of above average snow accumulation, Mainstem Colorado River flow remained near average leading

into snow-melt runoff. The Colorado River at Cameo reached a runoff peak on June 2, 2020 at 13,300 cfs which included CROs release. This represented a peak at within the bottom quarter of historical peak flow. Streamflow collapsed after peak runoff resulting in main stem flow dropping to below water rights administrative levels on July 23, 2020. The Shoshone Outage Protocol became effective since the Shoshone Powerplant was not operational. The Colorado State Engineer placed the Grand Valley Irrigation Company Junior Water Right Call on July 29, 2020. This was earlier than previous years with similar snow accumulation.

October through April WY2020 Delivery Operations: Green Mountain Reservoir continued stored water delivery through the end of the irrigation and winter delivery season. The Colorado River remained under administration from October 1, 2019 until the Shoshone Power Plant discontinued operations on February 14, 2020. Shoshone Outage Protocol (ShOP) declaration was delayed until March 1, 2020 for the contemplated Shoshone Powerplant winter maintenance outage. ShOP operations commenced on March 1, 2020 and remained in effect until Colorado River flow at the Shoshone Powerplant exceeded administrative levels on April 24, 2020.

HUP replacement and surplus delivery continued through October. During the end of the irrigation season Green Mountain delivered 28,263 acre-feet of HUP water. Delivery included 1,777 acre-feet for HUP beneficiaries' replacement. In addition, 26,485 acre-feet of HUP surplus was delivered in support of the Colorado River Endangered Fish Recovery Program. Green Mountain Reservoir did not make any Grand Valley irrigation diversion direct delivery since river flow was adequate to meet irrigation demand. HUP storage was 7,180 acre-feet at the end of the irrigation season.

Green Mountain Reservoir supported a temporary water exchange for Denver Water between September and November 25, 2019. Green Mountain Reservoir temporarily stored and delivered 4,952 acre-feet for Williams Fork Reservoir to support stream restoration work on the Williams Fork River.

Green Mountain Reservoir filled in 2019 and could only store a portion of the Colorado River Water Conservation District Moser Ditch exchange water. Green Mountain Reservoir stored and delivered 30.2 acre-feet under the River District's excess capacity contract.

The C-BT project remained out-of-priority from October 1, 2019 through February 14, 2020. Green Mountain Reservoir delivered 11,639 acre-feet of C-BT collection system replacement water, 1,972 acre-feet for contract deliveries, 0 acre-feet for the Silt Project replacement and 897 acre-feet for Green Mountain Reservoir evaporative losses during this period. In addition, the reservoir delivered an additional 291 acre-feet of winter HUP beneficiary replacement water.

The Shoshone Outage Protocol Agreement parties agreed to implement ShOP on March 1, 2020. Free River conditions were in effect for the final two weeks of February. Green Mountain Dam exercise the direct flow power right during this period and released reservoir inflow and 236 acre-feet from storage and for discretion power generation. Snow accumulation conditions and early runoff forecast indicated no need to store water. ShOP remained in effect until river flow conditions at the Shoshone Powerplant exceeded the 1,250 cfs agreed flow target. Green Mountain Reservoir released 2,735 acre-feet from the Power Pool and 156 acre-feet from the HUP allocation during ShOP.

Green Mountain Reservoir exercised the 1985 refill storage water right for ten days starting March 13, 2020. Colorado River flow at the Shoshone Powerplant exceeded the 900 cfs target during this period. Green Mountain Reservoir stored 813 acre-feet under the refill right.

On occasion, unseasonably cold temperatures delay or stall snow melt runoff during irrigation startup in early April. This may result in undesirable low river flows at the irrigation diversions near Grand Junction. The low flows impact endangered fish recovery efforts and diversion operations and is commonly referred to as an “April Hole”. Upper Colorado River basin reservoir operators and irrigation water users coordinate operations in order to mitigate the low flow conditions. The HUP managing entities decided to release carry-over surplus HUP water due to low river flow conditions on April 15, 2020. Green Mountain Reservoir released 1,562 acre-feet from the HUP allocation in addition to an environmental release from Ruedi Reservoir. The “April Hole” operation ended on April 22, 2020.

On April 23, 2020, Green Mountain Reservoir reached the water year’s minimum storage at 66,390 acre-feet, with a water surface elevation of 7,896.30 feet. Relaxation of water rights administration on the Colorado River allowed the 1985 refill storage right to resume diversion and store before declaration of Green Mountain Reservoir Start of Fill.

Green Mountain Reservoir was not impacted by any operating restrictions during the winter delivery season. The Heeney Slide operating restriction applies below 7,865 feet (36,957 acre-feet) where drawdown cannot exceed 0.5 feet per day. End-of-the-month storage contents for the reservoir during WY 2020 are compared to the 30-year average below. There were no other operating restrictions for Green Mountain Reservoir in WY2020.

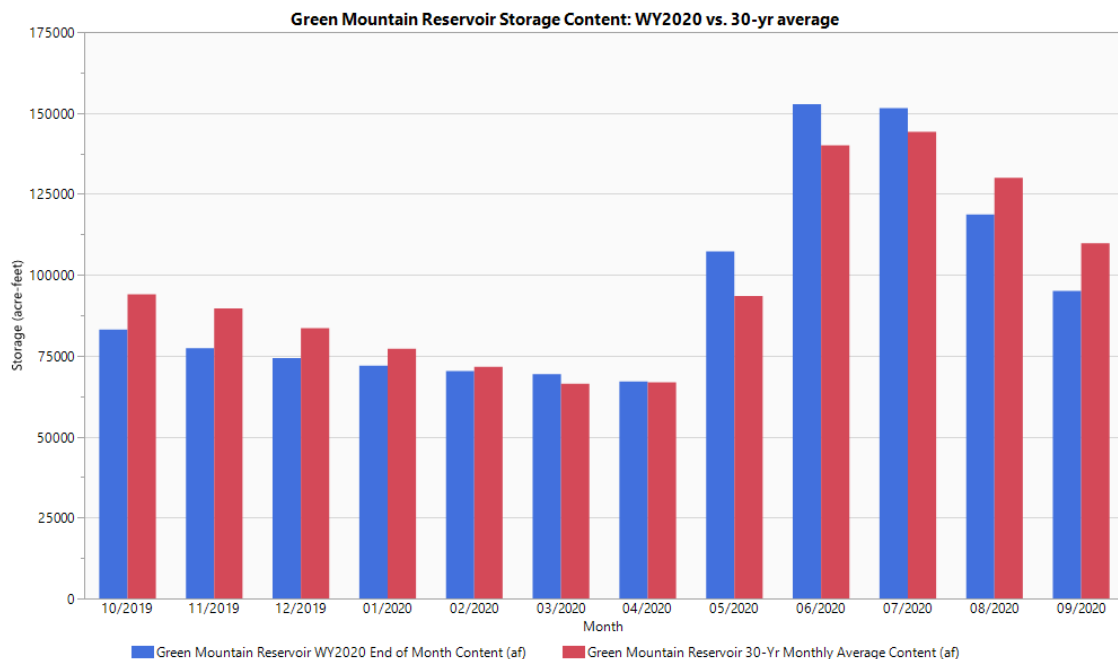


Figure 19: Green Mountain Reservoir monthly content during WY 2020 and 30-year average content.

March 11, 2020: The HUP managing entities held the 2019 HUP Operations Wrap Up meeting. The agenda included reports on total HUP deliveries and Green Mountain Reservoir Operations.

Reclamation informed the entities that Green Mountain Reservoir was forecast to fill and that the HUP allocation was expected to refill the full 66,000 acre-feet. The status of the Heeney Slide operation restriction was also discussed including the expectation that it would not apply during the 2020 irrigation season.

April through July Fill Operations: Green Mountain Reservoir exercised refill storage rights from April 24, 2020, until May 15, 2020. During this period Green Mountain Reservoir stored 12,670 acre-feet. The Start-of-Fill was declared on May 7, 2019. Reservoir storage was 79,060 acre-feet, about 106 percent of the historical average storage for this day.

Reclamation forecasted that Green Mountain Reservoir would physically fill in WY 2019. The well-above-average May 1, 2020, runoff projections indicated a physical fill for greater than 95 percent of possible hydrologic scenarios. The Denver Water Board and Colorado Springs Utilities were permitted to divert out of priority since all forecasts projected a substantial amount of runoff available for power generation.

The Colorado State Engineer office administered Green Mountain Reservoir operations under the Green Mountain Administrative Protocol (Protocol) for the 2020 fill season. Green Mountain Reservoir maintained the Direct Flow Power Water Right during the entire fill period.

May 15: The start of fill for Green Mountain Senior Refill Right was declared for WY 2020. Re-allocation of the carry over storage replenished the 52,000 acre-feet collection system replacement pool, Green Mountain Reservoir operational replacement, 5,000 acre-feet Silt Project allocation, and 10,570 acre-feet for the HUP allocation.

May 29 – June 6: Green Mountain increased release to the Blue River to powerplant capacity supporting the Colorado River Endangered Fish Recovery Program CROs for 2020. CROs operations focused on attempting augment peak flow at the 15-Mile Reach. Green Mountain Reservoir released 14,364 acre-feet in support of CROs.

June 10: Reclamation notifies the Blue River Decree parties that Green Mountain Reservoir fill plan is revised with an allocation for power reduced from 106,650 acre-feet to 70,000 acre-feet due to lack of precipitation.

June 24: The HUP Managing Entities held their initial meeting in remotely to consider conditions and to plan for WY 2020 operations. A total of 17 meetings and conference calls were held between July 8 and October 21, 2020 to manage releases from Green Mountain, Ruedi, Granby, Wolford Mountain, and Williams Fork Reservoirs; coordinate irrigation diversions in the Grand Valley; and attempt to maintain the mean monthly target flows in the 15-Mile Reach. The U.S. Fish and Wildlife Service proposed an average year target flow of 810 cfs due to hot and dry forecast.

June 27: Green Mountain Reservoir achieved a fill level of 7949.6 feet. Reclamation declared end of fill per the Green Mountain Administrative Protocol.

June 28: Green Mountain Reservoir obtained maximum fill level of 7949.65 feet for the 2020 fill year.

July 23: ShOP is in effect due to Shoshone Powerplant unavailable and Colorado River Flow below the 1,250 cfs target. Green Mountain Reservoir starts storage release to match HUP and scheduled contract release.

July 24: The Colorado State Engineer places the Colorado River under administration with the Junior Shoshone Powerplant Direct Flow Water Right. Green Mountain Reservoir commences contract and HUP replacement releases. ShOP is relaxed.

July 29: The Colorado State Engineer places the Colorado River under administration with the Grand Valley Irrigation Company Junior Water Right with Colorado Springs Utilities swing right. Green Mountain Reservoir starts delivery of Silt Project replacement water.

July 29: The Colorado State Engineer places the Colorado River under administration with the Grand Valley Irrigation Company Junior Water Right with C-BT swing right. Green Mountain Reservoir begins release of C-BT replacement water.

July 31: The observed April - July runoff to Green Mountain Reservoir was 244 KAF. The April 1 most probable forecast (Table 3 above) was 320 KAF.

August 1: The C-BT is out of priority with the Grand Valley Irrigation Company Junior Water Right administration.

July-September: Green Mountain Reservoir made storage releases from July 23 through the end of the water year. During the 2020 delivery period, Green Mountain Reservoir delivered 57,862 acre-feet from storage. Delivered storage included: 7,959 Colorado River Collection System replacement, 43,300 acre-feet for HUP beneficiary replacement and irrigation direct delivery, 2,221 for Silt Project Replacement, 1,256 for contracts, and 3,127 for Green Mountain Reservoir evaporation losses.

2021 Annual Operation Plan

Collection System and East Slope Colorado-Big Thompson Project

The C-BT Most-Probable Annual Operating Plan (AOP) is developed considering the effects of historical average runoff values, the expected demands and depletions of the Northern Water and Denver Water (including an assumed Northern Water quota of 70 percent), the project's initial states (e.g. pool levels), other average values, special operations such as previously planned system outages and maintenance schedules.

The 2021 AOP used a projected 215,300 acre-feet (AF) total inflow to the west slope collection system during water year (WY) 2021. It simulated pumping 40,300 AF of water from Willow Creek and no spill at Granby Reservoir for the WY. Windy Gap was not expected to pump to Granby Reservoir in WY 2021.

The 2021 AOP projected diversions totaling 261,300 AF through the Adams Tunnel during the WY. A bit over half of the projected diversions were planned between December 2020 and May 2021. Sufficient capacity remained and is simulated to convey 12,400 AF of Big Thompson River skim water at Olympus Tunnel and 25,600 AF of skim at Dille Tunnel for power generation. The 2021 AOP includes 8,700 AF of priority water from the Big Thompson River.

The 2021 AOP simulated a fill of both Carter Lake and Horsetooth Reservoirs. Carter Lake Reservoir was expected to fill by mid-March 2021, a second fill at the beginning of June, after which demands were projected to exceed supplies by mid-July, with an associated reservoir drawdown through the end of the WY to an ending elevation of 5,728 feet. Horsetooth Reservoir maximum content was achieved by the start of July 2021 after which time, demands are expected to exceed supplies and the reservoir elevation will decline to a minimum 5,403 feet prior to the end of the WY. By the end of WY 2021, Horsetooth Reservoir elevations were projected to be near 5,404 feet, considerable higher than the start of the WY 2021 which required a Horsetooth Reservoir elevation of not more than 5,388 feet due to the Soldier Canyon Dam outlet works project that started in mid-October 2020. Total deliveries from Horsetooth Reservoir were simulated as 117,700 AF. Initial WY content of Carter Lake Reservoir is 85,000 AF and simulated ending content is 78,300 AF. Horsetooth Reservoir's initial content is 76,000 AF and the simulated ending content is 104,800 AF.

Green Mountain Reservoir

The 2021 AOP used a projected 293,100 AF Green Mountain Reservoir total (depleted) inflow. With that inflow, plans provide for Green Mountain to fill in 2021, achieving maximum content in the first half of July. Total Green Mountain Reservoir releases are simulated as 276,900 AF, all through the powerplant. The most probable scenario requires no substitution obligation for Denver and Colorado Springs because the reservoir obtains a physical fill. The 2021 AOP includes refill of all Green Mountain Reservoir allocations for delivery during the 2021-2022 delivery season. The simulated minimum reservoir water surface elevation was 7,880.5 feet in mid-April before refilling begins, well above the Heeney Slide operational restriction of 7,865.0 feet.

The 2021 AOP assumed that Denver and Colorado Springs would deplete a total of 80,600 AF. Per the Blue River decree, the cities would be required to replace water obligated toward the senior storage right should a fill shortage occur in Green Mountain Reservoir due to the cities out-of-priority depletions.

Sixty-ninth Annual Report of the Western Division System Power Operations

Preface

This is the sixty-ninth annual report for the Pick-Sloan Missouri Basin Program, Western Division System (System) power operations. For the purpose of this report, the System also includes the Yellowtail Powerplant Units 1 and 2 and the generating facilities of the Fryngpan Arkansas Project (Fry-Ark). The function of the report is to inform interested parties of the generation and pump energy requirements of the hydropower system. The report consists of two parts: One part describes the actual generation and pumping operations for water year 2020 (WY 2020) and the second part presents the plan of generation and pumping operations for WY 2021.

Water Year 2020 – Generation and Pump Energy Summary

Power generation for the C-BT was below average compared to the previous two water years and the thirty-year average. The Fry-Ark was above the thirty-year average for WY 2020 and greater than both WY 2019 and WY 2018. The North Platte project was greater than the thirty-year average and the Big Horn project was slightly less than average. Overall, Western Division System power generation during WY 2020 was about average but slightly less than WY 2019. All powerplants in the C-BT produced less the average power, the Fry-Ark produced greater than average power, while most of the plants in Wyoming and Montana were above average in production. The exception was Yellowtail powerplant which was less than its thirty-year average for the water year.

In the case of the C-BT, demands for water were greater than average for WY 2020. The declared quota was 80 percent by June 2020, which was greater than average, but Adams Tunnel diversion were less than average and a larger than average portion of the demands were met from terminal reservoir storage. This was due to the Cottonwood Siphon lining project in July 2020 and the Soldier Canyon Dam outlet works project beginning in October 2020 which required a drawdown of Horsetooth Reservoir. Both had an impact on the Foothills Power Arm of the C-BT Project in the last quarter of WY 2020.

As shown in Table D-1, the C-BT powerplants produced an accumulated gross generation total of 485.5 gigawatt-hours (GWh) of electricity representing 81 percent of its thirty-year average and 18.4 percent of gross System generation. The gross generation produced by the entire System was 2,200.4 GWh or 100.2 percent of the thirty-year average. Gross generation includes one-half of the Yellowtail generation. Net generation is the gross generation less the energy used for pumping at Farr Plant, Willow Creek Pump, Flatiron Unit 3 and the two Mount Elbert units. Using Tables, D-1 and D-2, System net generation for WY 2020 was 1,821.7 GWh. The average for a water year is 1,921.0 GWh. The total System load includes firm energy deliveries, C-BT use-energy, support-energy, plant station service, and an estimate of transmission-system losses.

Table D-1 in Appendix D includes the gross generation for every powerplant in the System. Table D-2 reports the total energy required to operate the pumps in the System. Some of the numbers included in this section were provided by WAPA. Table D-3 shows monthly generation and pumping energy, by plant, and monthly System loads. The System boundaries are illustrated in Appendix E-1. Figure E-2 graphically summarizes Table D-3 including the C-BT contribution to the System.

In WY 2020, the Willow Creek Pumping Station pumped to Granby slightly more than half the volume pumped during WY 2019. The Willow Creek Pumping Station used 7.0 GWh of power during its WY 2020 operation. Meanwhile, the Farr Pumping Plant and the Flatiron Powerplant Unit 3 required 24.3 and 38.4 GWh, respectively. The Farr Pumping Plant required slightly below average energy, while Flatiron Powerplant Unit 3 operations required substantially more than the thirty-year average. The three pump's combined power requirement was 69.7 GWh, 110 percent of the thirty-year average, 3.1 percent of gross System generation. Pumping electrical demand is defined primarily by how much water is pumped and secondarily by how high the pump lifts that water.

According to the figures provided by WAPA, sales of electric power in the Western Division System totaled 2,567.2 GWh during WY 2020, with a revenue of \$71,590,304 a decrease from the previous year. Energy deficits were covered by a combination of scheduled interchange energy, use of the Mount Elbert pumped storage plant, and power purchases. The power purchases totaled 519.7 GWh during WY 2020 for which WAPA paid a total of \$17,959,281 an increase from the previous water year.

Water Year 2021 – Generation and Pump Energy Forecast

Under the most-probable runoff condition plan (2021 AOP), the gross generation for the C-BT powerplants is projected to be 582.9 GWh during WY 2021 (Table D-4), while pump energy requirements from the C-BT Power System are expected to reach 74.2 GWh. The gross generation for the entire System is expected to be 2,037.4 GWh, with a total load of 2,162.5 GWh, leaving a power deficit of 125.1 GWh. The System generation includes one-half of the total Yellowtail Powerplant generation and the Mount Elbert Powerplant generation resulting from Fry-Ark Project water deliveries. The total load includes energy deliveries under firm contracts, seasonal support energy deliveries, energy dedicated for C-BT use, estimates of station service energy, and estimates of transmission System losses.

Table D-4 summarizes the projected monthly System generation, pump energy, and loads for the most probable forecasted runoff conditions for WY 2021. Figure E-3 is a graphical summary of the System gross generation less pumping, including the C-BT contribution for the most probable inflow conditions. Table D-5 lists the scheduled maintenance for the various facilities in the C-BT as anticipated when the AOP simulation was completed. Tables D-6 and D-7 summarize the capacity data for the powerplants and pumping plants within the System, including the Yellowtail and Mount Elbert Units.

Appendix A Daily Records for WY 2020

Appendix A (1 of 38) Green Mountain Reservoir, CO

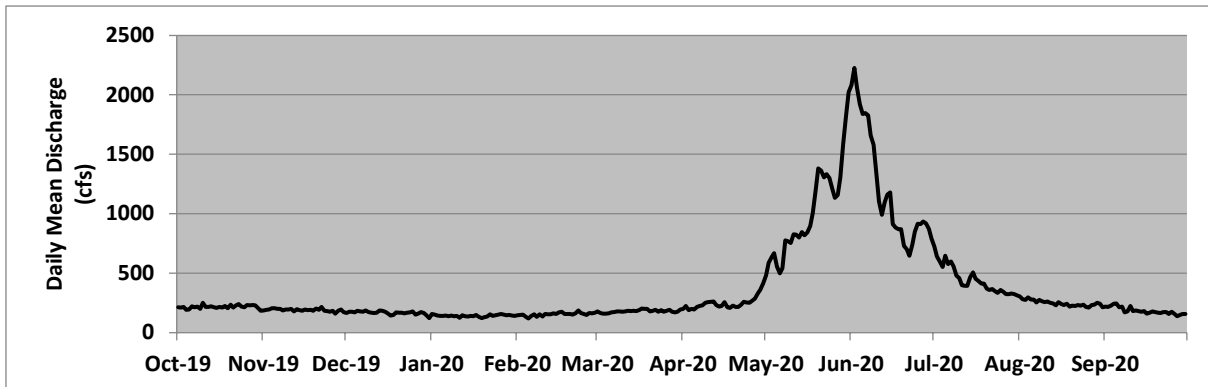
Location. --Lat 39°52'42", long 106°19'42", Summit County, Hydrologic Unit 14010002, on Green Mountain Dam, 13 miles southeast of Kremmling, Colorado, on the Blue River.

Gage. --Water level recorder with satellite telemetry. Elevation of gage is 7960 feet (m.s.l.) from topographic map.

Remarks. -- Inflow computed daily based on change in content from midnight to midnight, and on the 24-hour average releases from Green Mountain Reservoir. Recorders were operated from 01-Oct-2019 to 30-Sep-2020. Records are complete and fair. This record consists of operational data which could be subject to future revisions and changes.

Inflow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	214	187	166	156	147	179	200	483	2083	726	306	219
2	210	192	176	152	148	165	225	588	2227	641	282	217
3	217	194	175	144	152	159	189	633	2062	599	276	227
4	191	207	171	142	133	158	199	669	1921	552	296	243
5	195	204	185	140	119	162	195	555	1838	648	278	247
6	221	199	178	142	141	169	217	500	1846	577	278	214
7	213	200	177	138	154	173	224	543	1829	599	254	220
8	218	186	187	143	133	179	230	775	1659	558	274	171
9	199	193	174	138	155	178	251	769	1580	481	266	179
10	251	194	168	140	136	176	258	755	1331	458	257	224
11	216	200	165	123	158	178	260	826	1101	398	262	181
12	217	179	169	145	154	185	263	824	990	393	251	187
13	222	196	187	138	154	180	232	801	1097	393	245	180
14	214	189	184	134	163	183	219	845	1162	467	231	175
15	207	183	175	140	157	182	224	819	1179	506	257	181
16	217	196	162	138	170	189	256	844	913	454	239	159
17	211	189	144	149	176	202	215	898	884	435	232	167
18	224	191	150	132	156	199	209	1006	870	413	242	179
19	207	183	171	123	156	200	226	1198	871	412	219	173
20	234	202	167	131	157	180	217	1381	731	369	226	168
21	211	192	169	135	153	183	216	1361	702	358	224	166
22	229	216	162	153	163	193	235	1305	648	367	231	174
23	241	185	167	141	188	176	260	1333	737	349	226	173
24	219	183	171	146	165	189	253	1301	848	336	235	157
25	212	176	179	151	156	177	252	1210	917	359	217	176
26	232	183	153	157	150	183	268	1134	913	344	212	158
27	229	161	160	152	164	191	285	1159	936	324	231	138
28	233	185	173	145	162	177	330	1302	918	323	234	148
29	231	194	166	149	167	171	361	1588	873	330	252	157
30	205	173	146	145		177	415	1825	791	324	244	157
31	185		122	141		194		2021		314	214	
Min	185	161	122	123	119	158	189	483	648	314	212	138
Max	251	216	187	157	188	202	415	2021	2227	726	306	247
Mean	217	190	168	142	155	180	246	1008	1215	445	248	184
ac-ft	13341	11328	10312	8738	8897	11082	14647	61981	72313	27377	15255	10939



Appendix A (2 of 38)
Elliot Creek Canal near Green Mountain Reservoir, CO

Location. --Lat 39°52'25", long 106°19'49", Summit County, Hydrologic Unit 14010002 , on left bank at concrete flume structure, and 1.1 mi west of Heeney.

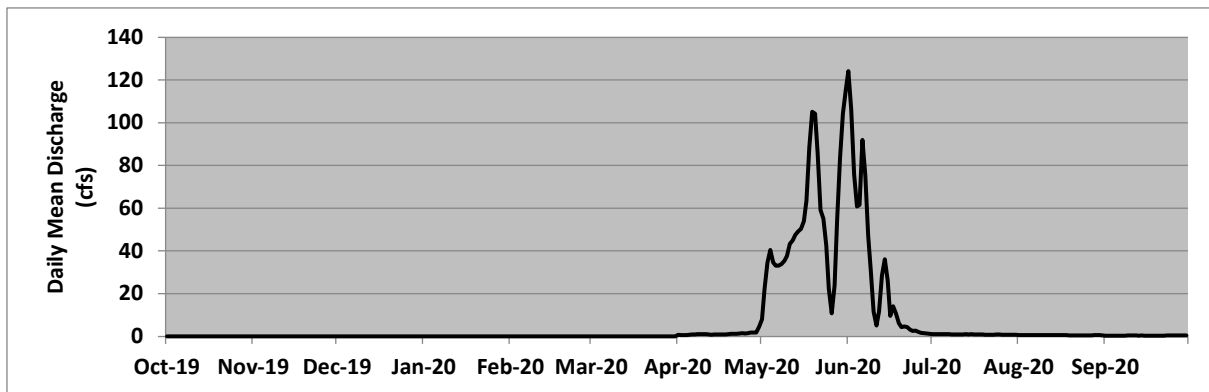
Gage.--Water-stage recorder with satellite telemetry. Elevation of gage is 8050 ft (m.s.l.) from topographic map.

Remarks.—This is a diversion from Elliot Creek in the Blue River Basin to Green Mountain Reservoir. Recorder was winterized on 01-Oct-2019. The station was put back into service from 1-Apr-2020 to 30-Sep-2020. Values for the off-season are marked as zero.

Records are reliable while recorder is operated. This record contains operational data which could be subject to future revisions and changes. Official data is published by the United States Geological Survey as site #09056500.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	1	8	124	1	1	0
2	0	0	0	0	0	0	1	22	106	1	1	0
3	0	0	0	0	0	0	1	34	76	1	1	0
4	0	0	0	0	0	0	1	40	61	1	1	0
5	0	0	0	0	0	0	1	35	62	1	1	0
6	0	0	0	0	0	0	1	33	92	1	1	0
7	0	0	0	0	0	0	1	33	76	1	1	0
8	0	0	0	0	0	0	1	34	47	1	1	0
9	0	0	0	0	0	0	1	35	31	1	1	0
10	0	0	0	0	0	0	1	38	12	1	1	0
11	0	0	0	0	0	0	1	43	5	1	1	0
12	0	0	0	0	0	0	1	45	12	1	1	0
13	0	0	0	0	0	0	1	47	28	1	1	0
14	0	0	0	0	0	0	1	49	36	1	1	0
15	0	0	0	0	0	0	1	50	26	1	1	0
16	0	0	0	0	0	0	1	54	10	1	1	0
17	0	0	0	0	0	0	1	64	14	1	1	0
18	0	0	0	0	0	0	1	89	11	1	1	0
19	0	0	0	0	0	0	1	105	6	1	0	0
20	0	0	0	0	0	0	1	104	4	1	0	0
21	0	0	0	0	0	0	1	86	5	1	1	0
22	0	0	0	0	0	0	1	59	4	1	1	0
23	0	0	0	0	0	0	1	55	3	1	1	0
24	0	0	0	0	0	0	1	43	2	1	0	0
25	0	0	0	0	0	0	1	22	3	1	0	0
26	0	0	0	0	0	0	2	11	2	1	1	0
27	0	0	0	0	0	0	2	24	2	1	1	0
28	0	0	0	0	0	0	2	55	1	1	1	0
29	0	0	0	0	0	0	2	83	1	1	1	0
30	0	0	0	0	0	0	5	104	1	1	1	0
31	0	0	0	0	0	0	0	115	0	1	1	0
Min	0	0	0	0	0	0	1	8	1	1	0	0
Max	0	0	0	0	0	0	5	115	124	1	1	0
Mean	0	0	0	0	0	0	1	52	29	1	1	0
ac-ft	0	0	0	0	0	0	71	3214	1713	56	35	21



Appendix A (3 of 38)
Green Mountain Reservoir, CO

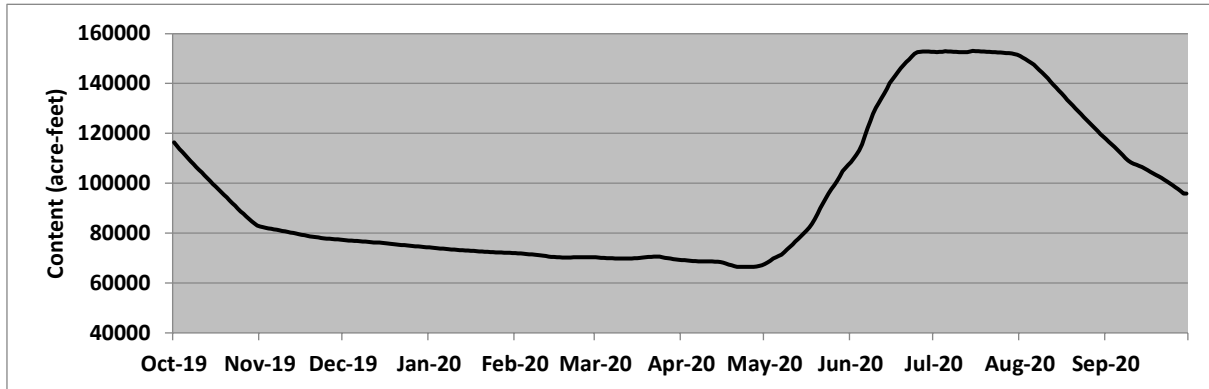
Location. --Lat 39°52'42", long 106°19'42", Summit County, Hydrologic Unit 14010002, on Green Mountain Dam, 13 miles southeast of Kremmling, Colorado, on the Blue River..

Gage. --Water level recorder with satellite telemetry. Elevation of gage is 7960 ft (m.s.l.) from topographic map.

Remarks.--Reservoir is formed by an earth-fill dam. Construction completed in 1943. Impoundment began on 16-Nov-1942. Green Mountain Reservoir provides storage used for replacement water of the C-BT diversions. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Maximum capacity is 153,639 AF at elevation 7950.00 ft, with 146,779 AF of active capacity. Records are complete and fair, but the data has not been revised. This record consists of operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	116415	82586	77210	74236	71911	70272	69186	67546	108476	152645	151042	117644
2	115021	82300	77106	74161	71862	70187	69126	68195	110012	152603	150392	116627
3	113710	82084	77015	74047	71813	70090	68995	68935	111324	152688	149701	115621
4	112462	81895	76924	73934	71727	70005	68887	69750	113187	152730	149033	114617
5	111221	81706	76860	73820	71604	69944	68767	70345	115656	152899	148348	113518
6	110046	81503	76783	73707	71493	69896	68695	70818	118718	152835	147497	112392
7	108846	81300	76706	73582	71408	69859	68636	71371	122036	152814	146404	111289
8	107672	81071	76641	73481	71285	69835	68588	72383	125009	152751	145356	110097
9	106477	80856	76550	73406	71211	69811	68576	73380	127836	152666	144295	109032
10	105393	80643	76447	73330	71064	69787	68576	74350	130208	152624	143215	108308
11	104251	80442	76344	73217	70916	69775	68588	75457	132183	152561	142043	107772
12	103117	80200	76254	73142	70757	69775	68600	76563	133923	152540	140735	107341
13	101999	79987	76202	73067	70599	69787	68552	77602	135875	152582	139473	106925
14	100873	79760	76137	72992	70466	69835	68480	78729	137945	152793	138301	106444
15	99739	79521	76047	72930	70369	69884	68314	79826	140054	153026	137153	105885
16	98634	79311	75931	72856	70320	69956	68124	80977	141639	152941	135974	105212
17	97523	79099	75776	72806	70284	70078	67794	82219	143154	152899	134742	104558
18	96437	78887	75648	72732	70223	70187	67393	83681	144642	152835	133496	103943
19	95314	78689	75546	72632	70223	70296	67029	85523	146158	152793	132241	103344
20	94248	78505	75444	72544	70223	70369	66703	87718	147393	152709	131087	102733
21	93132	78320	75342	72469	70223	70454	66494	89883	148556	152645	129941	102095
22	92023	78216	75228	72420	70235	70563	66424	91951	149617	152603	128801	101409
23	90897	78059	75126	72358	70296	70599	66424	94009	150854	152540	127646	100684
24	89767	77889	75036	72308	70308	70491	66412	95891	151947	152455	126502	99927
25	88703	77759	74959	72271	70308	70272	66401	97600	152518	152391	125343	99194
26	87690	77694	74819	72246	70296	70066	66412	99148	152688	152328	124211	98432
27	86672	77576	74704	72209	70308	69896	66459	100747	152835	152222	123122	97600
28	85649	77497	74615	72146	70308	69738	66599	102638	152878	152158	122000	96726
29	84662	77432	74513	72096	70320	69569	66797	104770	152814	152074	120870	95876
30	83763	77328	74400	72034		69413	67099	106114	152709	151842	119728	95876
31	83066		74287	71961		69293		107224		151524	118646	
Min	83066	77328	74287	71961	70223	69293	66401	67546	108476	151524	118646	95876
Max	116415	82586	77210	74236	71911	70599	69186	107224	152878	153026	151042	117644
Mean	98885	79604	75826	72940	70771	69999	67771	84043	136761	152571	135721	105704
ac-ft	83066	77328	74287	71961	70320	69293	67099	107224	152709	151524	118646	95876



Appendix A (4 of 38)
Blue River below Green Mountain Reservoir, CO

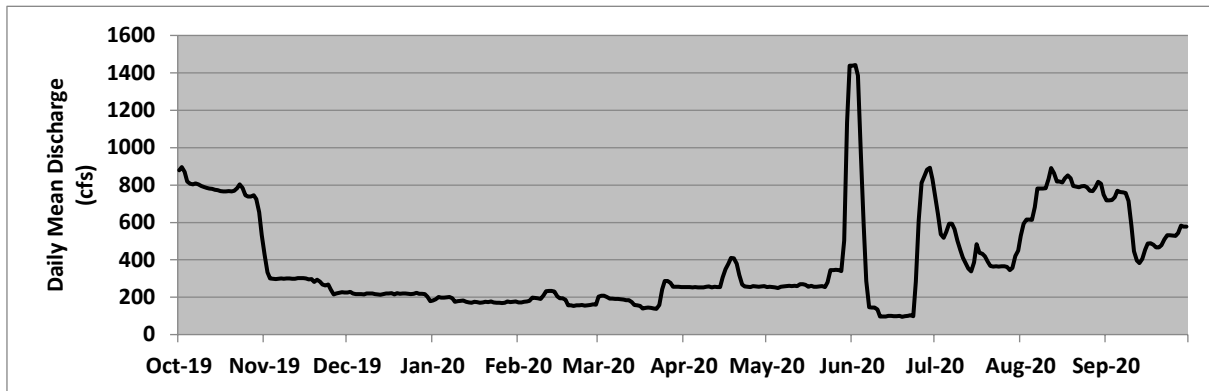
Location.--Lat 39°52'49", long 106°20'00", Summit County, Hydrologic Unit 14010002, on left bank 0.3 miles upstream from Elliot Creek, 0.3 miles downstream from Green Mountain Reservoir and 13 miles southeast of Kremmling.

Gage.-- Water-stage recorder with satellite telemetry. Datum of gage is 7682.66 feet (levels by U.S. Bureau of Reclamation).

Remarks.--Drainage area is 599 sq. mi. including 15.3 sq. mi. of Elliot Creek above the diversion for Elliot Creek feeder canal. Flow regulated by Green Mountain Reservoir since 1942. Diversions for irrigation of 5,000 acres upstream from station. Trans-mountain diversions upstream from station. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Recorded values are complete and reliable. This record consists of operational data which could be subject to future revisions and changes. Official record is published by the United States Geological Survey.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	879	427	225	182	172	203	254	254	1439	733	528	718
2	896	333	229	190	173	208	255	257	1442	646	594	718
3	870	300	221	202	176	208	255	255	1386	536	616	720
4	820	300	217	199	177	201	253	253	971	517	615	736
5	806	297	217	197	181	193	255	250	585	548	615	770
6	804	299	217	199	197	193	253	256	287	593	683	763
7	809	300	216	201	197	191	253	258	147	594	782	762
8	803	299	220	194	195	191	253	259	145	564	781	758
9	795	300	219	176	192	190	256	260	145	503	782	716
10	791	300	220	178	210	188	257	260	135	453	783	583
11	785	299	217	180	233	184	253	262	97	411	833	447
12	782	300	214	183	234	185	256	259	97	381	891	397
13	779	302	213	176	234	174	255	270	97	354	863	382
14	775	302	217	172	230	158	255	269	101	338	819	405
15	773	303	220	171	206	157	307	266	100	386	818	454
16	768	301	221	176	195	153	351	256	99	483	814	488
17	766	295	222	175	194	140	380	262	98	438	837	489
18	767	297	214	170	186	144	410	256	100	433	852	480
19	768	282	222	173	156	145	408	257	95	419	837	466
20	766	294	219	175	157	143	380	258	98	390	794	466
21	769	284	221	173	153	140	319	259	101	368	791	478
22	783	267	220	178	157	138	268	255	104	365	788	510
23	804	263	218	172	157	158	258	280	99	366	793	531
24	785	268	216	171	159	243	256	345	284	363	796	532
25	745	241	218	170	156	287	255	345	612	366	788	531
26	739	215	224	169	156	287	260	346	813	365	770	529
27	738	220	218	170	158	276	259	346	845	363	769	544
28	745	224	218	177	162	256	256	341	883	344	787	583
29	725	226	217	174	160	256	257	502	893	356	817	578
30	655	225	203	176		255	259	1135	831	420	808	578
31	534		179	178		255		1438		450	748	
Min	534	215	179	169	153	138	253	250	95	338	528	382
Max	896	427	229	202	234	287	410	1438	1442	733	891	770
Mean	775	285	217	180	183	197	281	347	438	447	767	570
ac-ft	47650	16987	13350	11064	10538	12105	16747	21361	26039	27462	47188	33938



Appendix A (5 of 38)
Willow Creek Reservoir, CO

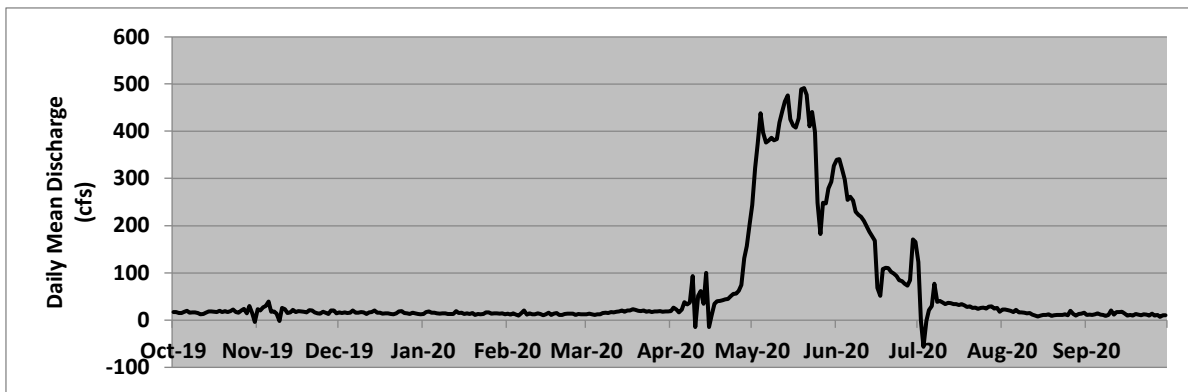
Location. -- Lat 40°08'52", long 105°56'28", Grand County, Hydrologic Unit 14010001, at Willow Creek Dam, 4 miles north of Granby, Colorado, on Willow Creek, a tributary of the Colorado River.

Gage.— Water level recorder with satellite telemetry. Elevation of gage is 8130 ft (m.s.l.) from topographic map.

Remarks.—Inflow computed daily using change in content from midnight to midnight, plus the 24-hour average releases through the Willow Creek Pump Canal and the reservoir outlet works. Recorders were operated from 01-Oct-2019 to 30-Sep-2020. Records are complete. Negative values are based on accounting procedures and mass balances. This record consists of operational data which could be subject to future revisions and changes.

Inflow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	17	23	17	13	14	12	19	244	340	123	23	11
2	17	20	15	17	12	14	26	322	341	-2	22	12
3	15	27	16	18	15	12	23	374	319	-57	21	11
4	15	30	15	16	12	11	16	438	298	-2	20	12
5	18	40	16	16	10	12	23	397	254	21	17	15
6	20	18	21	15	15	12	38	376	261	30	22	12
7	16	18	15	14	21	15	33	380	253	77	16	11
8	16	13	16	14	11	16	37	387	230	39	16	9
9	16	-2	17	15	14	15	93	381	223	41	16	11
10	15	26	17	13	12	17	-15	384	219	37	14	21
11	13	23	13	13	12	17	51	419	210	34	15	11
12	13	15	17	13	14	18	61	443	199	37	11	17
13	16	16	17	19	13	19	35	464	187	36	10	17
14	18	21	21	15	11	21	100	476	179	34	8	18
15	18	17	16	16	12	18	-14	426	168	34	10	13
16	18	19	16	13	16	21	10	412	68	32	11	10
17	17	18	14	15	11	20	35	408	52	34	11	11
18	20	18	15	13	14	23	40	427	108	31	12	10
19	17	16	14	15	15	22	41	489	111	28	9	13
20	19	21	13	11	11	20	42	492	110	30	10	11
21	17	20	12	13	11	19	44	477	102	26	11	10
22	19	16	15	12	13	21	45	410	99	27	11	12
23	22	14	18	13	13	18	51	441	93	24	11	11
24	17	14	19	16	13	19	56	399	85	26	12	10
25	16	17	15	16	14	17	56	249	82	27	10	14
26	21	16	14	13	11	18	62	183	77	25	19	10
27	24	13	13	15	13	18	74	248	73	28	13	11
28	14	20	16	15	12	19	131	247	85	29	10	7
29	30	20	14	14	12	18	157	279	171	25	13	10
30	14	14	13	14		18	204	293	166	26	14	10
31	-4		12	12		18		327		18	15	
Min	-4	-2	12	11	10	11	-15	183	52	-57	8	7
Max	30	40	21	19	21	23	204	492	341	123	23	21
Mean	17	19	16	14	13	17	52	377	172	30	14	12
ac-ft	1039	1118	955	889	748	1064	3120	23191	10242	1818	861	716



Appendix A (6 of 38)
Willow Creek Reservoir, CO

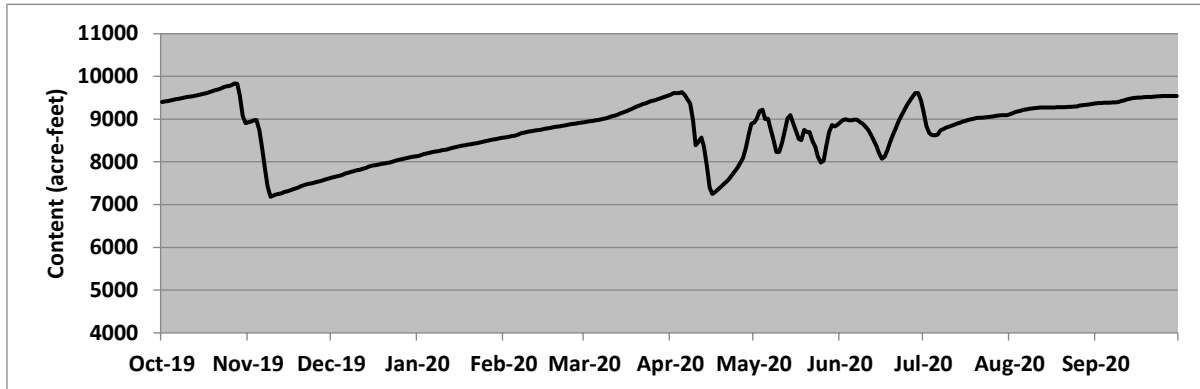
Location.—Lat 40° 08'52", long 105° 56'28", Grand County, Hydrologic Unit 14010001, at Willow Creek Dam, 4 miles north of Granby, Colorado, on Willow Creek, a tributary of the Colorado River.

Gage.— Water level recorder with satellite telemetry. Elevation of gage is 8130 ft (m.s.l.) from topographic map.

Remarks.—Reservoir is formed by an earth-fill dam. Construction completed in 1953. Impoundment began on April 2, 1953. Willow Creek Reservoir stores water from Willow Creek for diversion to Granby Reservoir via the Willow Creek Canal. Maximum capacity is 10,600 AF at elevation 8,130.00 ft, with 9,100 AF of active capacity between elevations 8077.00 and 8130.00 feet. Recorder was operated from 01-Oct 2019 to 30-Sep-2020. Record is complete and fair. This record consists of operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	9402	8926	7632	8137	8572	8931	9572	8924	8926	9176	9118	9369
2	9416	8942	7648	8157	8579	8944	9606	9007	8983	8835	9141	9375
3	9424	8970	7666	8176	8594	8952	9609	9192	8996	8674	9165	9377
4	9435	8981	7680	8193	8609	8960	9606	9218	8976	8627	9184	9383
5	9449	8744	7700	8209	8614	8970	9634	9002	8973	8622	9200	9385
6	9465	8304	7727	8224	8637	8981	9561	9009	8989	8634	9218	9388
7	9476	7863	7743	8237	8669	8996	9465	8749	8989	8738	9229	9391
8	9490	7413	7766	8249	8680	9012	9364	8497	8939	8766	9240	9391
9	9504	7187	7785	8263	8698	9028	8965	8229	8898	8800	9251	9399
10	9520	7215	7803	8275	8707	9048	8393	8232	8833	8825	9259	9421
11	9526	7239	7814	8287	8718	9067	8469	8449	8749	8846	9267	9441
12	9534	7251	7833	8299	8731	9088	8572	8710	8642	8869	9269	9457
13	9548	7268	7854	8321	8744	9109	8348	9015	8512	8895	9269	9474
14	9564	7294	7883	8336	8751	9136	7913	9094	8365	8916	9269	9490
15	9581	7313	7900	8353	8761	9157	7391	8921	8200	8942	9269	9498
16	9595	7337	7916	8365	8782	9184	7249	8733	8074	8960	9269	9501
17	9612	7359	7928	8383	8789	9210	7297	8539	8128	8981	9272	9506
18	9634	7380	7942	8393	8802	9240	7354	8512	8294	8999	9278	9509
19	9651	7397	7953	8408	8817	9272	7413	8749	8474	9012	9278	9517
20	9676	7428	7965	8415	8825	9302	7474	8695	8646	9025	9280	9520
21	9693	7455	7974	8427	8833	9326	7538	8698	8800	9030	9283	9523
22	9715	7474	7988	8437	8843	9353	7605	8489	8950	9035	9286	9529
23	9743	7488	8010	8446	8856	9372	7684	8351	9088	9041	9288	9534
24	9763	7499	8031	8464	8869	9399	7778	8123	9210	9048	9294	9537
25	9777	7518	8047	8482	8882	9419	7867	7986	9326	9056	9296	9542
26	9800	7536	8062	8494	8890	9441	7967	8031	9430	9065	9315	9542
27	9831	7547	8074	8509	8900	9462	8093	8365	9529	9075	9323	9545
28	9825	7572	8093	8521	8911	9485	8328	8695	9612	9088	9329	9542
29	9553	7596	8105	8534	8921	9506	8617	8864	9606	9091	9340	9545
30	9075	7614	8116	8549		9529	8890	8827	9435	9094	9350	9545
31	8905		8125	8559		9551		8872		9096	9361	
Min	8905	7187	7632	8137	8572	8931	7249	7986	8074	8622	9118	9369
Max	9831	8981	8125	8559	8921	9551	9634	9218	9612	9176	9361	9545
Mean	9554	7704	7896	8358	8758	9207	8387	8670	8886	8931	9264	9473
ac-ft	8905	7614	8125	8559	8921	9551	8890	8872	9435	9096	9361	9545



Appendix A (7 of 38)
Willow Creek below Willow Creek Reservoir, CO

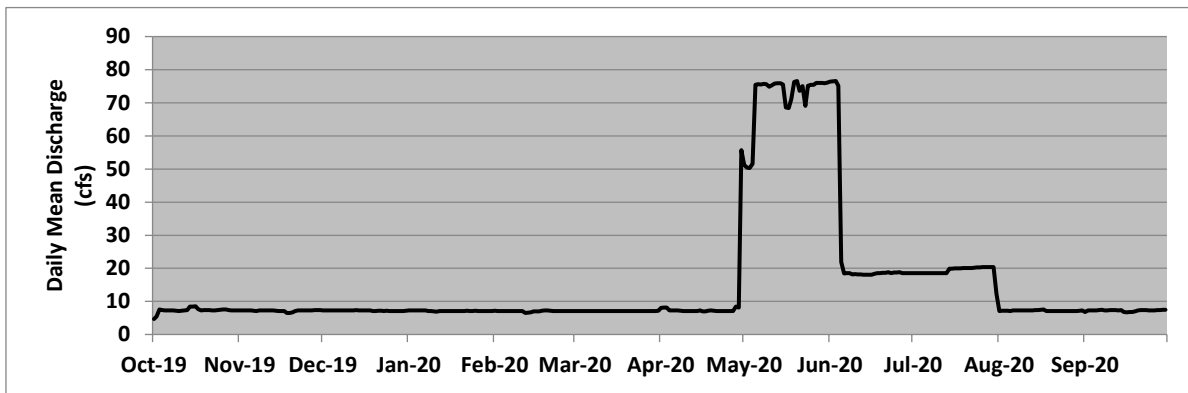
Location.--Lat 40°08'50", long 105°56'16", Grand County, Hydrologic Unit 14010001, at Willow Creek Dam, 4 miles north of Granby, Colorado, on Willow Creek, a tributary of the Colorado River.

Gage.--Water-stage recorder with satellite telemetry. Elevation of gage is 8040 feet (m.s.l.) from topographic map.

Remarks.-- Drainage area is 127 square miles. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Records are complete and reliable. The official record is published by the Division of Water Resources, State of Colorado. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	5	7	7	7	7	7	8	51	76	19	7	7
2	5	7	7	7	7	7	8	50	77	19	7	7
3	8	7	7	7	7	7	8	50	77	19	7	7
4	7	7	7	7	7	7	7	52	75	19	7	7
5	7	7	7	7	7	7	7	75	22	19	7	7
6	7	7	7	7	7	7	7	76	18	19	7	7
7	7	7	7	7	7	7	7	76	19	19	7	7
8	7	7	7	7	7	7	7	76	19	19	7	7
9	7	7	7	7	7	7	7	76	18	19	7	7
10	7	7	7	7	7	7	7	75	18	19	7	7
11	7	7	7	7	7	7	7	75	18	19	7	7
12	7	7	7	7	7	7	7	76	18	19	7	7
13	7	7	7	7	7	7	7	76	18	19	7	7
14	8	7	7	7	7	7	7	76	18	20	7	7
15	8	7	7	7	7	7	7	76	18	20	7	7
16	9	7	7	7	7	7	7	69	18	20	7	7
17	8	7	7	7	7	7	7	68	18	20	8	7
18	7	7	7	7	7	7	7	71	19	20	7	7
19	7	7	7	7	7	7	7	76	19	20	7	7
20	7	7	7	7	7	7	7	77	19	20	7	7
21	7	7	7	7	7	7	7	74	19	20	7	7
22	7	7	7	7	7	7	7	75	19	20	7	7
23	7	7	7	7	7	7	7	69	19	20	7	7
24	7	7	7	7	7	7	7	75	19	20	7	7
25	7	7	7	7	7	7	7	75	19	20	7	7
26	8	7	7	7	7	7	7	75	19	20	7	7
27	8	7	7	7	7	7	7	76	19	20	7	7
28	7	7	7	7	7	7	8	76	19	20	7	7
29	7	7	7	7	7	7	8	76	19	20	7	7
30	7	7	7	7		7	56	76	19	20	7	7
31	7		7	7		7		76		12	7	
Min	5	7	7	7	7	7	7	50	18	12	7	7
Max	9	7	7	7	7	7	56	77	77	20	8	7
Mean	7	7	7	7	7	7	9	72	26	19	7	7
ac-ft	450	429	445	437	405	434	531	4402	1562	1182	443	431



Appendix A (8 of 38)
Willow Creek Pump Canal, CO

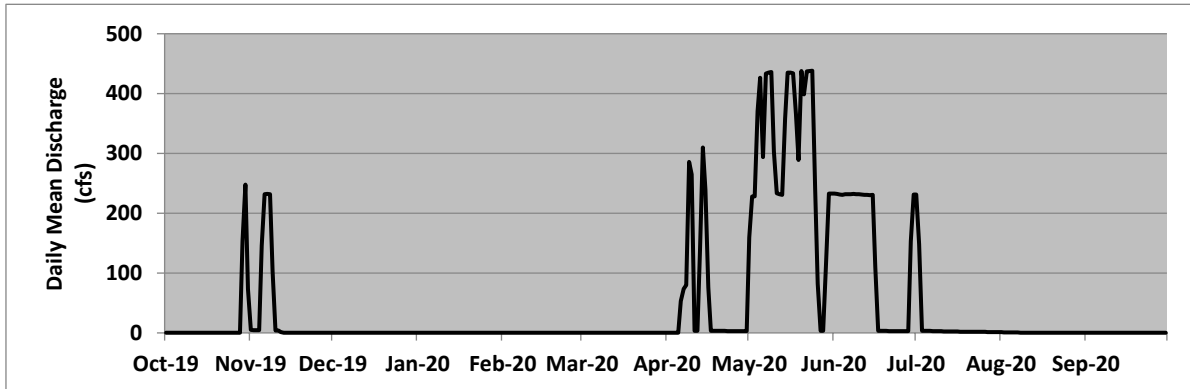
Location. --Lat 40°08'39", long 105°54'10", Grand County, Hydrologic Unit 14010001, at Willow Creek Pump Canal, 4 miles north of Granby, Colorado, on Willow Creek, a tributary of the Colorado River.

Gage.— Water-stage recorder with satellite telemetry at 15 foot Parshall Flume. Elevation of gage is 8300 feet (m.s.l.) from topographic map.

Remarks.—Canal is used to divert water from Willow Creek Reservoir to Granby Reservoir. Diversions are seasonal, mainly during late spring and early summer. Construction completed in 1953. Length of the canal is 3.4 miles. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Records are complete and reliable. This record consists of operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	5	0	0	0	0	0	160	233	231	1	0
2	0	5	0	0	0	0	0	228	232	148	1	0
3	0	5	0	0	0	0	0	228	232	4	1	0
4	0	5	0	0	0	0	0	371	231	4	1	0
5	0	146	0	0	0	0	0	427	232	4	1	0
6	0	232	0	0	0	0	53	294	232	3	1	0
7	0	232	0	0	0	0	73	433	232	3	1	0
8	0	232	0	0	0	0	80	435	232	3	0	0
9	0	103	0	0	0	0	286	436	232	3	0	0
10	0	4	0	0	0	0	265	303	232	3	0	0
11	0	4	0	0	0	0	4	233	231	3	0	0
12	0	1	0	0	0	0	4	232	231	3	0	0
13	0	0	0	0	0	0	138	231	231	2	0	0
14	0	0	0	0	0	0	310	357	230	2	0	0
15	0	0	0	0	0	0	239	435	231	2	0	0
16	0	0	0	0	0	0	76	435	110	2	0	0
17	0	0	0	0	0	0	4	434	4	2	0	0
18	0	0	0	0	0	0	4	366	4	2	0	0
19	0	0	0	0	0	0	4	289	4	2	0	0
20	0	0	0	0	0	0	4	438	3	2	0	0
21	0	0	0	0	0	0	4	399	3	2	0	0
22	0	0	0	0	0	0	3	437	3	2	0	0
23	0	0	0	0	0	0	3	438	3	2	0	0
24	0	0	0	0	0	0	3	438	3	2	0	0
25	0	0	0	0	0	0	3	241	3	2	0	0
26	0	0	0	0	0	0	3	82	3	2	0	0
27	0	0	0	0	0	0	3	4	3	1	0	0
28	0	0	0	0	0	0	3	4	3	1	0	0
29	154	0	0	0	0	0	3	116	153	1	0	0
30	248	0	0	0		0	3	233	231	1	0	0
31	74		0	0		0		233		1	0	
Min	0	0	0	0	0	0	0	4	3	1	0	0
Max	248	232	0	0	0	0	310	438	233	231	1	0
Mean	15	32	0	0	0	0	52	303	133	14	0	0
ac-ft	942	1929	6	12	1	0	3122	18618	7940	882	15	0



Appendix A (9 of 38)
Windy Gap Pumping Plant, CO

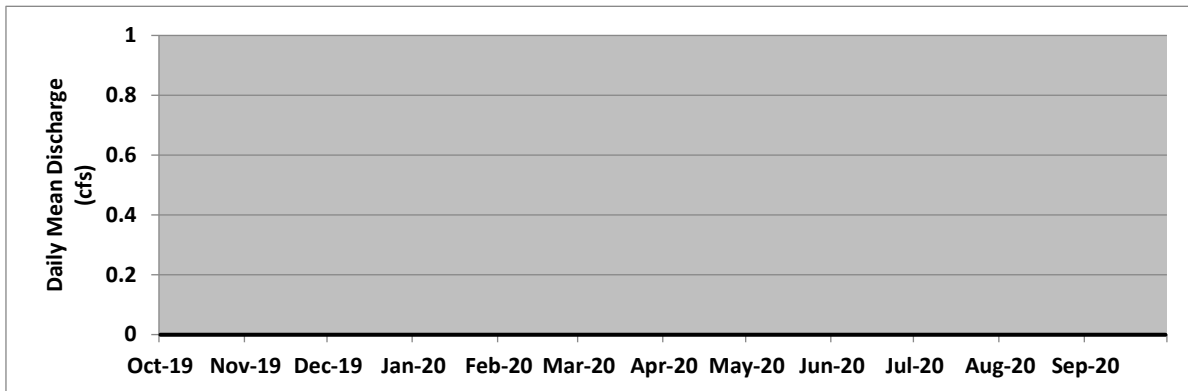
Location. --Lat 40°06'24", long 105°58'48", Grand County, Hydrologic Unit 14010001, 5.5 miles northeast of Granby, Colorado, on the Colorado River.

Gage.-- Reading taken directly from the pumps. Elevation of the pumping plant is 7823 (m.s.l.) from topographic map.

Remarks.-- Water is pumped from Windy Gap Reservoir to Granby Reservoir. Water is stored at Granby Reservoir before delivery through Adams Tunnel. Data was provided by Farr Pumping Plant operators each morning. Data was collected from 01-Oct-2019 to 30-Sep-2020. Records are complete and reliable, but the data has not been reviewed. This record consists of operational data which could be subject to future revisions and changes. Readings were provided by the Northern Water.

Windy Gap Pump Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
31	0	0	0	0	0	0	0	0	0	0	0	0
Min	0	0	0	0	0	0	0	0	0	0	0	0
Max	0	0	0	0	0	0	0	0	0	0	0	0
Mean	0	0	0	0	0	0	0	0	0	0	0	0
ac-ft	0	0	0	0	0	0	0	0	0	0	0	0



Appendix A (10 of 38)
Granby Reservoir, CO

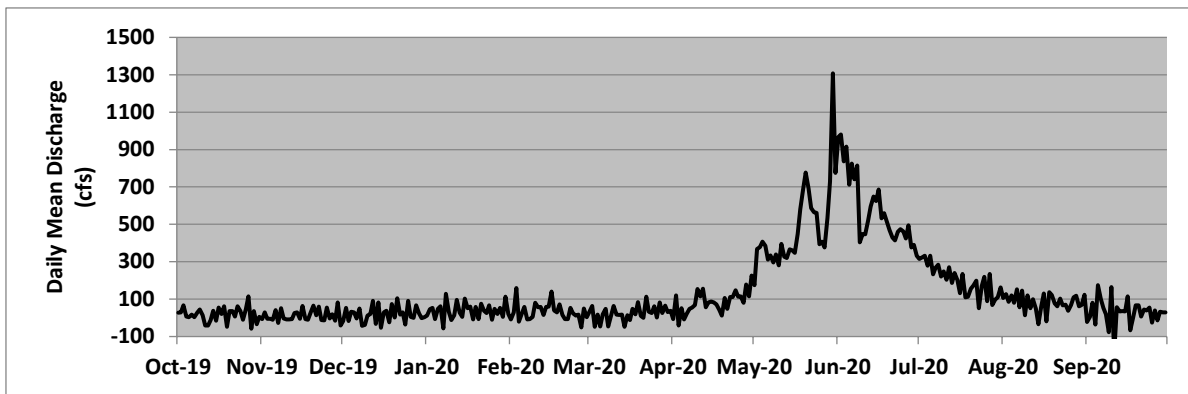
Location. --Lat 40°08'54", long 105°51'48", Grand County, Hydrologic Unit 14010001, on Granby Dam, 5.5 miles northeast of Granby, Colorado, on the Colorado River.

Gage.-- Water level recorder with satellite telemetry. Elevation of gage is 8300 (m.s.l.) from topographic map.

Remarks.-- Inflow computed daily based on change in content from midnight to midnight, and on the average daily releases through the reservoir outlet works. Recorders were operated from 01-Oct-2019 to 30-Sep-2020. Records are complete. Negative values are based on accounting procedures and mass balances. This record consists of operational data which could be subject to future revisions and changes.

Inflow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	28	-7	-16	12	-8	30	-6	175	968	315	106	-22
2	30	29	52	47	30	63	120	367	980	323	127	5
3	67	-6	-17	54	160	-48	-40	378	836	331	86	80
4	7	-5	32	-7	-21	16	52	408	915	278	120	-35
5	4	-10	28	47	22	-47	-8	386	713	333	80	174
6	17	41	-3	61	59	18	20	312	825	232	153	101
7	3	-27	50	-57	-8	48	49	334	741	269	57	52
8	27	51	-43	128	-7	-47	55	295	814	283	146	18
9	45	-4	-37	32	5	12	69	339	404	220	13	-77
10	14	-8	12	-12	81	63	155	281	448	248	121	164
11	-41	-8	21	14	57	18	115	396	447	203	52	-189
12	-40	-6	91	96	58	16	156	328	520	270	100	57
13	-13	25	-32	27	16	17	56	320	595	186	50	34
14	38	29	83	6	58	-48	82	366	648	239	-35	35
15	-15	-6	-53	103	60	13	87	360	624	202	62	35
16	56	63	28	52	140	-13	82	348	686	132	130	115
17	20	-6	37	60	39	49	72	449	532	234	-19	-66
18	61	-10	-24	-8	29	19	42	580	559	110	137	2
19	-47	31	74	58	71	84	11	688	512	113	121	66
20	36	65	1	-8	15	10	107	776	469	156	77	67
21	36	13	104	76	-7	1	47	691	429	172	62	7
22	6	60	17	38	-6	112	111	587	414	198	103	45
23	61	-13	30	26	53	32	111	565	460	51	66	39
24	36	-14	-36	67	24	26	148	561	473	170	69	55
25	-10	55	91	-10	13	62	113	393	462	219	37	-26
26	46	-4	4	48	17	1	114	407	425	88	68	40
27	115	19	1	21	-51	82	80	377	494	234	109	-14
28	-58	-16	67	53	49	26	177	533	376	69	119	33
29	36	83	24	5	3	65	114	729	390	97	61	28
30	-34	-42	-2	113		30	226	1307	332	110	69	28
31	4		3	20		38		776		163	123	
Min	-58	-42	-53	-57	-51	-48	-40	175	332	51	-35	-189
Max	115	83	104	128	160	112	226	1307	980	333	153	174
Mean	17	13	19	37	33	24	84	478	583	202	83	28
ac-ft	1064	744	1164	2303	1883	1485	4992	29383	34688	12398	5093	1692



**Appendix A (11 of 38)
Granby Reservoir, CO**

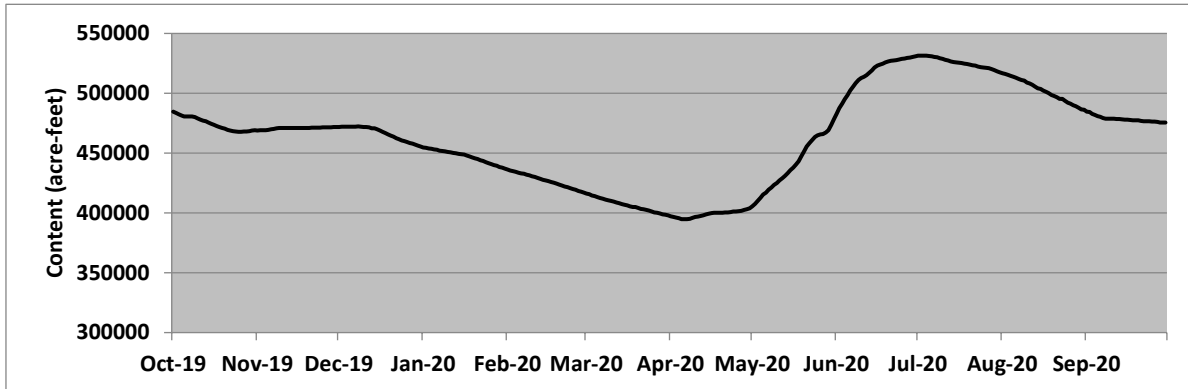
Location. --Lat 40°08'54", long 105°51'48", Grand County, Hydrologic Unit 14010001, on Granby Dam, 5.5 miles northeast of Granby, Colorado, on the Colorado River.

Gage.-- Water level recorder with satellite telemetry. Elevation of gage is 8300 (m.s.l.) from topographic map.

Remarks.--Reservoir is formed by an earth-fill dam and four earth-fill dikes. Construction completed in 1950. Impoundment began on 14-Sep-1949. Granby Reservoir provides west-slope storage for the C-BT project. Maximum capacity is 539,800 AF at elevation 8,280.00, with 463,300 AF of active capacity between elevations 8186.90 and 8280.00 feet. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Records are complete and reliable. This record consists of operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	484794	469077	471952	454922	436332	416267	397314	405600	483126	531513	516903	484794
2	483610	469145	472089	454516	435614	415632	396878	407685	487646	531513	516335	484447
3	482573	469145	472089	454114	435025	414673	396126	410030	491412	531441	515551	482988
4	481600	469145	472089	453646	434369	414034	395691	412890	495255	531513	514700	482018
5	480769	469417	472294	453241	433650	413271	395003	415375	498548	531368	513850	480908
6	480700	469962	472158	452839	433189	412636	394940	417223	502267	531006	513137	480560
7	480630	470375	472294	452239	432799	412062	395003	419403	505575	530576	512003	479455
8	480630	470855	472363	451972	432149	411301	395253	421457	508536	530071	511083	478973
9	480075	471059	472294	451571	431561	410662	395940	423452	511083	529422	510660	478765
10	479111	471059	471952	451100	430779	410156	396753	425135	512713	528778	509174	478973
11	478072	471059	471883	450700	430126	409524	396966	427271	513992	528060	508252	478765
12	477244	471059	471677	450367	429476	408888	397687	429088	515336	527411	507198	478626
13	476691	470991	470923	449964	428570	408256	398061	430973	517118	526767	505575	478557
14	475729	471059	470786	449497	427917	407494	398815	433321	519325	526262	504235	478348
15	474695	471059	470031	449231	427271	406990	399439	435679	521539	526045	503745	478072
16	473803	471196	469009	448833	426684	406298	400006	437976	523112	525617	502267	478072
17	472772	471196	467983	448033	426039	405727	400131	440413	523969	525402	501210	477659
18	471814	471059	466755	447235	425330	405097	400194	443385	524903	524974	500301	477522
19	471059	470991	465736	446568	424680	404971	400194	447235	525974	524473	498757	477522
20	470581	471196	464647	445771	423776	404337	400381	451503	526767	524041	497915	477453
21	469553	471264	463765	445110	423003	403585	400443	455525	527125	523541	496865	477106
22	468872	471470	462679	444179	422232	403146	400631	458489	527554	523112	495394	476828
23	468531	471470	461665	443452	421586	402641	400818	460985	527916	522465	495324	476828
24	468051	471470	460716	442591	420880	402013	401193	463492	528420	521967	493854	476828
25	467778	471608	460174	441801	420042	401383	401383	464852	528778	521611	492248	476416
26	467846	471608	459363	440939	419403	400631	401572	465668	529136	521397	491551	476347
27	468051	471677	458489	440214	418440	400318	401825	466142	529637	521041	490015	476141
28	468051	471677	457947	439553	417864	399629	402577	467303	529854	520252	489321	475729
29	468531	471883	457207	438570	416966	399002	403146	469349	530433	519397	488065	475524
30	469009	471952	456329	438042		398627	404086	473872	531078	518469	486740	475524
31	469145		455525	437254		397999		478348		517547	486393	
Min	467778	469077	455525	437254	416966	397999	394940	405600	483126	517547	486393	475524
Max	484794	471952	472363	454922	436332	416267	404086	478348	531078	531513	516903	484794
Mean	474528	470873	466608	447357	427095	406685	398948	440617	516604	525711	502214	478525
EOM	469145	471952	455525	437254	416966	397999	404086	478348	531078	517547	486393	475524



Appendix A (12 of 38)
Granby Reservoir, CO

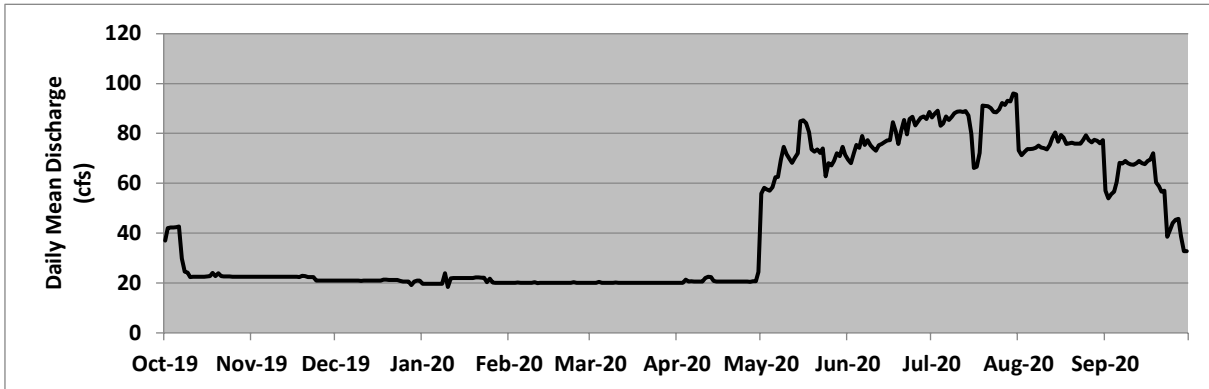
Location. --Lat 40°08'54", long 105°51'48", Grand County, Hydrologic Unit 14010001, on Granby Dam, 5.5 miles northeast of Granby, Colorado, on the Colorado River.

Gage.-- Water level recorder with satellite telemetry. Elevation of gage is 8300 feet (m.s.l.), from topographic map.

Remarks.--Reservoir is formed by an earth-fill dam and four earth-fill dikes. Construction completed in 1950. Impoundment began on 14-Sep-1949. Granby Reservoir provides west-slope storage for the C-BT project. Data was provided by personnel from the Northern Water. The stream gage directly below the dam is used to measure flows during winter. A USGS station further downstream is used to measure flows between spring and fall. Data was recorded from 01-Oct-2019 to 30-Sep-2020. Records are complete and fair. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	37	22.5	20.9	19.7	20.1	20.1	20.1	55.9	69.5	86.4	73.2	57
2	42	22.5	20.9	19.7	20.1	20.1	20.1	58.2	68.0	88.0	71.3	53.9
3	42.3	22.5	20.9	19.7	20.1	20.1	20.1	57.5	72.0	89.1	72.5	55.6
4	42.2	22.5	20.9	19.7	20.2	20.5	21.4	57.0	75.4	83.1	73.7	56.6
5	42.4	22.5	20.9	19.7	20.1	20.0	20.6	58.4	74.2	84.0	73.7	60.5
6	42.6	22.5	20.9	19.7	20.1	20.1	20.8	62.4	79.0	86.8	73.8	68.2
7	29.8	22.5	20.9	19.7	20.1	20.1	20.5	62.5	75.4	85.4	74.2	67.9
8	24.6	22.5	20.9	19.7	20.1	20.1	20.5	69.3	77.3	86.6	75.1	68.9
9	24.2	22.5	20.9	23.9	20.1	20.1	20.5	74.7	75.2	88.1	74.3	68
10	22.4	22.5	20.8	18.4	20.3	20.2	20.5	71.7	73.9	88.7	74.1	67.5
11	22.5	22.5	20.9	21.9	19.9	20.1	22.0	69.9	73.1	88.8	73.5	67.4
12	22.5	22.5	20.9	22.0	20.0	20.1	22.5	68.2	75.2	88.6	75.3	68
13	22.5	22.5	20.9	22.0	20.1	20.1	22.3	70.2	75.7	88.9	78.2	69
14	22.5	22.5	20.9	22.0	20.1	20.1	20.9	72.0	76.5	87.2	80.4	68
15	22.5	22.5	20.9	22.0	20.1	20.1	20.5	84.9	77.2	79.9	76.7	67.7
16	22.6	22.5	20.9	22.0	20.1	20.1	20.5	85.3	77.3	66.1	79.3	68.9
17	22.7	22.5	20.9	22.0	20.1	20.1	20.5	84.1	84.5	66.6	78.3	69.5
18	24	22.3	21.3	22.0	20.1	20.1	20.5	80.5	80.7	72.1	75.8	72
19	22.8	22.9	21.3	22.0	20.1	20.1	20.5	73.5	75.7	91.1	76.0	60.4
20	23.9	22.8	21.2	22.2	20.1	20.1	20.5	72.7	81.0	91.0	76.2	58.8
21	22.7	22.4	21.2	22.3	20.1	20.1	20.5	73.6	85.4	90.9	75.9	56.6
22	22.6	22.4	21.2	22.1	20.1	20.1	20.5	72.1	79.6	90.1	75.9	57
23	22.6	22.4	21.2	22.1	20.1	20.1	20.5	73.9	85.8	88.6	75.9	38.5
24	22.6	21	20.8	20.3	20.3	20.1	20.5	62.8	86.7	88.4	77.3	41.3
25	22.5	20.9	20.5	21.8	20.1	20.1	20.5	68.0	83.2	89.6	79.2	44
26	22.5	21	20.5	20.1	20.1	20.1	20.5	67.1	84.8	92.2	77.3	45.3
27	22.5	20.9	20.5	20.1	20.1	20.1	20.5	68.9	86.3	91.4	76.4	45.7
28	22.5	21	19.2	20.1	20.1	20.1	20.7	72.1	86.8	93.1	77.4	38.6
29	22.5	20.9	20.6	20.1	20.1	20.1	20.6	70.8	85.7	92.8	77.0	32.7
30	22.5	21	20.9	20.1		20.1	24.4	74.7	88.6	96.0	76.0	32.7
31	22.5		21.0	20.1		20.1		71.4		95.7	77.3	
Min	22.4	20.9	19.2	18.4	19.9	20.0	20.1	55.9	68.0	66.1	71.3	32.7
Max	42.6	22.9	21.3	23.9	20.3	20.5	24.4	85.3	88.6	96.0	80.4	72
Mean	27	22	21	21	20	20	21	70	79	87	76	58
ac-ft	1638	1318	1283	1287	1154	1234	1240	4293	4700	5346	4664	3424



Appendix A (13 of 38)
Farr Pumping Plant, Granby Reservoir, CO

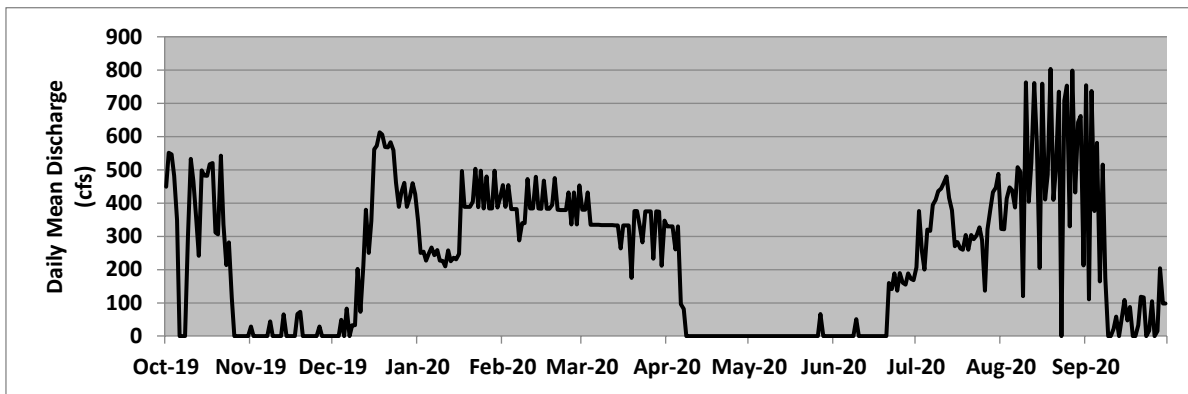
Location.--Lat 40°11'30", long 105°52'52", Grand County, Hydrologic Unit 14010001, at Farr Pumping Plant on the north end of Granby Reservoir, 8 miles northeast of Granby, Colorado, on the Colorado River.

Gage.-- Reading taken directly from the pumps, based on conduit pressure and Granby Reservoir's elevation. Elevation of the pumping plant is 8320 ft from topographic map.

Remarks.-- Water is pumped from Granby to the Granby Pump Canal which discharges into Shadow Mountain Reservoir. The operation keeps Shadow Mountain Reservoir/Grand Lake at a steady water surface level (within 0.72 feet for this period) when trans-mountain diversions via Adams Tunnel are taking place. Data was provided by Farr Pumping Plant operators, Northern Water, each morning. Data was collected from 01-Oct-2019 to 30-Sep-2020. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	449	29	0	346	454	380	330	0	0	207	322	755
2	551	0	0	250	389	380	330	0	0	376	321	111
3	547	0	0	254	454	432	330	0	0	256	414	737
4	482	0	49	227	382	335	261	0	0	200	448	376
5	349	0	0	249	382	335	330	0	0	320	439	581
6	0	0	83	267	382	335	96	0	0	317	387	165
7	0	0	0	243	288	335	82	0	0	395	508	516
8	0	44	33	259	340	334	0	0	0	410	494	175
9	297	0	33	227	340	334	0	0	51	436	120	0
10	533	0	202	226	473	334	0	0	0	444	763	0
11	467	0	73	210	384	334	0	0	0	460	404	22
12	352	0	212	258	384	334	0	0	0	480	522	59
13	242	65	380	225	479	333	0	0	0	416	761	0
14	499	0	250	236	384	333	0	0	0	378	585	51
15	483	0	346	231	383	264	0	0	0	270	205	109
16	482	0	562	247	468	333	0	0	0	283	759	47
17	517	0	573	497	383	333	0	0	0	264	411	88
18	521	66	613	389	383	333	0	0	0	260	486	0
19	312	73	606	389	395	175	0	0	0	304	804	0
20	306	0	569	389	475	376	0	0	0	260	410	33
21	543	0	568	404	380	376	0	0	160	304	509	118
22	336	0	583	503	379	329	0	0	141	292	735	116
23	214	0	559	388	379	282	0	0	189	303	0	0
24	282	0	462	498	379	375	0	0	137	327	708	16
25	115	0	389	384	432	375	0	0	190	289	754	105
26	0	29	433	480	336	375	0	0	161	137	330	0
27	0	0	461	384	432	233	0	66	155	321	799	15
28	0	0	389	384	336	375	0	0	189	382	432	204
29	0	0	417	498	453	374	0	0	172	433	643	98
30	0	0	460	387		212	0	0	168	447	662	98
31	0		427	415		347		0		488	213	
Min	0	0	0	210	288	175	0	0	0	137	0	0
Max	551	73	613	503	479	432	330	66	190	488	804	755
Mean	286	10	314	334	397	333	59	2	57	337	495	153
ac-ft	17611	607	19303	20517	22826	20499	3489	131	3398	20745	30442	9114



Appendix A (14 of 38)
Shadow Mountain/Grand Lake, CO

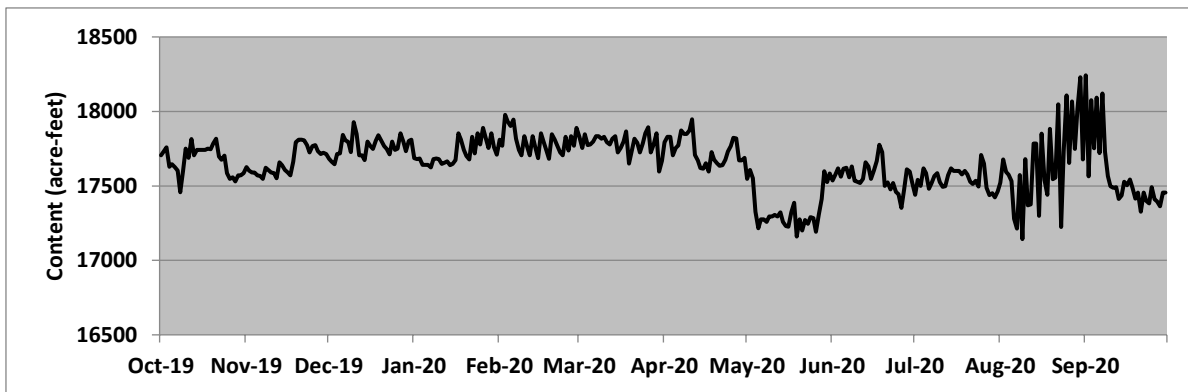
Location. --Lat 40°12'26", long 105°50'28", Grand County, Hydrologic Unit 14010001, on the Colorado River at the Shadow Mountain outlet works structure, 10 miles northeast of Granby, Colorado.

Gage.--Water-stage recorder with satellite telemetry. Elevation of gage is 8375 feet (m.s.l.) from topographic map.

Remarks.—Shadow Mountain/Grand Lake was constructed between 1944 and 1946. Impoundment began in 1946. Active capacity between elevations 8,366 and 8,367 is 1,800 AF. Grand Lake is used as forebay storage for Adams Tunnel. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Some data were provided by Farr Pumping Plant personnel during down time. Records are complete and fair. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	17706	17627	17682	17688	17811	17830	17793	17548	17537	17440	17522	18242
2	17733	17603	17664	17679	17769	17756	17830	17608	17578	17540	17677	17564
3	17760	17590	17645	17684	17977	17848	17830	17553	17618	17501	17594	18077
4	17630	17590	17714	17643	17932	17774	17706	17327	17563	17619	17575	17753
5	17645	17572	17719	17643	17903	17779	17756	17217	17615	17585	17533	18092
6	17627	17566	17843	17643	17945	17798	17771	17277	17623	17480	17281	17721
7	17603	17548	17806	17624	17816	17835	17873	17277	17558	17517	17214	18122
8	17457	17623	17795	17679	17743	17835	17850	17258	17631	17567	17572	17731
9	17604	17608	17726	17684	17706	17816	17850	17295	17534	17585	17144	17566
10	17751	17590	17929	17679	17835	17830	17873	17295	17529	17525	17680	17498
11	17688	17585	17850	17648	17761	17793	17947	17305	17519	17493	17370	17487
12	17814	17553	17706	17656	17706	17779	17708	17295	17548	17499	17376	17492
13	17707	17659	17706	17666	17835	17816	17671	17324	17658	17572	17786	17414
14	17741	17640	17674	17640	17761	17835	17621	17258	17631	17619	17785	17437
15	17742	17608	17798	17648	17688	17724	17616	17232	17548	17601	17299	17529
16	17743	17590	17767	17674	17853	17756	17653	17227	17603	17601	17851	17506
17	17742	17572	17749	17853	17798	17798	17598	17324	17668	17601	17540	17542
18	17751	17664	17804	17811	17738	17866	17726	17386	17776	17577	17441	17487
19	17745	17792	17841	17743	17682	17651	17676	17159	17726	17601	17883	17416
20	17785	17811	17804	17701	17848	17729	17653	17275	17501	17577	17546	17456
21	17817	17811	17767	17677	17811	17816	17634	17200	17524	17527	17557	17327
22	17697	17806	17749	17830	17769	17790	17640	17272	17477	17514	18047	17456
23	17675	17774	17712	17719	17724	17724	17676	17245	17519	17535	17225	17400
24	17703	17726	17798	17853	17706	17785	17731	17290	17459	17495	17730	17382
25	17585	17767	17743	17779	17830	17853	17768	17285	17445	17708	18108	17492
26	17548	17774	17751	17890	17738	17895	17823	17193	17353	17651	17654	17411
27	17558	17733	17853	17816	17835	17724	17818	17309	17469	17488	18067	17395
28	17530	17714	17798	17756	17769	17779	17671	17414	17611	17438	17748	17364
29	17572	17722	17732	17853	17890	17853	17671	17600	17598	17452	18017	17456
30	17572	17715	17801	17761		17596	17690	17525	17519	17423	18229	17456
31	17585		17811	17709		17669		17584		17465	17677	
Min	17457	17548	17645	17624	17682	17596	17598	17159	17353	17423	17144	17327
Max	17817	17811	17929	17890	17977	17895	17947	17608	17776	17708	18229	18242
Mean	17672	17664	17766	17720	17799	17785	17737	17334	17565	17542	17636	17576
EOM	17585	17715	17811	17709	17890	17669	17690	17584	17519	17465	17677	17456



Appendix A (15 of 38)

Alva B. Adams Tunnel at East Portal, near Estes Park, CO

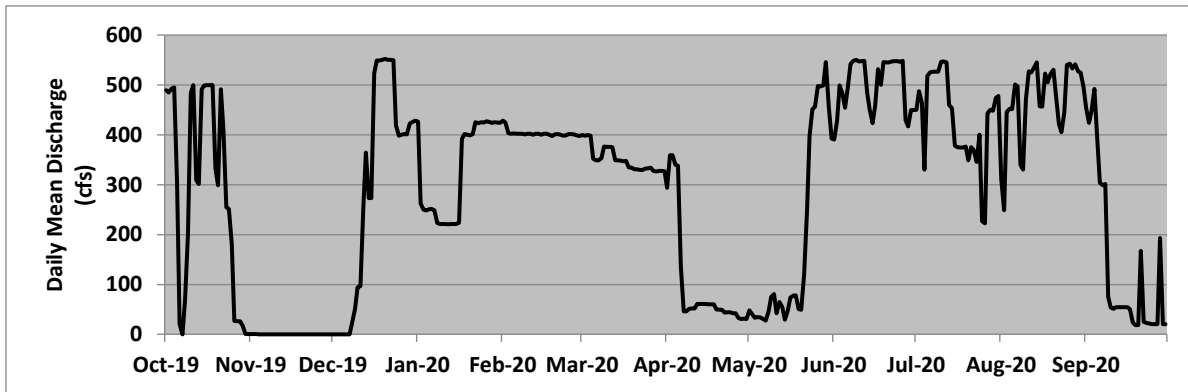
Location. --Lat 40°19'40", long 105°34'39", Larimer County, Hydrologic Unit 10190006, 4.5 miles southwest of Estes Park, Colorado.

Gage.-- Water-stage recorder with satellite telemetry at 15 foot Parshall flume. Elevation of gage is 8250 ft (m.s.l.) from topographic map.

Remarks.-- Constructed between 1940 and 1947. Tunnel is 13.1 miles long, and extends between Grand Lake and East Portal approximately 4 miles southwest of Estes Park. Its maximum capacity is 550 cfs. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes. Official record published by the Colorado Division of Water Resources.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	490	0	0	427	429	400	294	48	391	450	310	455
2	485	0	0	262	425	398	359	41	428	488	249	424
3	493	0	0	250	404	400	359	34	499	465	446	448
4	496	0	0	249	402	399	340	35	483	330	452	492
5	305	0	0	251	403	352	338	34	454	518	452	402
6	21	0	0	252	402	349	136	31	497	526	501	304
7	0	0	0	249	403	349	46	28	542	527	497	299
8	69	0	23	223	402	354	46	45	548	527	340	302
9	199	0	51	221	401	376	51	75	551	527	330	75
10	484	0	94	221	402	376	52	81	547	547	471	54
11	500	0	97	222	402	376	52	43	548	547	527	51
12	309	0	255	221	400	375	61	65	549	546	526	55
13	302	0	365	221	402	349	61	54	485	460	536	55
14	492	0	273	221	403	349	61	30	450	453	545	54
15	499	0	273	222	400	348	61	48	423	379	458	55
16	500	0	524	224	402	347	60	74	458	375	457	55
17	500	0	549	392	402	347	60	78	532	375	523	50
18	500	0	549	402	401	335	60	78	500	375	506	24
19	333	0	550	400	398	334	50	51	546	376	522	19
20	299	0	552	399	401	331	49	49	545	349	530	19
21	491	0	551	402	402	331	49	119	546	375	479	167
22	408	0	551	426	400	330	44	245	547	370	422	25
23	255	0	550	424	398	330	44	398	548	346	405	23
24	251	0	419	426	399	332	44	452	548	400	445	21
25	181	0	399	425	402	333	42	456	547	227	541	20
26	27	0	401	427	402	334	42	498	548	223	543	20
27	26	0	402	426	401	328	33	498	430	443	533	20
28	27	0	401	424	399	326	31	499	417	450	542	193
29	17	0	423	426	398	328	31	546	450	449	527	21
30	1	0	426	425		328	31	458	450	474	525	21
31	1		428	424		327		392		478	496	
Min	0	0	0	221	398	326	31	28	391	223	249	19
Max	500	0	552	427	429	400	359	546	551	547	545	492
Mean	289	0	294	328	403	351	100	180	500	431	472	141
ac-ft	17771	3	17210	19357	23179	20917	5932	10291	29767	25580	28052	8376



Appendix A (16 of 38)
Marys Lake, CO

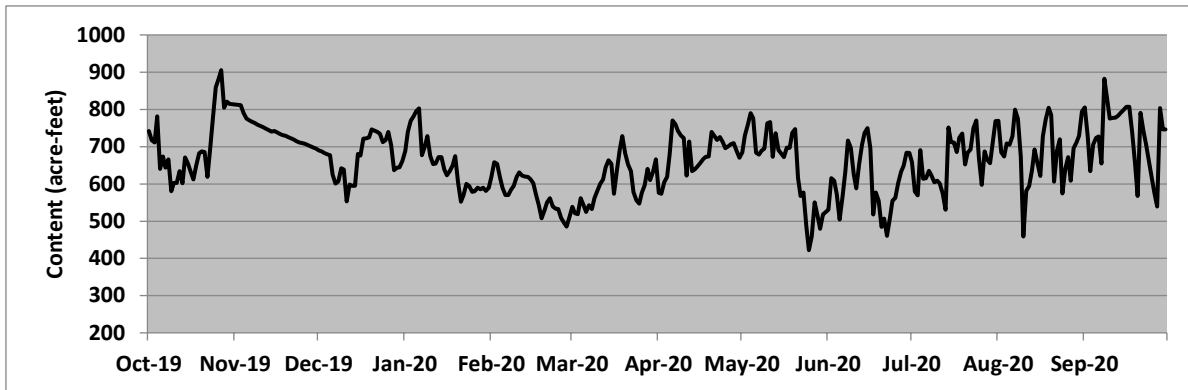
Location. --Lat 40°22'40", long 105°31'50", Larimer County, Hydrologic Unit 10190006, 2 miles southwest of Estes Park, Colorado.

Gage.-- Water-level recorder with satellite telemetry. Elevation of gage is 8060 feet (m.s.l.) from topographic map.

Remarks.-- Constructed between 1947 and 1949. Impoundment began in August, 1950. Active capacity between elevations 8,025 and 8,040 is 500 AF. Used as a forebay storage for Estes Powerplant. The only measurable inflow into the reservoir comes from Adams Tunnel. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Record is complete and reliable. The gage does not record water surface levels below elevation 8,022.62 feet, content of 322 AF. Values reported as less than 322 AF are estimates. These are operational data which could be subject to further revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	742	813	690	688	619	539	576	685	531	658	769	805
2	717	812	687	740	658	522	574	730	616	580	685	729
3	711	811	683	770	654	519	604	758	608	569	673	635
4	781	790	680	781	617	562	619	790	573	691	709	705
5	641	775	677	795	589	542	680	777	504	614	705	723
6	673	771	625	803	570	525	770	684	565	615	728	728
7	644	767	601	677	570	542	760	679	634	635	800	655
8	666	763	607	700	584	532	742	689	717	622	774	883
9	580	759	642	728	595	562	731	695	697	605	673	833
10	603	756	639	675	619	581	723	763	626	609	459	776
11	603	752	553	654	631	600	622	766	588	601	582	778
12	634	748	599	655	622	612	714	673	653	574	594	778
13	602	744	595	672	620	645	634	736	706	531	637	783
14	671	740	595	672	619	663	639	691	737	752	693	792
15	655	742	681	639	613	654	647	682	750	712	656	800
16	632	738	676	623	602	574	656	672	696	711	621	807
17	612	735	721	634	570	635	667	698	518	686	728	807
18	650	731	723	650	544	692	673	697	577	724	774	738
19	682	729	725	675	508	729	673	737	555	735	804	654
20	687	726	747	604	529	682	739	747	485	652	785	568
21	686	723	743	553	550	652	728	617	507	684	606	791
22	619	719	740	570	562	635	719	568	461	693	689	743
23	700	715	734	600	540	578	726	577	508	750	720	708
24	776	712	712	594	534	556	713	486	554	770	574	663
25	860	710	718	579	533	547	696	422	562	671	641	617
26	883	708	739	580	508	576	701	460	603	598	672	578
27	906	704	703	590	496	597	707	550	633	688	609	539
28	805	701	637	586	485	641	709	515	649	665	696	804
29	821	698	643	590	511	610	689	479	684	656	712	747
30	815	695	645	582		632	670	518	683	715	730	747
31	814		662	590		666		525		769	794	
Min	580	695	553	553	485	519	574	422	461	531	459	539
Max	906	813	747	803	658	729	770	790	750	770	804	883
Mean	705	743	672	653	574	600	683	647	606	663	687	730
EOM	814	695	662	590	511	666	670	525	683	769	794	747



Appendix A (17 of 38)
Big Thompson River above Lake Estes, CO

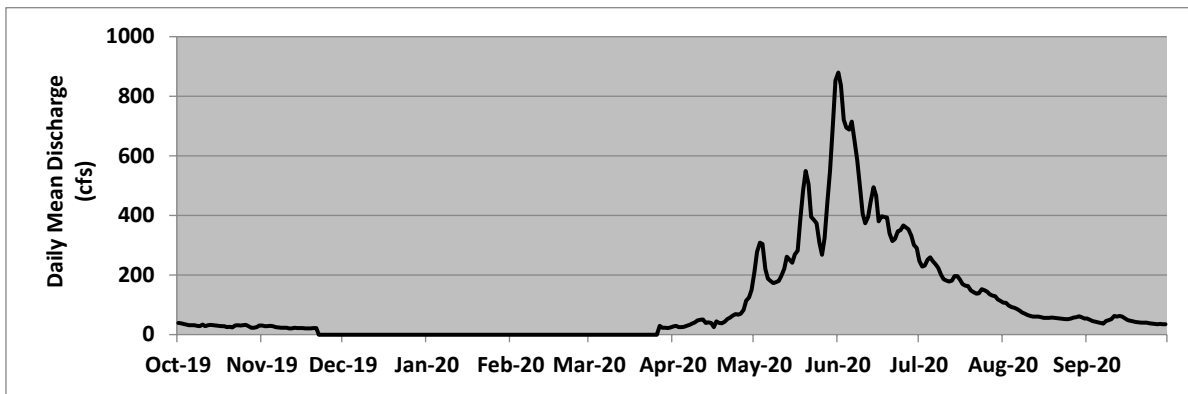
Location. --Lat 40°22'42", long 105°30'48", Larimer County, Hydrologic Unit 10190006, 600 feet downstream from bridge on state highways 7 and 36 in Estes Park, Colorado, downstream from Black Canyon Creek, and 0.3 miles northwest of Estes Powerplant.

Gage.-- Water-stage recorder with satellite telemetry. 15 foot Parshall flume with overflow weirs and supplemental outside gage. Datum of gage at 7492.5 feet.

Remarks.— Drainage area is 137 mi2. Station consists of an automated data collection platform. Recorder was operated from 01-Oct-2019 until 21-Nov-2019, before it was winterized. The station was put back into service from 27-Mar-2020 to 30-Sep-2020. Values for the off-season are marked as zero, but winter month flows normally fluctuate between 10 and 30 cfs. This record contains operational data which could be subject to future revisions and changes. The official record for this station is published by the Colorado Division of Water Resources.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	40	31	0	0	0	0	27	212	880	247	108	54
2	38	29	0	0	0	0	29	278	837	229	107	50
3	36	29	0	0	0	0	25	309	720	232	98	46
4	34	30	0	0	0	0	26	304	695	252	92	43
5	31	28	0	0	0	0	27	220	688	260	90	42
6	31	25	0	0	0	0	29	188	715	246	86	39
7	32	25	0	0	0	0	33	181	655	236	81	38
8	30	23	0	0	0	0	37	173	586	224	75	46
9	29	24	0	0	0	0	41	177	503	201	70	49
10	34	23	0	0	0	0	48	180	406	185	66	52
11	29	21	0	0	0	0	50	198	374	181	63	62
12	32	22	0	0	0	0	51	221	395	178	60	60
13	33	23	0	0	0	0	39	262	447	182	60	63
14	31	22	0	0	0	0	41	251	495	196	60	60
15	31	22	0	0	0	0	39	241	467	196	58	54
16	30	22	0	0	0	0	26	269	380	185	57	49
17	29	21	0	0	0	0	45	282	397	170	56	47
18	28	21	0	0	0	0	39	385	395	164	57	44
19	26	21	0	0	0	0	38	485	394	164	57	42
20	27	22	0	0	0	0	43	549	340	148	56	41
21	24	22	0	0	0	0	52	504	314	143	55	40
22	31	0	0	0	0	0	58	396	321	138	54	40
23	31	0	0	0	0	0	64	385	347	139	53	40
24	31	0	0	0	0	0	69	374	351	152	52	39
25	32	0	0	0	0	0	67	308	367	149	52	37
26	33	0	0	0	0	0	70	268	360	144	54	36
27	28	0	0	0	0	29	83	324	354	136	58	35
28	23	0	0	0	0	24	114	448	332	131	58	36
29	23	0	0	0	0	23	125	549	302	129	61	35
30	25	0	0	0	0	23	150	705	290	118	59	35
31	31	0	0	0	0	25	853	853	113	54		
Min	23	0	0	0	0	0	25	173	290	113	52	35
Max	40	31	0	0	0	29	150	853	880	260	108	63
Mean	30	17	0	0	0	4	53	338	470	180	67	45
ac-ft	1867	1003	0	0	0	244	3145	20777	27982	11045	4101	2686



Appendix A (18 of 38)
Olympus Dam, CO

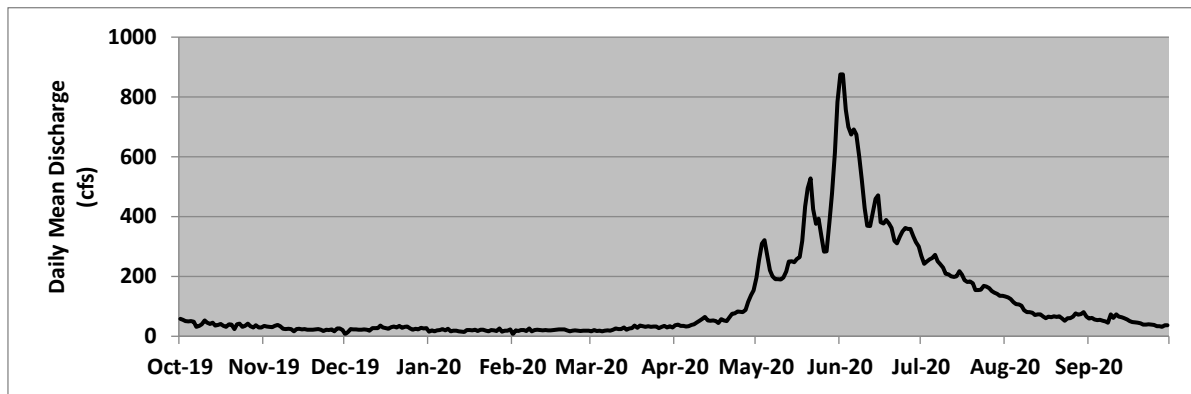
Location. --Lat 40°22'31", long 105°29'15", Larimer County, Hydrologic Unit 10190006, 1.5 miles east of Estes Park, Colorado, on the Big Thompson River.

Gage.—Water-stage recorders with satellite telemetry. Inflow computed daily based on the change in content from midnight to midnight at Marys Lake and Lake Estes, daily average releases from Olympus Dam, and daily average discharge at Olympus Tunnel and Adams Tunnel.

Remarks.— Olympus dam was constructed between 1947 and 1949. Impoundment began on November 1948. Total capacity at maximum water surface elevation of 7475.0 feet is 3,070 AF. System start up can create computation errors in the calculated inflows. No adjustments to the record were required for the period. This record contains operational data which could be subject to future revisions and changes.

Computed Inflow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	55	32	15	19	20	21	39	255	875	242	130	62
4	50	31	23	20	21	19	35	321	700	258	114	54
6	49	38	22	24	18	19	33	220	692	272	107	52
8	35	25	23	25	16	19	40	191	600	241	87	46
10	53	25	19	18	22	26	51	189	429	209	80	61
12	41	17	27	16	20	23	65	216	369	200	71	65
14	36	25	35	15	20	21	51	250	460	200	73	61
16	42	24	28	21	21	27	51	259	381	206	60	51
18	31	21	30	22	23	28	58	320	389	181	63	46
20	39	23	29	22	23	33	51	495	362	177	64	44
22	40	22	29	18	17	33	75	426	311	154	59	39
24	32	22	32	20	20	33	83	393	350	168	60	39
26	42	23	22	18	17	27	81	283	358	160	66	33
28	29	26	23	15	18	34	115	383	334	146	72	31
30	29	21	26	18		34	154	614	300	135	80	37
Max	59	38	35	26	26	36	154	784	875	272	133	73
ac-ft	2460	1491	1575	1191	1129	1639	3727	20139	27981	12121	4921	2949



**Appendix A (19 of 38)
Olympus Dam, CO**

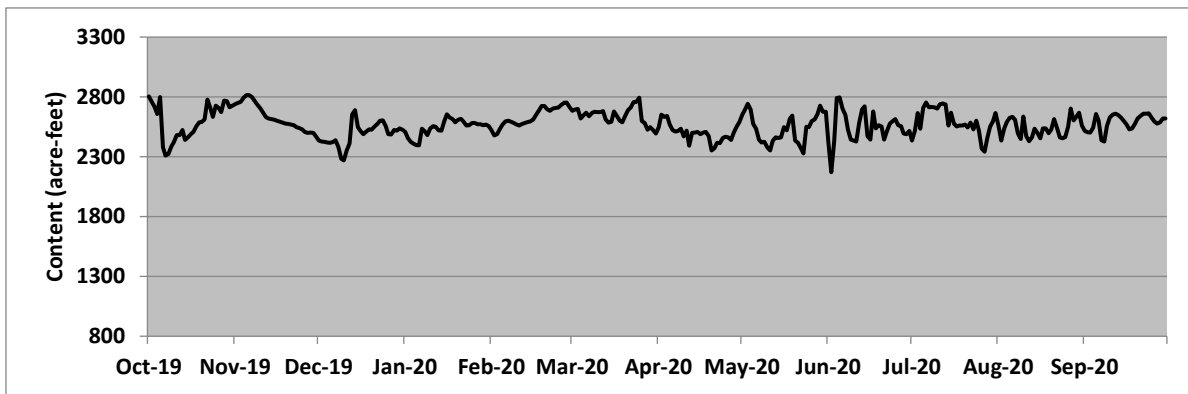
Location. --Lat 40°22'31", long 105°29'19", Larimer County, Hydrologic Unit 10190006, 1.5 miles east of Estes Park, Colorado, on the Big Thompson River.

Gage. -- Water-level recorder with satellite telemetry. Elevation of gage is 7490 feet (m.s.l.) from topographic map.

Remarks. -- Constructed between 1947 and 1949. Impoundment began in November, 1948. Active capacity between elevations 7,450.25 and 7,474.00 is 2,476 AF. Used as afterbay storage for Estes Powerplant and forebay for Olympus Tunnel. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	2806	2742	2437	2508	2524	2684	2547	2654	2418	2437	2566	2516
2	2761	2750	2429	2457	2480	2696	2654	2693	2172	2516	2435	2506
3	2718	2761	2426	2424	2489	2701	2633	2744	2429	2665	2534	2503
4	2657	2794	2421	2410	2534	2620	2642	2694	2791	2536	2589	2542
5	2801	2815	2418	2399	2571	2647	2574	2575	2797	2710	2626	2657
6	2381	2817	2423	2395	2597	2669	2525	2536	2703	2756	2635	2606
7	2311	2799	2439	2534	2603	2640	2511	2443	2650	2715	2609	2439
8	2325	2766	2383	2514	2594	2667	2517	2419	2527	2718	2494	2429
9	2386	2735	2285	2483	2584	2677	2536	2424	2443	2715	2450	2556
10	2423	2706	2272	2539	2571	2674	2470	2379	2437	2703	2637	2630
11	2481	2669	2352	2558	2563	2674	2519	2352	2427	2739	2475	2654
12	2483	2631	2411	2551	2575	2682	2394	2434	2584	2747	2431	2660
13	2525	2621	2654	2521	2584	2613	2501	2464	2694	2739	2464	2650
14	2440	2614	2689	2519	2592	2585	2503	2457	2721	2561	2534	2630
15	2462	2609	2547	2599	2597	2594	2509	2464	2475	2669	2499	2599
16	2489	2603	2516	2655	2613	2679	2489	2547	2443	2579	2455	2572
17	2508	2594	2489	2628	2652	2643	2504	2521	2681	2554	2539	2530
18	2553	2585	2511	2614	2686	2603	2509	2616	2537	2561	2537	2539
19	2589	2577	2529	2589	2725	2589	2473	2645	2566	2563	2497	2577
20	2591	2575	2527	2609	2725	2643	2352	2435	2553	2569	2527	2621
21	2613	2571	2554	2618	2699	2691	2371	2418	2445	2546	2616	2642
22	2778	2564	2575	2594	2684	2713	2416	2378	2517	2587	2544	2660
23	2710	2549	2603	2561	2703	2757	2415	2328	2577	2530	2464	2662
24	2633	2541	2606	2564	2708	2759	2457	2551	2596	2603	2455	2664
25	2727	2530	2558	2582	2711	2794	2468	2547	2616	2522	2467	2626
26	2710	2508	2491	2584	2732	2599	2464	2599	2566	2368	2553	2596
27	2674	2501	2486	2574	2750	2584	2442	2613	2556	2343	2705	2579
28	2771	2503	2524	2574	2754	2527	2501	2657	2494	2452	2604	2589
29	2764	2501	2519	2566	2718	2549	2551	2727	2491	2551	2637	2621
30	2715	2472	2539	2569		2525	2591	2677	2516	2596	2669	2621
31	2727		2527	2556		2494		2677		2667	2561	
Min	2311	2472	2272	2395	2480	2494	2352	2328	2172	2343	2431	2429
Max	2806	2817	2689	2655	2754	2794	2654	2744	2797	2756	2705	2664
Mean	2597	2633	2488	2543	2632	2644	2501	2538	2547	2597	2542	2589
EOM	2727	2472	2527	2556	2718	2494	2591	2677	2516	2667	2561	2621



Appendix A (20 of 38)
Big Thompson River below Olympus Dam, CO

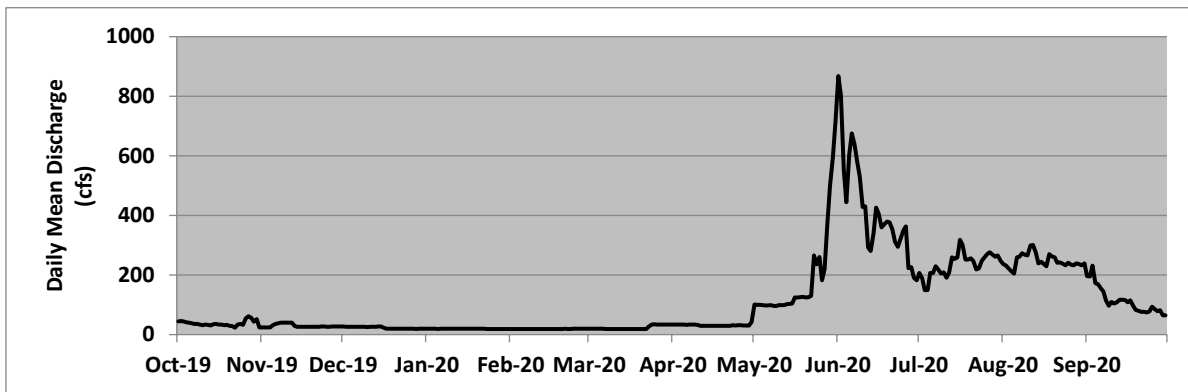
Location. --Lat 40°22'35", long 105°29'06", Larimer County, Hydrologic Unit 10190006, 620 feet downstream from Olympus Dam and 100 feet upstream of Dry Gulch, 2.0 miles east in Estes Park.

Gage. -- Water-stage recorder with satellite telemetry. 15 foot Parshall flume with overflow weirs in a concrete shelter with a supplemental outside gage. Datum of gage at 7422.50 feet.

Remarks.— Drainage area is 155 mi2. Area at site used between 29-Jan-1934 and 21-Mar-1951 was 162 mi2. Station consists of automated data collection platform and digital recorder as primary record. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Record is complete. Flow calculations during peak runoff could lose accuracy as the water begins to flow over the outside boards. This record contains operational data which could be subject to future revisions and changes. The official record for this station is published by the Colorado Division of Water Resources.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	45	24	27	20	19	20	34	101	868	207	237	196
2	45	24	27	20	19	20	34	100	804	189	232	195
3	44	24	27	20	19	20	34	100	554	149	222	232
4	41	24	26	20	19	20	34	99	445	149	213	173
5	40	31	26	19	19	20	34	98	604	207	205	170
6	38	37	26	20	19	19	33	98	675	207	259	155
7	36	39	27	20	19	19	33	99	642	230	262	145
8	36	41	27	20	19	19	33	97	580	219	273	115
9	34	41	26	20	19	19	33	96	530	205	268	97
10	32	40	26	20	19	19	33	99	429	209	266	110
11	34	40	26	20	19	19	30	99	431	191	299	105
12	33	40	26	20	19	18	30	99	293	209	301	108
13	30	30	27	20	19	19	30	103	281	260	276	117
14	35	26	27	20	19	18	30	104	339	254	239	117
15	36	26	27	20	19	19	30	104	426	260	244	116
16	34	26	23	20	19	18	30	125	406	318	237	109
17	34	26	20	20	19	19	30	125	360	302	230	115
18	32	26	20	20	19	19	30	126	369	253	270	97
19	33	26	20	20	19	19	30	127	379	252	263	83
20	30	26	20	20	19	19	30	125	377	256	260	79
21	28	26	20	20	19	19	30	126	353	246	241	77
22	23	27	20	20	19	19	30	130	312	219	243	77
23	34	28	20	19	19	28	32	265	294	222	238	75
24	36	28	20	19	20	34	31	236	321	248	232	77
25	33	27	20	19	20	34	31	261	350	259	241	94
26	55	27	20	19	20	34	31	183	363	271	235	85
27	62	27	20	19	20	33	31	220	224	277	233	78
28	56	27	19	19	20	34	31	378	226	270	239	82
29	44	27	20	19	20	33	31	500	191	262	237	65
30	52	28	20	19		34	42	597	182	266	233	65
31	24		20	19		33		713		248	239	
Min	23	24	19	19	19	18	30	96	182	149	205	65
Max	62	41	27	20	20	34	42	713	868	318	301	232
Mean	38	30	23	20	19	23	32	185	420	236	247	114
ac-ft	2323	1764	1430	1202	1094	1417	1891	11371	25008	14506	15207	6765



Appendix A (21 of 38)
Olympus Tunnel near Estes Park, CO

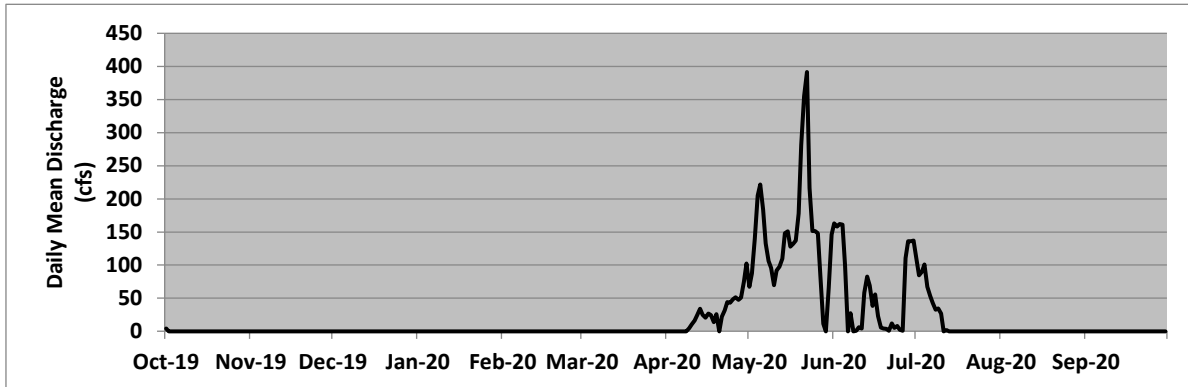
Location. --Lat 40°22'24", long 105°29'00", Larimer County, Hydrologic Unit 10190006, southeast of Estes Park, Colorado.

Gage. -- Water-stage recorder and satellite telemetry. Elevation of gage is 7460 ft (m.s.l.) from topographic map.

Remarks.— Constructed between 1949 and 1952. The tunnel is 7.2 miles long, between Estes Park and the Pole Hill Canal. Its diameter is 9.75 feet and maximum design capacity is 550 cfs. The hydropower diversion operation, also known as the skim operation, diverts water from the Big Thompson River through Olympus Tunnel for power generation at three power plants down the foothills, before returning it to the Big Thompson River near the canyon mouth. The skim daily value is determined based on the data from the stream gages in the system. Period of record includes 01-Oct-2019 through 30-Sep-2020. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Hydropower Diversion (Skim), cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	4	0	0	0	0	0	0	67	163	109	0	0
2	0	0	0	0	0	0	0	87	158	84	0	0
3	0	0	0	0	0	0	0	140	162	90	0	0
4	0	0	0	0	0	0	0	205	161	101	0	0
5	0	0	0	0	0	0	0	222	99	67	0	0
6	0	0	0	0	0	0	0	184	0	53	0	0
7	0	0	0	0	0	0	0	133	27	43	0	0
8	0	0	0	0	0	0	0	106	0	33	0	0
9	0	0	0	0	0	0	5	95	1	34	0	0
10	0	0	0	0	0	0	10	69	6	27	0	0
11	0	0	0	0	0	0	16	92	4	0	0	0
12	0	0	0	0	0	0	25	97	58	2	0	0
13	0	0	0	0	0	0	34	110	83	0	0	0
14	0	0	0	0	0	0	25	148	69	0	0	0
15	0	0	0	0	0	0	20	151	39	0	0	0
16	0	0	0	0	0	0	27	128	56	0	0	0
17	0	0	0	0	0	0	24	132	23	0	0	0
18	0	0	0	0	0	0	14	137	6	0	0	0
19	0	0	0	0	0	0	26	178	4	0	0	0
20	0	0	0	0	0	0	0	281	3	0	0	0
21	0	0	0	0	0	0	22	355	1	0	0	0
22	0	0	0	0	0	0	32	392	12	0	0	0
23	0	0	0	0	0	0	44	216	5	0	0	0
24	0	0	0	0	0	0	43	151	8	0	0	0
25	0	0	0	0	0	0	48	152	2	0	0	0
26	0	0	0	0	0	0	52	148	1	0	0	0
27	0	0	0	0	0	0	48	83	110	0	0	0
28	0	0	0	0	0	0	51	11	136	0	0	0
29	0	0	0	0	0	0	75	0	136	0	0	0
30	0	0	0	0		0	103	66	137	0	0	0
31	0		0	0		0		146		0	0	
Min	0	0	0	0	0	0	0	0	0	0	0	0
Max	4	0	0	0	0	0	103	392	163	109	0	0
Mean	0	0	0	0	0	0	25	145	56	21	0	0
ac-ft	9	0	0	0	0	0	1474	8891	3315	1277	0	0



Appendix A (22 of 38)
Olympus Tunnel, CO

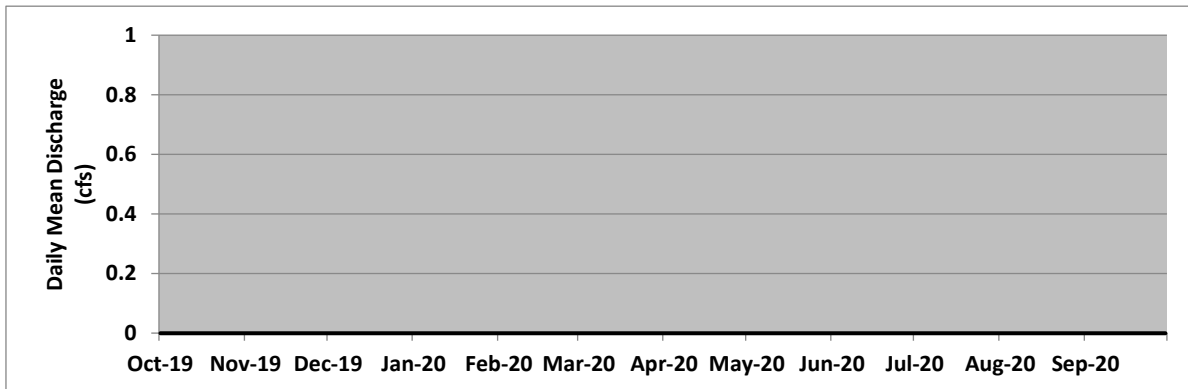
Location. --Lat 40°22'24", long 105°29'00", Larimer County, Hydrologic Unit 10190006, southeast of Estes Park, Colorado.

Gage. -- Water-stage recorder and satellite telemetry. Elevation of gage is 7460 ft (m.s.l.) from topographic map.

Remarks.— Constructed between 1949 and 1952. The tunnel is 7.2 miles long, between Estes Park and the Pole Hill Canal. Its diameter is 9.75 feet and maximum design capacity is 550 cfs. The right to divert native run-off is determined by the Colorado Division of Water Resources. Period of record from 01-Oct-2019 through 30-Sep-2020. Record is complete and reliable.

Priority Diversion Flow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
19	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
21	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
25	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
27	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
29	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0		0	0	0	0	0	0	0
31	0		0	0		0		0		0		0
Min	0	0	0	0	0	0	0	0	0	0	0	0
Max	0	0	0	0	0	0	0	0	0	0	0	0
Mean	0	0	0	0	0	0	0	0	0	0	0	0
ac-ft	0	0	0	0	0	0	0	0	0	0	0	0



**Appendix A (23 of 38)
Olympus Tunnel, CO**

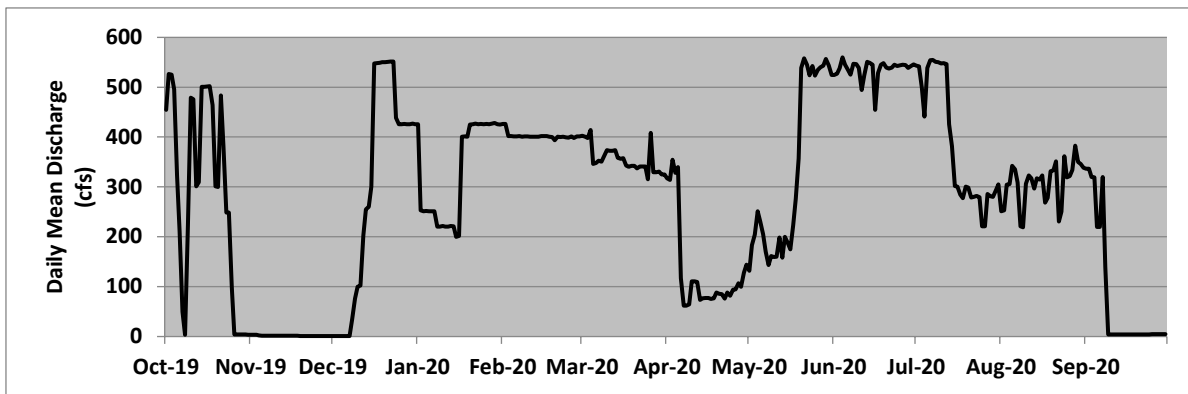
Location. --Lat 40°22'24", long 105°29'00", Larimer County, Hydrologic Unit 10190006, southeast of Estes Park, Colorado, on the Big Thompson River.

Gage. -- Water-stage recorder with satellite telemetry. Elevation of gage is 7460 ft (m.s.l.) from topographic map.

Remarks.— Constructed between 1949 and 1952. The tunnel is 7.2 miles long, between Estes Park and the Pole Hill Canal. Its diameter is 9.75 feet and maximum design capacity is 550 cfs. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Records are complete and reliable. This record contains operational data which could be subject to future revisions and changes. Official record is published by the Colorado Division of Water Resources.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	455	4	1	425	426	402	317	132	525	543	251	337
2	526	4	0	253	426	401	314	183	527	542	253	336
3	525	3	0	251	402	398	354	204	538	498	305	319
4	496	2	0	251	402	414	328	251	560	441	306	319
5	323	2	0	251	401	346	340	230	545	539	342	219
6	211	1	0	251	401	348	117	205	535	554	335	220
7	50	1	1	251	402	353	62	170	525	555	309	320
8	3	1	34	220	401	350	62	143	547	550	221	139
9	224	1	76	221	401	362	64	161	546	550	219	4
10	479	1	100	221	401	373	111	159	539	547	306	4
11	475	1	102	221	400	372	111	160	494	548	323	4
12	301	1	202	220	400	373	109	199	524	546	317	4
13	310	1	255	221	401	374	73	158	550	426	296	4
14	500	1	260	221	401	358	76	200	549	382	317	4
15	501	1	300	200	402	356	77	187	545	301	314	4
16	501	1	547	202	402	358	77	174	454	300	323	4
17	502	1	548	400	402	343	76	223	528	285	268	4
18	464	1	549	401	401	340	76	276	545	277	278	4
19	301	1	550	400	400	342	88	357	548	300	331	4
20	300	1	550	425	394	342	86	539	539	299	333	4
21	483	1	551	426	400	337	85	558	537	279	351	4
22	381	1	551	427	400	341	76	545	539	280	230	4
23	248	1	551	425	400	341	88	524	545	282	250	4
24	248	1	438	426	399	341	82	542	543	279	361	4
25	99	1	426	425	399	315	94	523	544	221	319	4
26	4	1	425	426	401	408	94	535	545	221	322	4
27	4	1	426	426	398	329	106	540	544	286	334	4
28	4	1	425	427	401	329	100	543	539	281	382	4
29	4	1	425	428	401	331	128	556	542	280	350	4
30	4	1	427	426		325	144	544	546	293	346	4
31	4		426	425		325		524		305	338	
Min	3	1	0	200	394	315	62	132	454	221	219	4
Max	526	4	551	428	426	414	354	558	560	555	382	337
Mean	288	1	295	329	402	356	130	330	536	387	307	77
ac-ft	17711	80	18145	20219	23136	21872	7763	20321	31908	23779	18904	4559



Appendix A (24 of 38)
Pinewood Reservoir near Loveland, Colorado, CO

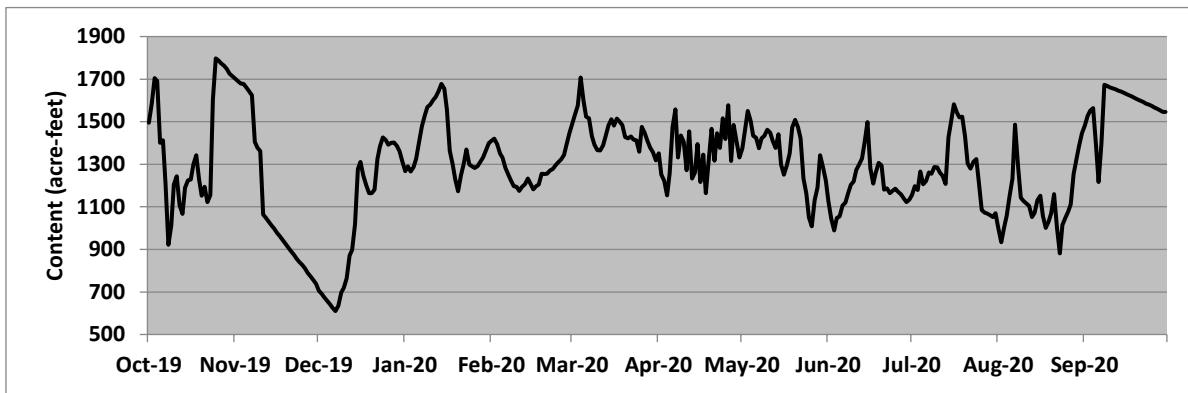
Location. --Lat 40°22', long 105°17.9'; Larimer County, Hydrologic Unit 10190006, 10 miles southwest of Loveland, Colorado.

Gage. -- Water-level recorder with satellite telemetry. Elevation of gage is 6,600 feet (m.s.l.) from topographic map.

Remarks. -- Constructed between 1951 and 1952. Impoundment began in January 4, 1954. Active capacity between elevations 6,550.00 and 6,580.00 is 1,570 AF. The gage is capable of measuring the water surface elevation down to 6555.70 feet, a content of 604 AF. Used as the forebay storage for Flatiron Powerplant. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	1495	1702	707	1267	1411	1492	1352	1374	1125	1155	998	1482
2	1585	1690	691	1290	1420	1533	1251	1456	1043	1197	934	1528
3	1706	1679	674	1265	1394	1576	1223	1550	990	1180	1004	1552
4	1691	1678	658	1287	1351	1707	1154	1504	1047	1265	1058	1564
5	1402	1660	642	1326	1331	1597	1257	1434	1055	1206	1151	1390
6	1413	1643	626	1404	1282	1523	1474	1425	1107	1222	1233	1216
7	1209	1624	610	1479	1251	1517	1558	1376	1120	1262	1487	1399
8	923	1405	636	1530	1225	1433	1332	1422	1161	1256	1300	1674
9	1013	1379	697	1568	1197	1392	1435	1434	1204	1287	1143	1670
10	1204	1362	719	1581	1194	1367	1406	1462	1219	1286	1128	1662
11	1244	1064	765	1601	1175	1364	1272	1449	1273	1262	1116	1657
12	1108	1048	872	1616	1195	1388	1454	1410	1299	1245	1104	1652
13	1066	1031	898	1643	1206	1432	1233	1376	1328	1207	1053	1647
14	1189	1013	1018	1678	1233	1484	1262	1442	1402	1427	1072	1642
15	1225	996	1278	1655	1209	1512	1394	1298	1499	1498	1131	1636
16	1229	979	1310	1559	1182	1482	1217	1251	1281	1582	1153	1630
17	1300	961	1247	1363	1197	1514	1345	1295	1210	1545	1058	1624
18	1342	943	1202	1301	1205	1500	1164	1352	1262	1521	1001	1618
19	1227	927	1164	1230	1255	1485	1318	1475	1307	1523	1031	1611
20	1152	909	1164	1173	1254	1428	1467	1509	1294	1430	1070	1605
21	1194	892	1181	1249	1255	1422	1317	1474	1180	1303	1160	1599
22	1122	876	1324	1297	1270	1431	1446	1422	1186	1280	1002	1592
23	1155	858	1385	1370	1278	1416	1376	1233	1164	1311	881	1586
24	1604	841	1427	1299	1296	1413	1516	1163	1175	1324	1014	1580
25	1798	827	1415	1290	1309	1359	1418	1050	1185	1215	1047	1574
26	1787	813	1392	1282	1323	1476	1578	1009	1170	1085	1077	1567
27	1774	790	1402	1292	1344	1447	1316	1131	1158	1073	1113	1560
28	1763	773	1402	1313	1393	1408	1485	1191	1140	1069	1254	1553
29	1747	756	1386	1333	1448	1379	1406	1343	1123	1061	1324	1547
30	1726	740	1362	1365		1357	1333	1287	1135	1051	1386	1547
31	1714		1313	1399		1318		1223		1070	1446	
Min	923	740	610	1173	1175	1318	1154	1009	990	1051	881	1216
Max	1798	1702	1427	1678	1448	1707	1578	1550	1499	1582	1487	1674
Mean	1391	1129	1050	1397	1279	1456	1359	1349	1195	1271	1127	1572
EOM	1714	740	1313	1399	1448	1318	1333	1223	1135	1070	1446	1547



Appendix A (25 of 38)
Flatiron Reservoir, CO

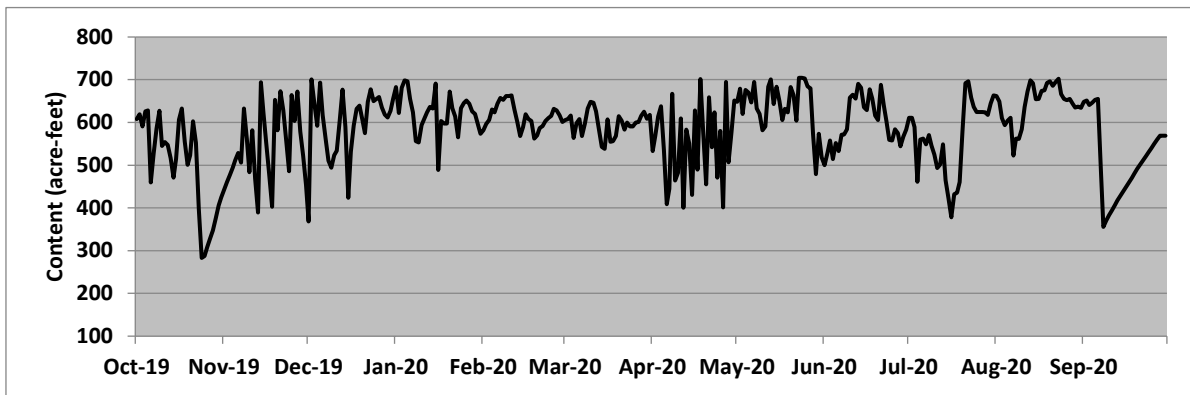
Location. --Lat 40°22.1', long 105°13.3'; Larimer County, Hydrologic Unit 10190006, 8 miles southwest of Loveland, Colorado.

Gage. -- Water-level recorder with satellite telemetry. Elevation of gage is 5,600 feet (m.s.l.) from topographic map.

Remarks. -- Constructed between 1951 and 1953. Impoundment began in January, 1954. Active capacity between elevations 5,462.00 and 5,472.80 is 436 AF. Used as the afterbay storage for Flatiron Powerplant. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	608	442	369	683	582	606	533	648	500	611	662	649
2	619	460	701	622	597	608	568	679	528	611	649	651
3	591	477	644	681	606	617	614	620	558	589	610	641
4	626	494	592	698	630	563	638	676	514	461	593	646
5	628	512	693	696	623	598	536	670	552	560	605	652
6	460	528	617	655	644	608	408	647	533	563	611	655
7	528	506	563	624	657	568	445	695	571	549	522	493
8	586	633	510	556	653	597	667	633	572	570	563	356
9	627	562	494	553	662	632	464	620	584	546	561	370
10	545	484	523	594	662	648	482	582	658	525	584	383
11	554	582	534	608	663	646	610	590	665	493	636	394
12	547	468	603	623	630	626	400	683	656	502	672	406
13	517	389	677	636	602	584	583	701	690	549	698	418
14	471	694	589	632	568	543	551	643	681	465	692	428
15	515	622	423	691	589	538	431	684	636	423	654	438
16	606	549	531	489	619	607	628	650	629	378	655	449
17	633	478	593	604	608	555	490	606	677	432	674	460
18	556	403	632	597	604	557	701	631	656	436	676	470
19	501	652	640	597	562	568	574	624	617	460	693	481
20	523	582	606	672	569	615	455	683	606	582	697	492
21	603	673	575	634	587	604	658	664	688	692	686	502
22	553	628	649	614	591	583	542	604	640	697	695	512
23	398	558	677	565	604	599	623	704	604	658	702	521
24	283	486	650	633	610	591	471	704	559	636	667	530
25	288	664	655	645	615	590	580	703	558	625	655	540
26	308	604	659	651	632	600	401	685	584	624	652	550
27	328	672	635	644	628	601	695	680	575	625	655	560
28	348	579	619	626	617	615	507	572	544	624	644	569
29	376	522	612	620	601	625	576	479	567	618	635	569
30	405	453	628	595		609	651	574	583	644	637	569
31	425		655	574		618		518		663	634	
Min	283	389	369	489	562	538	400	479	500	378	522	356
Max	633	694	701	698	663	648	701	704	690	697	702	655
Mean	502	545	598	623	614	597	550	640	600	562	644	512
EOM	425	453	655	574	601	618	651	518	583	663	634	569



Appendix A (26 of 38)
Flatiron Powerplant Unit #3 Pump, CO

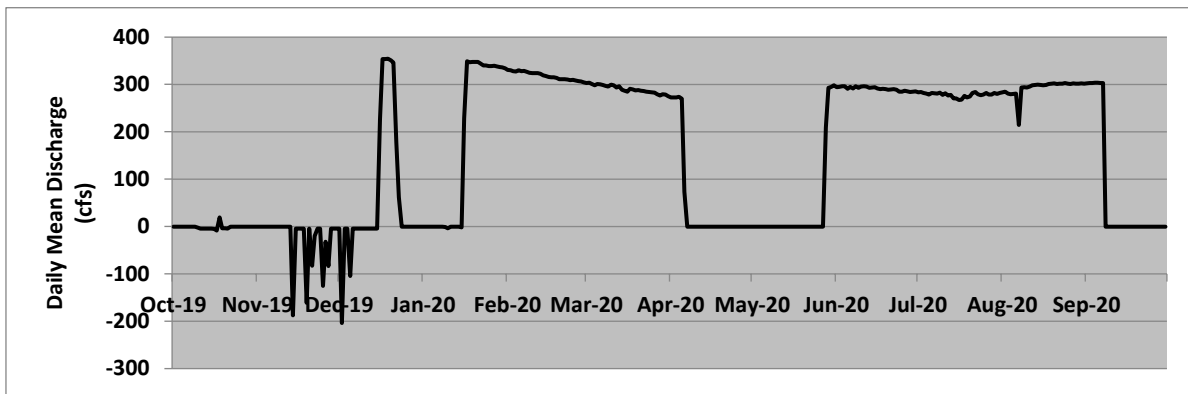
Location. --Lat 40°21'53", long 105°14'09", Larimer County, Hydrologic Unit 10190006, 9 miles west of Loveland, Colorado

Gage. -- There is a flow meter in place.

Remarks. -- Constructed between 1951 and 1953. The Powerplant consists of three generating units. Unit #3 can be used to pump water from Flatiron Reservoir to Carter Lake Reservoir, or to generate power. For the purpose of this table, any negative values indicate power generation or leakage through the conduit from Carter Lake Reservoir into Flatiron Reservoir. The maximum capacity of the pump is approximately 480 cfs, but the efficiency varies according to the water surface levels at Carter Lake and Flatiron Reservoirs. Discharges are measured using a flow meter inside the pressure conduit. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	-4	0	331	303	272	0	294	283	284	302
2	0	0	-204	0	330	304	272	0	295	284	284	303
3	0	0	-4	0	328	301	273	0	296	282	281	303
4	0	0	-4	0	327	298	274	0	296	280	279	303
5	0	0	-104	0	330	301	270	0	291	278	280	303
6	0	0	-4	0	328	300	73	0	295	282	281	303
7	0	0	-4	0	329	299	0	0	292	282	215	303
8	0	0	-4	0	327	297	0	0	296	281	293	0
9	0	0	-4	-1	324	295	0	0	293	283	294	0
10	-2	0	-4	-3	324	300	0	0	295	278	293	0
11	-4	0	-4	0	324	298	0	0	296	281	296	0
12	-4	0	-4	0	324	293	0	0	296	277	298	0
13	-4	0	-4	0	323	296	0	0	293	278	299	0
14	-4	-187	-4	0	319	288	0	0	294	270	300	0
15	-4	-4	-4	-2	318	287	0	0	294	271	299	0
16	-5	-4	226	228	316	285	0	0	291	267	298	0
17	-8	-4	353	349	315	291	0	0	290	268	299	0
18	19	-4	354	347	315	289	0	0	291	276	301	0
19	-4	-161	354	347	314	287	0	0	290	272	301	0
20	-4	-4	351	348	311	288	0	0	289	274	302	0
21	-5	-83	346	347	311	286	0	0	289	282	301	0
22	0	-20	178	344	311	286	0	0	290	284	301	0
23	0	-4	62	340	311	285	0	0	289	279	302	0
24	0	-4	0	340	309	284	0	0	285	277	303	0
25	0	-125	0	339	309	283	0	0	285	278	302	0
26	0	-32	0	339	308	283	0	0	286	282	301	0
27	0	-83	0	339	307	280	0	0	286	279	302	0
28	0	-4	0	338	306	277	0	209	284	278	302	0
29	0	-4	0	337	304	279	0	293	285	282	302	0
30	0	-4	0	336		278	0	294	286	280	302	0
31	0		0	334		275		298		282	302	
Min	-8	-187	-204	-3	304	275	0	0	284	267	215	0
Max	19	0	354	349	331	304	274	298	296	284	303	303
Mean	-1	-25	60	172	318	290	48	35	291	278	293	71
ac-ft	-60	-1460	3688	10604	18309	17843	2845	2171	17312	17113	18043	4205



**Appendix A (27 of 38)
CHFC 930 Section, CO**

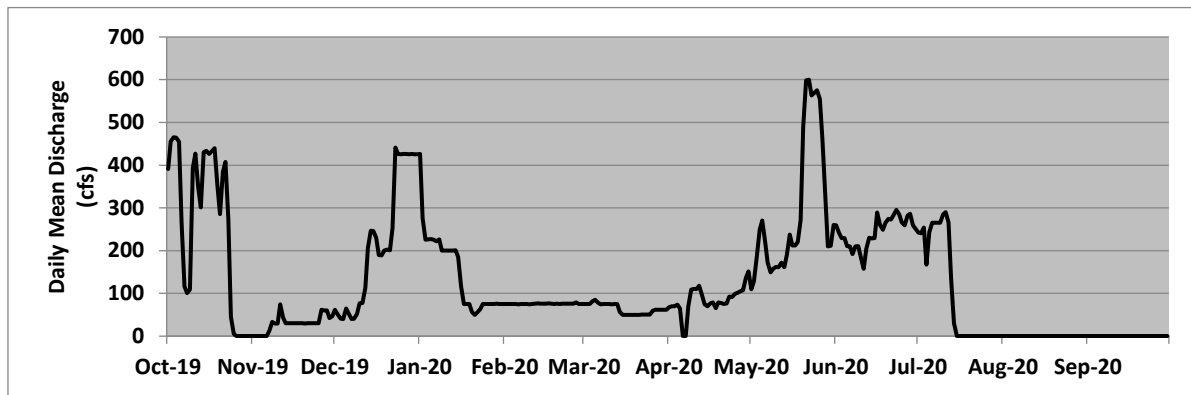
Location. --Lat 40°22'26", long 105°13'52", Larimer County, Hydrologic Unit 10190006, 8 miles southwest of Loveland, Colorado.

Gage. -- Water-stage recorder with satellite telemetry. Elevation of gage is 5470 feet from topographic map.

Remarks. -- Constructed between 1949 and 1953. The canal is 3.8 miles long and has a maximum capacity of 930 cfs. The canal is used to move C-BT water and diverted native water to the Big Thompson River and/or Horsetooth Reservoir. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Canal alga growth can create accuracy issues. The record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Flow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	391	0	62	426	75	75	68	109	260	242	0	0
2	456	1	51	275	75	75	70	128	241	240	0	0
3	465	1	41	226	75	75	70	186	229	254	0	0
4	465	1	40	227	75	82	74	249	229	167	0	0
5	455	1	65	227	75	85	65	271	210	244	0	0
6	264	1	52	226	75	78	0	221	210	265	0	0
7	116	13	40	222	75	75	0	172	192	265	0	0
8	101	33	40	226	75	75	70	150	210	266	0	0
9	109	30	52	200	75	75	109	157	211	266	0	0
10	393	29	77	200	75	75	110	162	185	285	0	0
11	427	75	77	200	75	75	110	161	158	290	0	0
12	347	44	113	200	76	75	118	172	204	266	0	0
13	302	30	206	200	76	75	96	162	230	135	0	0
14	430	30	247	201	76	56	74	190	229	30	0	0
15	434	30	246	186	76	50	70	238	229	0	0	0
16	426	30	230	117	76	50	77	212	290	0	0	0
17	432	30	190	75	76	50	79	212	260	0	0	0
18	440	30	189	75	76	50	66	221	249	0	0	0
19	351	30	200	75	76	50	79	272	265	0	0	0
20	286	30	202	57	76	50	77	490	274	0	0	0
21	384	31	201	50	75	50	75	598	273	0	0	0
22	408	30	254	56	76	50	76	600	284	0	0	0
23	274	30	441	63	76	50	93	564	295	0	0	0
24	45	30	426	75	76	50	92	569	285	0	0	0
25	5	30	425	75	76	50	99	576	266	0	0	0
26	0	61	426	75	76	59	101	555	260	0	0	0
27	0	61	426	75	79	62	105	461	282	0	0	0
28	0	60	425	75	75	62	108	328	286	0	0	0
29	0	42	427	76	75	61	137	210	260	0	0	0
30	0	47	426	75		62	152	211	251	0	0	0
31	0		426	75		62		260		0	0	
Min	0	0	40	50	75	50	0	109	158	0	0	0
Max	465	75	441	426	79	85	152	600	295	290	0	0
Mean	265	30	217	149	76	64	84	292	244	104	0	0
ac-ft	16276	1763	13337	9146	4351	3905	4997	17983	14495	6382	4	2



Appendix A (28 of 38)
Dille Tunnel near Drake, CO

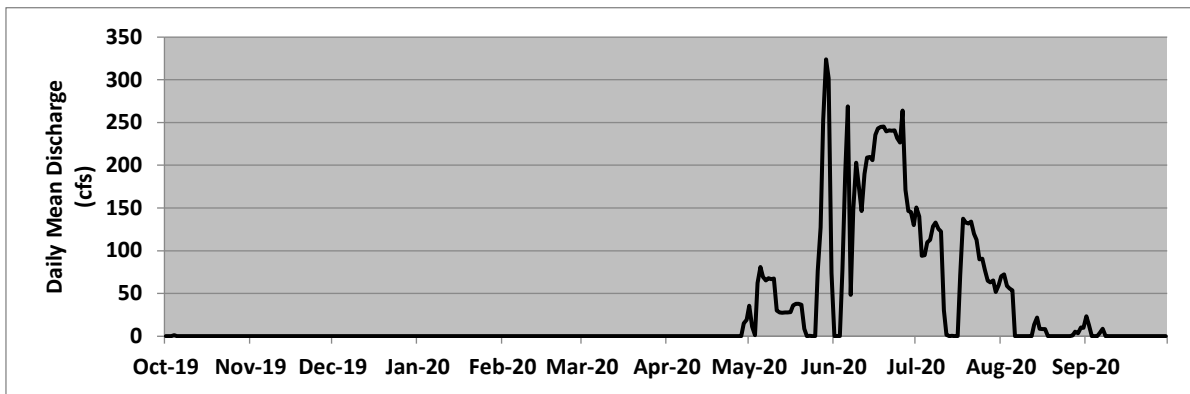
Location. --Lat 40°25'02", long 105°14'35", Larimer County, Hydrologic Unit 10190006, 11 miles west of Loveland, Colorado, on the Big Thompson River.

Gage. -- Water-stage recorder with satellite telemetry at Parshall Flume. Elevation of gage is 5520 feet (m.s.l.) from topographic map.

Remarks. -- Constructed in 1950. Maximum capacity is 600 cfs, but only 400 cfs can be measured accurately. Dille Tunnel diverts water from the Big Thompson River for power generation and water supply. The hydropower diversion operation, also known as the skim operation, diverts water from the Big Thompson River through Dille Tunnel for power generation at the Big Thompson Powerplant, where the diverted water is returned to the river. The skim daily value is determined based on the data from the gage. Record is complete and accurate.

Hydropower Diversion Flow (Skim), cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	0	0	0	0	0	0	0	36	0	150	70	23
2	0	0	0	0	0	0	0	11	0	140	72	13
3	0	0	0	0	0	0	0	1	0	94	59	0
4	1	0	0	0	0	0	0	62	76	95	56	0
5	0	0	0	0	0	0	0	81	192	110	54	0
6	0	0	0	0	0	0	0	69	269	113	0	4
7	0	0	0	0	0	0	0	65	48	129	0	9
8	0	0	0	0	0	0	0	68	148	133	0	0
9	0	0	0	0	0	0	0	67	203	125	0	0
10	0	0	0	0	0	0	0	67	173	123	0	0
11	0	0	0	0	0	0	0	30	146	31	0	0
12	0	0	0	0	0	0	0	28	190	2	0	0
13	0	0	0	0	0	0	0	28	209	0	13	0
14	0	0	0	0	0	0	0	28	210	1	22	0
15	0	0	0	0	0	0	0	28	206	0	9	0
16	0	0	0	0	0	0	0	28	236	0	8	0
17	0	0	0	0	0	0	0	36	243	72	8	0
18	0	0	0	0	0	0	0	38	245	138	0	0
19	0	0	0	0	0	0	0	38	245	133	0	0
20	0	0	0	0	0	0	0	37	240	132	0	0
21	0	0	0	0	0	0	0	9	241	134	0	0
22	0	0	0	0	0	0	0	0	240	120	0	0
23	0	0	0	0	0	0	0	1	241	113	0	0
24	0	0	0	0	0	0	0	0	232	90	0	0
25	0	0	0	0	0	0	0	0	226	91	0	0
26	0	0	0	0	0	0	0	77	264	77	0	0
27	0	0	0	0	0	0	0	127	171	65	1	0
28	0	0	0	0	0	0	0	253	146	63	5	0
29	0	0	0	0	0	0	15	324	145	65	3	0
30	0	0	0	0	0	0	19	302	130	52	10	0
31	0	0	0	0	0	0	0	74	60	10	0	0
Min	0	0	0	0	0	0	0	0	0	0	0	0
Max	1	0	0	0	0	0	19	324	269	150	72	23
Mean	0	0	0	0	0	0	1	65	177	85	13	2
ac-ft	2	0	0	0	0	0	68	3988	10545	5250	795	97



Appendix A (29 of 38)
Dille Tunnel near Drake, CO

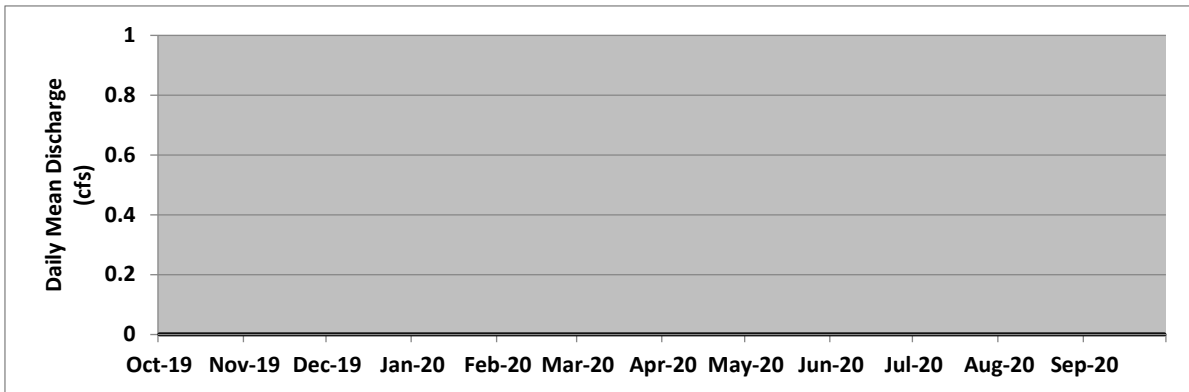
Location. --Lat 40°25'02", long 105°14'35", Larimer County, Hydrologic Unit 10190006, 11 miles west of Loveland, Colorado, on the Big Thompson River.

Gage. -- None.

Remarks. -- Constructed in 1950. Maximum capacity is 600 cfs. Dille Tunnel diverts water from the Big Thompson River for power generation and water supply. The right to divert native run-off is determined by the State of Colorado. The numbers presented in this table are based on gaged flows and available priority water. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Priority Diversion Flow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
2	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0
22	0	0	0	0	0	0	0	0	0	0	0	0
24	0	0	0	0	0	0	0	0	0	0	0	0
26	0	0	0	0	0	0	0	0	0	0	0	0
28	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0
Max	0	0	0	0	0	0	0	0	0	0	0	0
ac-ft	0	0	0	0	0	0	0	0	0	0	0	0



Appendix A (30 of 38)
Dille Tunnel near Drake, CO

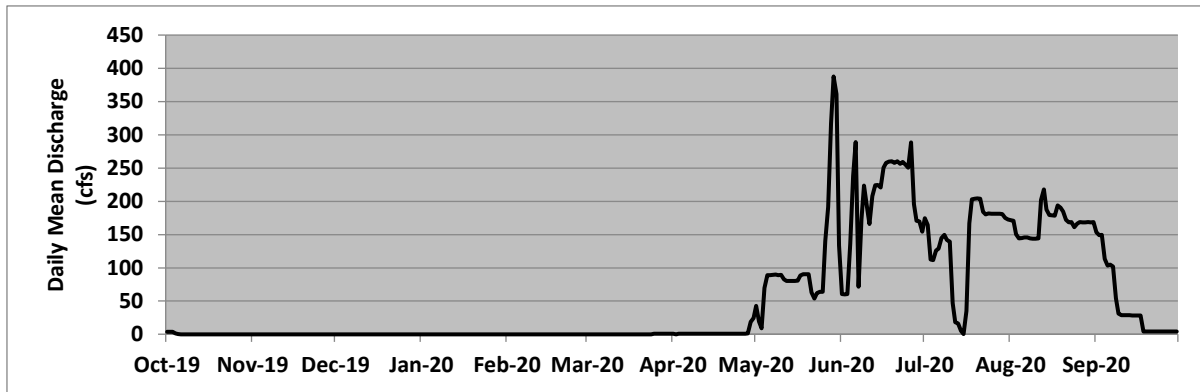
Location. --Lat 40°25'02", long 105°14'35", Larimer County, Hydrologic Unit 10190006, 11 miles west of Loveland, Colorado, on the Big Thompson River.

Gage. -- Water-stage recorder with satellite telemetry at Parshall Flume. Elevation of gage is 5520 feet from topographic map.

Remarks. — Constructed in 1950. The Dille Tunnel has a maximum capacity is 600 cfs, but only 400 cfs can be measured accurately. Dille Tunnel diverts water from the Big Thompson River for power generation and water supply. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes. The official record is published by the Colorado Division of Water Resources.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	4	0	0	0	0	0	1	43	61	175	172	153
2	4	0	0	0	0	0	0	19	60	164	171	149
3	4	0	0	0	0	0	1	9	61	113	150	149
4	1	0	0	0	0	0	1	70	136	111	144	114
5	0	0	0	0	0	0	1	89	238	126	145	103
6	0	0	0	0	0	0	1	89	289	129	146	105
7	0	0	0	0	0	0	1	90	72	145	146	102
8	0	0	0	0	0	0	1	90	173	150	144	54
9	0	0	0	0	0	0	1	89	224	142	144	31
10	0	0	0	0	0	0	1	89	192	139	144	29
11	0	0	0	0	0	0	1	83	166	47	144	29
12	0	0	0	0	0	0	1	80	208	18	202	29
13	0	0	0	0	0	0	1	80	224	16	218	29
14	0	0	0	0	0	0	1	80	225	5	188	28
15	0	0	0	0	0	0	1	80	221	0	179	28
16	0	0	0	0	0	0	1	81	251	35	179	29
17	0	0	0	0	0	0	1	88	258	167	178	29
18	0	0	0	0	0	0	1	91	260	203	194	4
19	0	0	0	0	0	0	1	91	260	204	191	4
20	0	0	0	0	0	0	1	90	258	205	185	4
21	0	0	0	0	0	0	1	63	260	204	172	4
22	0	0	0	0	0	0	1	54	256	184	168	4
23	0	0	0	0	0	0	1	62	259	180	169	4
24	0	0	0	0	0	0	1	64	255	182	161	4
25	0	0	0	0	0	1	1	64	251	181	166	4
26	0	0	0	0	0	1	1	140	288	181	169	4
27	0	0	0	0	0	1	1	191	196	181	168	4
28	0	0	0	0	0	1	1	317	171	181	168	4
29	0	0	0	0	0	1	19	388	170	181	169	4
30	0	0	0	0		1	24	362	154	175	168	4
31	0		0	0		1		134		173	169	
Min	0	0	0	0	0	0	0	9	60	0	144	4
Max	4	0	0	0	0	1	24	388	289	205	218	153
Mean	0	0	0	0	0	0	2	108	203	139	168	41
ac-ft	28	0	1	1	0	12	128	6662	12092	8527	10336	2464



Appendix A (31 of 38)
Big Thompson Power Plant, CO

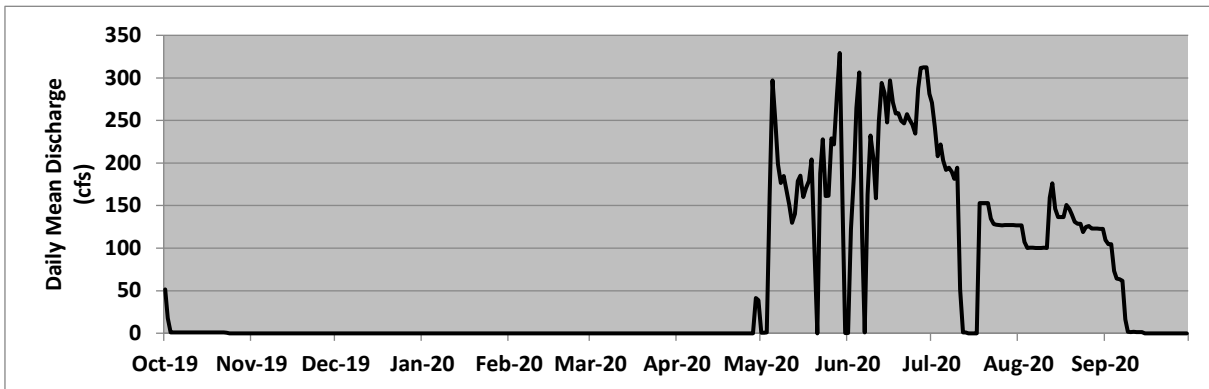
Location. --Lat 40°25'16", long 105°13'26", Larimer County, Hydrologic Unit 10190006, 9 miles west of Loveland, Colorado, on the Big Thompson River.

Gage. -- Flow meter with satellite telemetry. Elevation of gage is 5280 feet (m.s.l.) from topographic map.

Remarks. -- Initial operation in 1959. Maximum capacity is 400 cfs. Power plant returns hydropower diversions to the Big Thompson River downstream of the Big Thompson River canyon mouth. The plant is also used to deliver C-BT project and Windy Gap Project water to the Big Thompson River. Depending on weather, the plant is generally winterized from November through April, each year. This record contains data recorded between 01-Oct-2019 and 30-Sep-2020. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	52	0	0	0	0	0	0	1	0	271	127	109
2	18	0	0	0	0	0	0	1	122	242	127	105
3	1	0	0	0	0	0	0	1	183	208	107	105
4	1	0	0	0	0	0	0	161	264	222	100	73
5	1	0	0	0	0	0	0	297	307	203	100	64
6	1	0	0	0	0	0	0	249	113	192	100	64
7	1	0	0	0	0	0	0	199	1	195	100	62
8	1	0	0	0	0	0	0	176	163	190	100	17
9	1	0	0	0	0	0	0	185	232	181	100	2
10	1	0	0	0	0	0	0	167	206	195	100	1
11	1	0	0	0	0	0	0	151	158	51	100	2
12	1	0	0	0	0	0	0	130	248	1	159	2
13	1	0	0	0	0	0	0	140	294	1	176	1
14	1	0	0	0	0	0	0	179	282	0	146	1
15	1	0	0	0	0	0	0	185	248	0	137	0
16	1	0	0	0	0	0	0	160	297	0	136	0
17	1	0	0	0	0	0	0	171	271	0	136	0
18	1	0	0	0	0	0	0	179	258	153	151	0
19	1	0	0	0	0	0	0	204	259	153	146	0
20	1	0	0	0	0	0	0	99	249	153	140	0
21	1	0	0	0	0	0	0	0	247	153	131	0
22	1	0	0	0	0	0	0	188	257	134	129	0
23	1	0	0	0	0	0	0	228	251	128	129	0
24	0	0	0	0	0	0	0	161	245	127	119	0
25	0	0	0	0	0	0	0	162	234	127	125	0
26	0	0	0	0	0	0	0	229	288	127	126	0
27	0	0	0	0	0	0	0	222	312	127	123	0
28	0	0	0	0	0	0	0	279	312	127	123	0
29	0	0	0	0	0	0	41	329	312	127	123	0
30	0	0	0	0	0	0	39	146	282	127	123	0
31	0	0	0	0	0	0	0	0	0	127	123	0
Min	0	0	0	0	0	0	0	0	0	0	100	0
Max	52	0	0	0	0	0	41	329	312	271	176	109
Mean	3	0	0	0	0	0	3	161	230	130	125	20
ac-ft	181	0	0	0	0	0	159	9873	13679	8018	7664	1204



**Appendix A (32 of 38)
CHFC Wasteway, CO**

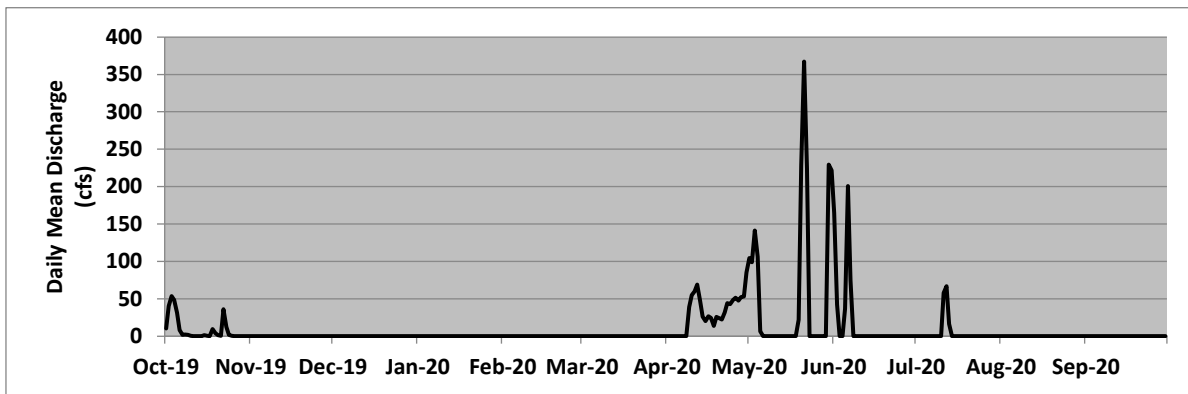
Location. --Lat 40°25'13", long 105°13'28", Larimer County, Hydrologic Unit 10190006, 9 miles west of Loveland, Colorado, on the Big Thompson River.

Gage. -- Water-stage recorder with satellite telemetry at 15 foot Parshall Flume. Elevation of gage is 5465 feet (m.s.l.) from Designer's Operating Criteria.

Remarks. -- Constructed between 1949 and 1953. Maximum capacity is 400 cfs. The structure is used to return diverted water and to deliver C-BT and Windy Gap Project water to the Big Thompson River. Depending on weather, the facility is generally winterized between November and April. Recorder was operated during October 2019 and also between April 2020 and September 2020. Record is complete and reliable. These data are provisional operations data and are subject to further revision and change. The official record is published by the Colorado Division of Water Resources.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	10	0	0	0	0	0	0	104	165	0	0	0
2	40	0	0	0	0	0	0	99	42	0	0	0
3	54	0	0	0	0	0	0	141	0	0	0	0
4	49	0	0	0	0	0	0	106	0	0	0	0
5	31	0	0	0	0	0	0	6	37	0	0	0
6	8	0	0	0	0	0	0	0	201	0	0	0
7	2	0	0	0	0	0	0	0	74	0	0	0
8	2	0	0	0	0	0	0	0	0	0	0	0
9	2	0	0	0	0	0	39	0	0	0	0	0
10	0	0	0	0	0	0	55	0	0	0	0	0
11	0	0	0	0	0	0	60	0	0	58	0	0
12	0	0	0	0	0	0	69	0	0	67	0	0
13	0	0	0	0	0	0	47	0	0	16	0	0
14	0	0	0	0	0	0	26	0	0	0	0	0
15	2	0	0	0	0	0	20	0	0	0	0	0
16	1	0	0	0	0	0	27	0	0	0	0	0
17	0	0	0	0	0	0	24	0	0	0	0	0
18	10	0	0	0	0	0	14	0	0	0	0	0
19	4	0	0	0	0	0	26	22	0	0	0	0
20	1	0	0	0	0	0	24	228	0	0	0	0
21	0	0	0	0	0	0	22	367	0	0	0	0
22	36	0	0	0	0	0	32	224	0	0	0	0
23	12	0	0	0	0	0	44	0	0	0	0	0
24	2	0	0	0	0	0	43	0	0	0	0	0
25	1	0	0	0	0	0	48	0	0	0	0	0
26	0	0	0	0	0	0	52	0	0	0	0	0
27	0	0	0	0	0	0	48	0	0	0	0	0
28	0	0	0	0	0	0	52	0	0	0	0	0
29	0	0	0	0	0	0	53	0	0	0	0	0
30	0	0	0	0	0	0	85	229	0	0	0	0
31	0	0	0	0	0	0	0	222	0	0	0	0
Min	0	0	0	0	0	0	0	0	0	0	0	0
Max	54	0	0	0	0	0	85	367	201	67	0	0
Mean	9	0	0	0	0	0	30	56	17	5	0	0
ac-ft	530	0	0	0	0	0	1807	3469	1030	282	6	1



**Appendix A (33 of 38)
CHFC 550 Section, CO**

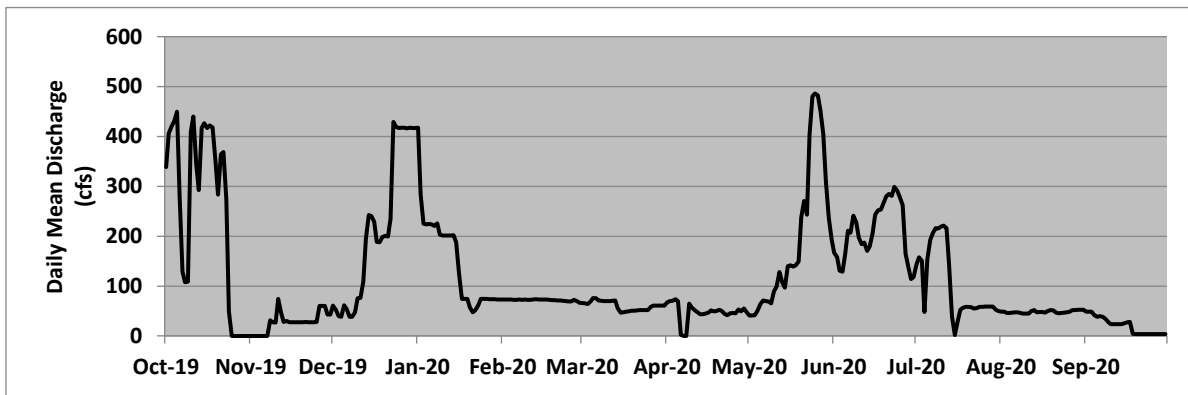
Location. --Lat 40°25'25", long 105°13'34", Larimer County, Hydrologic Unit 10190006, 9 miles west of Loveland, Colorado.

Gage. -- Water-stage recorder with satellite telemetry. Elevation of gage is 5460 feet (m.s.l.) from topographic map.

Remarks. -- Constructed between 1949 and 1953. The canal is 9.4 miles long and has a maximum design capacity of 550 cfs. The canal is used to move C-BT water and Big Thompson River priority water to Horsetooth Reservoir. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Algae growth in canal can create accuracy issues. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	339	0	61	418	73	66	67	41	167	143	49	49
2	406	0	52	285	73	65	70	41	159	158	49	48
3	420	0	40	225	73	64	70	41	131	151	46	49
4	430	0	38	224	73	69	73	51	129	48	46	42
5	450	0	61	225	73	77	70	63	162	153	47	39
6	282	0	54	224	73	75	2	71	211	192	48	40
7	129	0	38	221	73	71	0	70	207	206	47	38
8	108	31	38	226	73	70	0	69	241	216	46	35
9	109	27	48	203	73	70	65	66	228	216	45	28
10	410	27	76	201	72	70	57	90	197	219	45	24
11	440	75	76	201	72	70	52	99	184	222	45	24
12	344	47	109	202	73	70	48	128	187	216	50	24
13	293	28	195	202	74	71	44	107	170	142	52	24
14	418	30	242	202	73	55	43	97	180	39	47	24
15	427	28	241	188	73	47	45	140	206	2	48	26
16	417	28	229	125	73	47	47	142	243	27	48	28
17	422	27	189	74	73	49	51	139	252	53	47	28
18	418	28	188	74	73	50	49	142	254	57	50	4
19	352	28	198	74	72	51	50	149	266	58	52	4
20	283	28	201	57	72	51	52	238	281	58	51	4
21	365	28	200	47	71	51	50	271	285	58	47	4
22	369	28	235	52	71	52	44	243	281	55	45	4
23	273	28	429	62	71	52	42	403	299	56	46	4
24	49	28	419	74	70	52	45	480	291	58	47	4
25	0	28	417	74	69	52	46	486	279	59	47	4
26	0	60	418	74	69	59	46	482	262	59	49	4
27	0	60	418	74	72	61	53	452	165	59	52	4
28	0	60	416	74	70	61	49	405	140	59	52	4
29	0	43	418	74	67	61	55	311	114	59	52	4
30	0	43	417	73		61	48	238	118	52	52	4
31	0		417	73		61		194		50	52	
Min	0	0	38	47	67	47	0	41	114	2	45	4
Max	450	75	429	418	74	77	73	486	299	222	52	49
Mean	257	28	212	148	72	61	48	192	210	103	48	21
ac-ft	15772	1661	13050	9126	4140	3730	2847	11804	12475	6348	2974	1231



Appendix A (34 of 38)
Horsetooth Reservoir near Fort Collins, CO

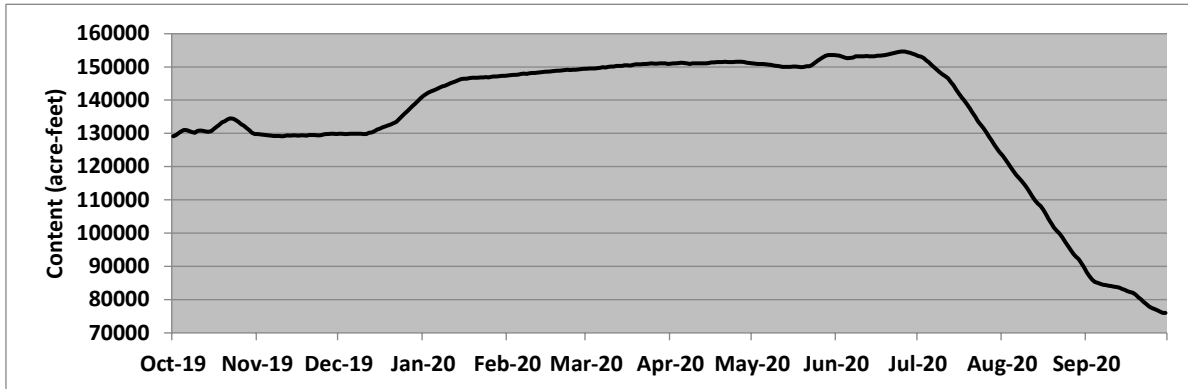
Location. --Lat 40°36'00", long 105°10'05", Larimer County, Hydrologic Unit 10190007, at Horsetooth Dam outlet works, 4.8 miles west of Fort Collins, Colorado.

Gage. — Water level recorder with satellite telemetry. Elevation of gage is 5300 feet (m.s.l.) from topographic map.

Remarks. — Reservoir is formed by four earth-fill dams. Construction completed in 1949. Impoundment began in 1951. Horsetooth Reservoir is one of two terminal reservoirs for C-BT diversions. Trans-mountain diversions are stored at Horsetooth Reservoir before final delivery. Maximum capacity is 156,735 AF at elevation 5430.00 ft, with 142,038 AF of active storage. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Record is complete and reliable. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	129113	129792	129884	141250	147446	149426	150981	151041	153450	153308	123368	88257
2	129516	129682	129884	141847	147485	149485	151041	150981	153328	153047	122260	86931
3	130104	129571	129810	142272	147624	149545	151081	150901	153107	152704	121033	85959
4	130694	129461	129792	142659	147644	149545	151141	150861	152785	151961	119882	85348
5	131026	129387	129902	143008	147742	149664	151220	150881	152604	151340	118649	85007
6	130989	129295	129921	143395	147841	149764	151141	150781	152704	150521	117581	84725
7	130657	129240	129866	143726	147940	149864	151021	150681	152785	149804	116604	84414
8	130325	129204	129866	144115	147900	149844	150901	150581	153167	149089	115752	84355
9	130159	129185	129847	144367	148078	150023	151021	150421	153147	148335	114680	84192
10	130768	129076	129829	144719	148157	150103	151061	150281	153167	147742	113612	84074
11	130879	129240	129755	145051	148216	150142	151061	150182	153187	147229	112276	83911
12	130749	129406	130159	145343	148275	150281	151101	150043	153248	146520	110981	83764
13	130528	129277	130251	145676	148374	150261	151081	149984	153187	145500	109814	83544
14	130473	129369	130657	146089	148434	150261	151061	150043	153187	144445	108921	83219
15	130675	129406	131100	146343	148573	150441	151200	150023	153208	143202	108165	82882
16	131285	129314	131470	146422	148553	150461	151340	150103	153349	141963	107030	82546
17	132043	129424	131803	146461	148672	150401	151380	150083	153409	140865	105651	82239
18	132620	129442	132080	146658	148712	150621	151460	150043	153470	139848	104215	82005
19	133309	129314	132397	146756	148811	150741	151480	149944	153591	138721	102822	81467
20	133645	129461	132713	146717	148850	150801	151480	150043	153793	137447	101634	80698
21	134243	129479	133048	146756	148930	150801	151540	150222	153955	136235	100613	79991
22	134525	129479	133477	146796	149029	150861	151480	150241	154136	135012	99871	79286
23	134450	129424	134224	146796	149109	150881	151460	150621	154338	133682	98732	78556
24	134056	129442	135049	146894	149069	150961	151480	151240	154561	132564	97472	77872
25	133440	129626	135840	146875	149129	151021	151540	151821	154641	131599	96236	77461
26	132787	129810	136651	147032	149168	150961	151540	152423	154641	130399	95008	77107
27	132248	129829	137428	147091	149247	151001	151500	152906	154480	129076	93834	76725
28	131599	129847	138245	147150	149366	151021	151440	153349	154237	127834	92946	76330
29	130952	129884	138968	147210	149386	151061	151300	153551	153955	126595	92203	75951
30	130214	129774	139752	147288		151081	151200	153551	153631	125329	91032	75951
31	129792		140576	147308		150881		153571		124283	89639	
Min	129113	129076	129755	141250	147446	149426	150901	149944	152604	124283	89639	75951
Max	134525	129884	140576	147308	149386	151081	151540	153571	154641	153308	123368	88257
Mean	131544	129471	132718	145486	148474	150394	151258	151013	153548	140845	106533	81826
EOM	129792	129774	140576	147308	149386	150881	151200	153571	153631	124283	89639	75951



Appendix A (35 of 38)
Charles Hansen Supply Canal below Horsetooth Reservoir, CO

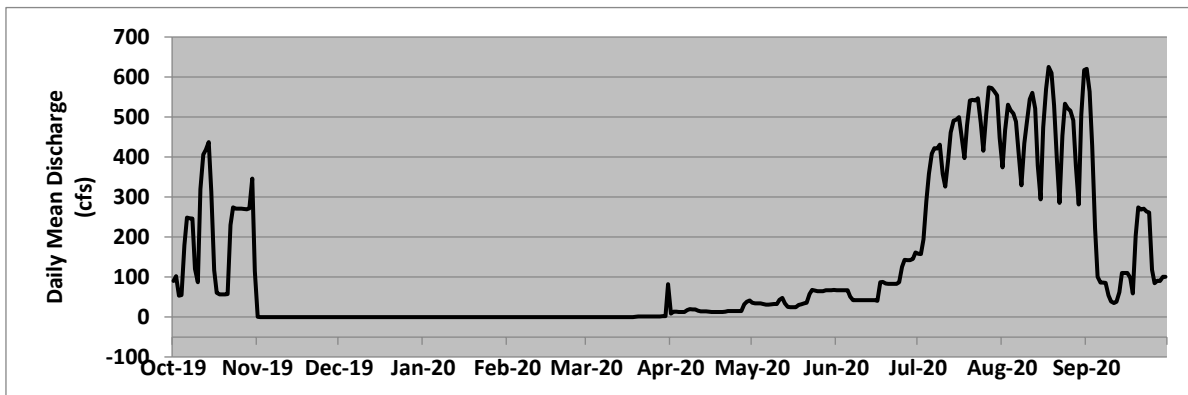
Location. --Lat 40°36'01", long 105°10'18", Larimer County, Hydrologic Unit 10190007, 4 miles west of Fort Collins, Colorado.

Gage. -- Two flow meters with satellite telemetry measure the flow for each conduit leading toward the hollow jet valves.

Remarks. -- Constructed between 1950 and 1952. The canal is 5.1 miles long and has a maximum capacity of 1500 cfs. The canal is used to deliver C-BT and Windy Gap Project water stored at Horsetooth Reservoir. Recorder was operated from 01-Oct-2019 to 30-Sep-2020 by the Northern Water and the Colorado Division of Water Resources. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Discharge, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	90	1	0	0	0	0	9	36	67	158	374	620
2	102	0	0	0	0	0	13	34	67	157	466	563
3	54	0	0	0	0	0	13	34	67	194	530	429
4	55	0	0	0	0	0	13	34	67	290	517	223
5	180	0	0	0	0	0	13	32	67	358	508	101
6	249	0	0	0	0	0	13	31	51	408	488	86
7	247	0	0	0	0	0	18	31	42	422	403	86
8	246	0	0	0	0	0	19	32	42	421	329	86
9	121	0	0	0	0	0	19	32	42	431	434	54
10	87	0	0	0	0	0	19	32	42	358	487	39
11	319	0	0	0	0	0	16	43	42	326	544	35
12	406	0	0	0	0	0	14	48	42	393	560	38
13	418	0	0	0	0	0	14	34	42	461	521	63
14	437	0	0	0	0	0	14	25	42	491	379	110
15	314	0	0	0	0	0	13	25	42	493	294	110
16	118	0	0	0	0	0	13	25	41	500	474	110
17	61	0	0	0	0	0	13	25	87	451	570	98
18	57	0	0	0	0	0	12	30	88	397	625	59
19	57	0	0	0	0	1	12	32	84	478	610	203
20	57	0	0	0	0	2	12	34	83	541	529	274
21	57	0	0	0	0	2	13	36	83	543	390	268
22	230	0	0	0	0	2	15	58	83	541	285	271
23	274	0	0	0	0	2	15	68	83	546	453	264
24	271	0	0	0	0	2	15	66	87	485	533	261
25	271	0	0	0	0	2	15	65	125	415	521	118
26	271	0	0	0	0	2	15	65	143	506	516	85
27	270	0	0	0	0	2	15	65	142	574	491	91
28	269	0	0	0	0	2	32	67	142	573	379	90
29	272	0	0	0	0	2	38	67	145	564	281	101
30	346	0	0	0		2	41	67	161	554	505	101
31	115		0	0		82		67		447	617	
Min	54	0	0	0	0	0	9	25	41	157	281	35
Max	437	1	0	0	0	82	41	68	161	574	625	620
Mean	204	0	0	0	0	3	17	43	78	435	471	168
ac-ft	12533	1	0	0	0	204	988	2657	4653	26731	28989	9989



Appendix A (36 of 38)
Carter Lake near Berthoud, Colorado, CO

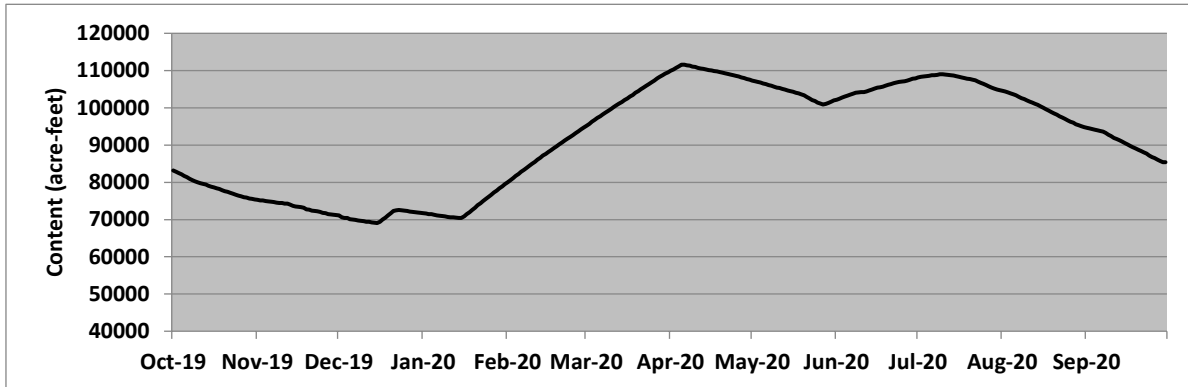
Location. --Lat 40°19' 28" , long 105°12' 41" , Larimer County, Hydrologic Unit 10190006, on Dam #1, 7 miles northwest of Berthoud, Colorado, and 10 miles west of Loveland, Colorado.

Gage. --Water level recorder with satellite telemetry. Elevation of gage is 5770 feet (m.s.l.) from topographic map.

Remarks. --Reservoir is formed by three earth-fill dams. Construction completed in 1952. Carter Lake Reservoir is one of two terminal reservoirs for C-BT water diversions. Trans-mountain water diversions are stored at Carter Lake Reservoir before final delivery. Maximum capacity is 112,200 AF at elevation 5759.00 feet, with 108,900 AF of active capacity. Recorder was operated from 01-Oct-2019 to 30-Sep-2020. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Storage, AF, 2400-hour Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	83189	75326	71097	71676	80052	95175	109938	107281	102168	108172	104536	94624
2	82827	75176	70597	71607	80543	95684	110335	107124	102467	108330	104357	94473
3	82497	75126	70461	71499	81118	96313	110756	106988	102745	108421	104134	94290
4	82126	75005	70393	71499	81714	96801	111178	106764	102999	108511	103867	94128
5	81745	74906	70070	71283	82250	97281	111577	106562	103267	108600	103588	93977
6	81374	74826	69964	71146	82797	97750	111577	106382	103544	108725	103355	93783
7	80953	74696	69915	71038	83355	98219	111452	106102	103834	108805	102933	93633
8	80625	74566	69720	70960	83883	98744	111338	105911	104056	108861	102634	93289
9	80287	74457	69672	70842	84444	99193	111110	105676	104145	109008	102312	92786
10	80041	74417	69565	70715	84984	99709	110962	105463	104212	108986	101991	92379
11	79796	74297	69428	70617	85505	100214	110745	105318	104223	108952	101692	91940
12	79592	74248	69380	70568	86058	100710	110585	105116	104391	108839	101394	91631
13	79377	74048	69273	70490	86591	101162	110449	104882	104625	108725	101085	91343
14	79112	73651	69127	70442	87178	101615	110267	104680	104882	108679	100787	90959
15	78858	73482	69021	70422	87651	102102	110120	104502	105172	108522	100391	90577
16	78634	73433	69370	70823	88124	102534	110040	104313	105396	108319	100050	90174
17	78411	73354	69964	71440	88619	103021	109903	104100	105508	108172	99643	89761
18	78188	73176	70549	71980	89147	103500	109756	103900	105643	107980	99237	89411
19	77914	72730	71146	72601	89676	104033	109632	103633	105899	107822	98843	89094
20	77661	72681	71715	73195	90206	104525	109461	103355	106169	107720	98503	88735
21	77428	72404	72276	73820	90737	105004	109302	102955	106382	107574	98120	88408
22	77165	72306	72512	74397	91237	105441	109144	102534	106629	107360	97761	88060
23	76894	72197	72542	74975	91738	105933	108940	102124	106786	107079	97401	87714
24	76702	72098	72463	75556	92197	106371	108770	101803	106932	106730	97041	87168
25	76440	71765	72385	76108	92689	106853	108612	101427	107045	106415	96649	86790
26	76259	71735	72286	76682	93225	107270	108454	101162	107180	106102	96280	86477
27	76007	71460	72178	77246	93708	107878	108183	100897	107349	105776	95987	86121
28	75867	71381	72059	77793	94204	108319	107980	101041	107563	105463	95618	85766
29	75656	71303	71980	78360	94689	108782	107754	101360	107788	105127	95337	85432
30	75536	71166	71902	78930		109223	107563	101681	107923	104871	95067	85432
31	75436		71804	79459		109495		102002		104748	94807	
Min	75436	71166	69021	70422	80052	95175	107563	100897	102168	104748	94807	85432
Max	83189	75326	72542	79459	94689	109495	111577	107281	107923	109008	104536	94624
Mean	78793	73381	70800	73167	87528	102544	109863	104098	105231	107658	99852	90278
EOM	75436	71166	71804	79459	94689	109495	107563	102002	107923	104748	94807	85432



Appendix A (37 of 38)
Saint Vrain Canal below Carter Reservoir, CO

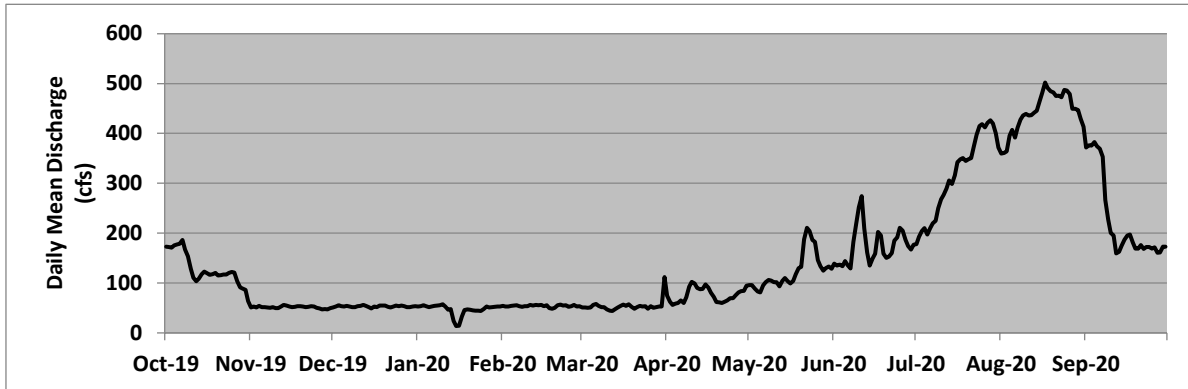
Location. --Lat 40°19'27", long 105°12'35", Larimer County, Hydrologic Unit 10190006, downstream from Carter Reservoir Dam #1, 7 miles northwest of Berthoud, Colorado, and 10 miles west of Loveland, Colorado.

Gage. -- Water-stage recorder with telephone telemetry. Data provided by the Northern Water. Elevation of gage is 5,590 feet from topographic map.

Remarks. -- Constructed between 1952 and 1954. The canal is 9.8 miles long and has a maximum capacity of 625 cfs. The canal is used to deliver C-BT and Windy Gap Project water, as well as diverted native water from conveyance contract holders. Record was provided by the Northern Water for the period 01-Oct-2019 to 30-Sep-2020. Record is complete and fair. This record contains operational data which could be subject to future revisions and changes.

Flow, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	173	51	51	53	54	51	75	96	139	178	360	372
2	172	52	53	54	53	51	63	96	135	192	360	376
3	171	51	55	55	53	50	56	89	137	204	364	376
4	175	54	54	53	54	51	58	83	133	210	396	382
5	177	51	53	52	54	56	60	81	144	197	407	374
6	179	52	54	53	55	58	65	95	135	210	392	369
7	186	51	53	54	53	54	60	101	129	220	412	353
8	167	50	51	54	52	52	72	106	182	225	428	266
9	153	51	51	55	53	51	92	105	220	250	436	227
10	128	49	53	57	54	47	102	102	252	268	439	200
11	110	49	54	53	56	44	99	101	274	276	436	195
12	104	53	56	46	55	44	90	93	210	289	436	159
13	108	56	54	48	56	47	87	104	161	305	442	162
14	118	54	51	24	55	51	88	110	135	299	445	175
15	122	53	49	13	56	54	97	103	149	316	464	187
16	120	51	53	14	53	56	91	99	159	342	482	195
17	116	52	51	33	55	54	81	104	202	348	502	197
18	118	54	54	46	49	57	72	118	195	350	491	181
19	120	53	55	47	48	52	62	130	159	345	484	169
20	115	53	54	46	50	48	61	132	150	348	482	169
21	116	51	52	45	55	51	60	188	153	350	475	176
22	117	52	51	44	56	54	62	211	160	373	475	168
23	117	53	52	45	55	53	65	204	185	397	472	172
24	120	53	54	44	55	53	69	187	191	414	487	172
25	122	50	54	48	52	49	69	183	211	419	486	169
26	121	49	55	53	53	53	75	146	205	412	479	172
27	104	47	53	51	56	50	81	134	186	421	450	160
28	91	47	52	52	52	52	84	125	174	426	449	161
29	89	47	51	52	54	53	84	130	167	420	447	172
30	86	49	53	53		53	94	133	177	400	429	172
31	64		53	53		112		128		371	413	
Min	64	47	49	13	48	44	56	81	129	178	360	159
Max	186	56	56	57	56	112	102	211	274	426	502	382
Mean	128	51	53	47	54	54	76	123	174	315	443	226
ac-ft	7891	3056	3254	2876	3095	3294	4509	7566	10325	19390	27211	13452



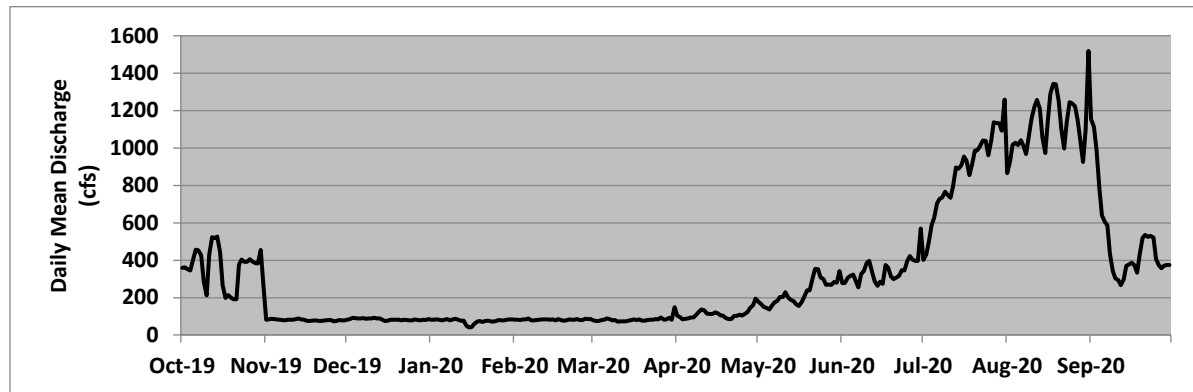
Appendix A (38 of 38)
Colorado-Big Thompson Project, CO

Location. -- Larimer , Grand, Summit, Boulder, Weld counties in Colorado, hydrologic units 14010001, 14010002 and 10190006, 10190007, on the Colorado River, Big Thompson River and Cache La Poudre River basins.

Remarks.— This table presents a summation of all the daily deliveries of C-BT and Windy Gap Project water through the Saint Vrain Canal, the Charles Hansen Supply Canal, the Dixon Canal, the Charles Hansen Feeder Canal and small deliveries upstream from Flatiron Reservoir. These values include metered water. The water diverted is used for agricultural, municipal and industrial purposes, to generate hydroelectric power and to provide recreation for the public. This record contains operational data which could be subject to future revisions and changes. Period of record is between 01-Oct-2019 and 30-Sep-2020. Data were provided by the Northern Water. Record is complete and reliable.

Total Daily Water Deliveries, cfs, Daily Mean Values

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	359	82	82	81	81	79	105	179	277	402	867	1156
2	364	84	86	81	82	76	96	165	279	429	929	1114
3	353	87	92	84	80	76	84	151	306	496	1018	992
4	346	86	90	82	84	81	87	145	316	588	1028	785
5	400	83	90	78	84	82	89	137	323	627	1017	639
6	456	82	90	81	89	89	93	158	289	705	1041	605
7	453	80	90	85	79	85	94	174	255	729	1011	587
8	426	79	87	79	79	79	108	183	326	736	968	435
9	285	83	88	83	81	80	126	203	343	766	1067	343
10	211	82	89	88	82	72	138	204	384	749	1157	303
11	430	82	92	83	85	74	131	229	397	733	1221	293
12	523	86	89	78	83	73	115	201	337	798	1258	267
13	519	89	89	77	85	73	112	188	287	897	1211	297
14	527	84	81	51	82	76	113	181	263	890	1058	370
15	443	82	76	41	84	80	122	164	286	909	974	377
16	264	77	78	43	79	84	116	156	274	955	1148	387
17	199	76	83	60	85	81	105	176	374	932	1291	375
18	214	77	83	71	80	84	103	206	362	855	1343	334
19	200	78	82	75	76	77	90	239	313	910	1341	430
20	192	76	82	71	78	77	86	240	299	986	1251	520
21	192	75	79	75	84	80	85	303	308	988	1104	535
22	377	77	82	77	82	83	103	354	316	1013	998	525
23	403	78	80	73	82	82	103	352	348	1040	1138	531
24	392	80	79	72	85	85	109	308	346	1039	1246	522
25	392	81	78	75	80	84	105	300	397	962	1239	406
26	406	73	84	80	81	93	112	268	423	1039	1223	373
27	393	74	81	79	87	81	124	271	403	1138	1151	357
28	385	80	79	78	85	83	145	269	397	1134	1048	371
29	383	78	82	82	86	91	159	284	397	1132	926	375
30	455	78	80	83		82	196	281	570	1093	1096	375
31	274		85	83		148		343		1260	1519	
Min	192	73	76	41	76	72	84	137	255	402	867	267
Max	527	89	92	88	89	148	196	354	570	1260	1519	1156
Mean	362	80	84	75	82	83	112	226	340	869	1125	499
ac-ft	22245	4777	5167	4618	4737	5098	6647	13907	20225	53423	69198	29716



Appendix B Operations Tables

B-1: Western Division Pick-Sloan Missouri Basin Program Pertinent Reservoir Data

Table B-1: Western Division Pick-Sloan Missouri Basin Program Pertinent Reservoir Data (units of Acre-Feet)

Reservoir	Dead Storage ¹	Active Storage ²	Total Storage	Normal Minimum Storage	Limitation on normal minimum storage
Green Mountain	6,860	146,779	153,639	47,684	Minimum elevation for rated power output
Willow Creek	1,486	9,779	10,553	6,675	Elevation of pump canal head-works
Lake Granby	74,190	465,568	539,758	74,190	Lowest outlet elevation
Shadow Mountain	506	16,848	17,354	16,026	Minimum permissible Grand Lake elevation; 8,366 ft.
Grand Lake	NA ³	511	1,015	504	Legislation limits fluctuation
Marys Lake	42	885	927	308	Minimum elevation for power generation
Lake Estes	409	2,659	3,068	740	Minimum elevation to release 550 cfs
Pinewood Lake	416	1,765	2,181	613	Minimum elevation for power generation
Flatiron	125	635	760	324	Minimum elevation to release 550 cfs
Carter Lake	3,306	108,924	112,230	306	Lowest outlet elevation
Horsetooth	7,003	149,732	156,735	17,600	Elevation on highest delivery works
Total	94,343	90	998,220	167,970	

1 Storage capacity below elevation of lowest outlet

2 Total storage minus dead storage

3 Not determined

B-2: C-BT Monthly Summary of Blue River Operations in Water Year 2020

Table B-2: C-BT Monthly Summary of Blue River Operations in Water Year 2020 (units: Acre-Feet)

	INITIAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
UNDEPLETED RUNOFF ABOVE GREEN MNT RESV		14,738	12,157	9,808	9,567	9,337	10,935	18,048	81,245	105,795	45,231	20,088	12,453	349,403
UNDEPLETED RUNOFF ABOVE DILLON RESV.		7,783	6,924	5,552	5,902	5,835	6,001	9,344	49,181	65,021	25,913	11,128	6,549	205,131
PERCENT OF TOTAL UNDEPLETED RUNOFF ABV DILLON RESV.		0.528	0.570	0.566	0.617	0.625	0.549	0.518	0.605	0.615	0.573	0.554	0.526	0.587
DEPLETIONS BY 1929 COLORADO SPRINGS RIGHT		0	0	0	0	0	0	7	149	422	162	23	0	763
DEPLETIONS BY 1948 COLORADO SPRINGS RIGHT		1,785	280	0	0	0	0	28	1,629	4,096	2,405	2	0	10,226
INFLOW TO DILLON RESV.		7,672	7,059	5,552	5,902	5,835	6,001	9,308	47,003	59,036	23,123	11,103	6,549	194,143
DILLON RESV. STORAGE (1,000 acre-feet)	244.9	236.1	230.8	230.2	231.1	231.5	231.3	234.7	248.9	259.7	250.8	243.9	243.7	---
ROBERTS TUNNEL DIVERSIONS		8,940	5,355	111	38	0	0	0	2,256	15,872	22,877	10,411	384	66,245
DILLON RESV. OUTFLOW TO THE RIVER		6,386	6,094	6,055	5,073	5,395	6,147	5,942	29,917	31,539	8,059	6,295	5,026	121,929
TOTAL DEPLETIONS BY DENVER		1,286	965	-503	829	440	-147	3,366	17,085	27,498	15,064	4,808	1,523	72,213
RUNOFF BETWEEN DILLON RESV. & GREEN MTN RESV.		6,953	5,232	4,242	3,738	3,507	4,935	8,705	32,432	40,510	19,204	8,959	5,887	144,305
ACTUAL INFLOW TO GREEN MTN RESERVOIR		13,341	11,328	10,312	8,738	8,897	11,082	14,647	61,981	72,313	27,377	15,255	10,931	266,200
GREEN MOUNTAIN END OF MONTH STORAGE (1,000 acre-feet)	117.8	83.1	77.3	74.3	72.0	70.3	69.3	67.1	107.2	152.7	151.5	118.6	95.0	---
TOTAL GREEN MOUNTAIN OUTFLOW		47,650	16,987	13,350	11,064	10,538	12,105	16,747	21,361	26,039	27,462	47,188	33,938	284,429

B-3: Pick-Sloan Missouri Basin Program 2020 Summary of Actual Operations

Table B-3: Pick-Sloan Missouri Basin Program 2020 Summary of Actual Operations (Units: water in 1,000 Acre-feet. Energy in Giga-Watt Hours)

	INITIAL OR TOTAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
GREEN MOUNTAIN RESERVOIR													
Depleted Watershed Inflow	266.2	13.3	11.3	10.3	8.7	8.9	11.1	14.6	62	72.3	27.4	15.3	10.9
Turbine Release	284.2	47.7	16.8	13.3	11.1	10.5	12.1	16.7	21.4	26	27.5	47.2	33.9
Bypass	0.2	0	0.1	0	0	0	0	0	0	0	0	0	0
Spill	0	0	0	0	0	0	0	0	0	0	0	0	0
End of Month Content	117.8	83.1	77.3	74.3	72	70.3	69.3	67.1	107.2	152.7	151.5	118.6	95
Kwh/AF		182.6	166.3	150.3	135.6	132.9	132.2	161.2	173.2	184.3	196.6	190.7	182.7
Generation	49.8	8.7	2.8	2	1.5	1.4	1.6	2.7	3.7	4.8	5.4	9	6.2
WILLOW CREEK RESERVOIR													
Inflow	45.8	1	1.1	1	0.9	0.7	1.1	3.1	23.2	10.2	1.9	0.9	0.7
Release to River	11.2	0.5	0.4	0.4	0.4	0.4	0.4	0.5	4.4	1.6	1.2	0.4	0.4
Pumped to Granby	33.5	0.9	1.9	0	0	0	0	3.1	18.6	7.9	0.9	0	0
End of Month Content	9.4	8.9	7.6	8.1	8.6	8.9	9.6	8.9	8.9	9.4	9.1	9.4	9.5
Pump Energy	7	0.2	0.4	0	0	0	0	0.6	4	1.6	0.2	0	0
GRANBY - SHADOW MOUNTAIN - GRAND LAKE													
Natural Watershed Inflow	222.9	3.8	3.2	3.3	3.4	4.6	3.9	11.1	73.6	82.5	22.1	7.2	4.1
Total Inflow into Granby	205.9	4.2	5.3	3.9	3.7	3.2	2.8	11.1	80.5	63.3	16.4	7.6	4
Granby Fish Release	30.7	1.5	1.2	1.2	1.2	1.2	1.2	1.2	4.2	4.6	5.3	4.6	3.3
Granby Seepage	4.5	0.6	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3
Granby Spill	0.4	0	0	-0.1	0	0	0	0	0.1	0.1	0.1	0.1	0.1
Adams Tunnel	211.5	17.8	0	18.1	20.2	23.2	21.6	5.9	11.1	29.8	26.5	29	8.4
Granby End of Month content	485.7	469.1	472	455.5	437.3	417	398	404.1	478.3	531.1	517.5	486.4	475.5
SM-GL End of Month Content	17.9	17.6	17.7	17.8	17.7	17.9	17.7	17.7	17.6	17.5	17.5	17.7	17.4

	INITIAL OR TOTAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Pumped from Granby	168.5	17.6	0.6	19.3	20.5	22.8	20.5	3.5	0.1	3.4	20.7	30.4	8.9
Granby Pump Kwh/AF		147.6	164.8	145.1	146.2	149	156.1	172	0	147.2	139.8	141.3	145.7
Granby Pump Energy	24.7	2.6	0.1	2.8	3	3.4	3.2	0.6	0	0.5	2.9	4.3	1.3
MARYS LAKE – ESTES – FLATIRON													
Adams Tunnel Water	211.5	17.8	0	18.1	20.2	23.2	21.6	5.9	11.1	29.8	26.5	29	8.4
Marys Lake Generation	33.9	2.7	0	2.8	3.3	4	3.6	0.6	1.5	4.7	4.5	5	1.2
Estes Generation	97.3	8.1	0	8.4	9.6	10.9	9.9	2.4	4.7	13.6	12.3	13.8	3.6
Divertible Big-Thompson	39	0	0	1.4	3.4	6.1	6.3	1.1	0.8	6.1	6.1	6.3	1.5
Diverted Big-Thompson Water	15	0	0	0	0	0	0	1.5	8.9	3.3	1.3	0	0
Olympus Tunnel	208.4	17.7	0.1	18.1	20.2	23.1	21.9	7.8	20.3	31.9	23.8	18.9	4.6
Pole Hill Generation	133.4	12	0	12	13.3	15.8	14.6	2.3	11	22.6	15.9	11.1	2.8
Flatiron 1 & 2 Generation	170.9	14.6	0.4	14.5	16.9	19.9	19	5.9	16.9	25.8	18.9	14.8	3.3
Flatiron 3 Turbine Release		0	1.4	0.6	0	0	0	0	0	0	0	0	0
Flatiron 3 Kwh/AF Gen.		-	-	-	-	-	-	-	-	-	-	-	-
Flatiron 3 Generation		0	0.3	0.1	0	0	0	0	0	0	0	0	0
Flatiron 3 Pumping	112.7	0.1	0.1	4.4	10.7	18.3	17.8	2.9	2.1	17	17	17.9	4.4
Flatiron 3 Kwh/AF Pump		0	0	0	318.3	334	353.7	364.9	352.5	357.4	360.7	0	0
Flatiron 3 Pump Energy	39	0	0.022	1.4	3.4	6.1	6.3	1.1	0.8	6.1	6.1	6.3	1.5
CARTER LAKE													
Pumped from Flatiron	112.7	0.1	0.1	4.4	10.7	18.3	17.8	2.9	2.1	17	17	17.9	4.4
Release to Flatiron	2	0	1.4	0.6	0	0	0	0	0	0	0	0	0
Irrigation Delivery	112.7	0.1	0.1	4.4	10.7	18.3	17.8	2.9	2.1	17	17	17.9	4.4
Evaporation & Seepage	3	0.2	0.1	0	0	0	0.1	0.3	0.4	0.5	0.5	0.5	0.3
End of Month Content	83.6	75.4	71.2	71.8	79.5	94.7	109.5	107.6	102	107.9	104.7	94.8	85
BIG THOMPSON POWERPLANT													
Diverted Dille Tunnel Water	40.2	0	0	0	0	0	0	0.1	6.7	12.1	8.5	10.3	2.4
Irrigation Delivery	16.9	0.9	0	0	0	0	0	0	0.5	0.9	3.1	8.2	3.2

	INITIAL OR TOTAL	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Turbine Release	40.7	0.2	0	0	0	0	0	0.2	9.9	13.6	8	7.7	1.2
Generation	5.2	0	0	0	0	0	0	0	1.1	2	1.1	0.9	0.1
HORSETOOTH RESERVOIR													
Hansen Feeder Canal Inflow	77.5	15.5	1.5	12.9	9.1	4.1	3.7	2.8	9.3	11.1	5	1.8	0.8
Irrigation Delivery	119.2	13.6	2.1	2.3	2.2	2	2.2	2.5	6.3	9.3	30.4	32.9	13.3
Evaporation	5.1	0.4	0.2	0	0	0	0.3	0.6	0.7	0.9	0.9	0.7	0.4
End of Month Content	128.7	129.8	129.8	140.6	147.3	149.4	150.9	151.2	153.6	153.6	124.3	89.6	75.6
TOTAL CBT DELIVERY[1]	248.8	14.6	2.2	6.7	12.8	20.4	20	5.5	8.9	27.2	50.6	59	21
BASE GENERATION													
Green Mountain	49.8	8.7	2.8	2	1.5	1.4	1.6	2.7	3.7	4.8	5.4	9	6.2
Flatiron 3	0.4	0	0.3	0.1	0	0	0	0	0	0	0	0	0
Big Thompson	5.2	0	0	0	0	0	0	0	1.1	2	1.1	0.9	0.1
TOTAL	55.4	8.7	3.1	2.1	1.5	1.4	1.6	2.7	4.8	6.8	6.5	9.9	6.3
LOAD FOLLOWING GENERATION													
Marys Lake	33.9	2.7	0	2.8	3.3	4	3.6	0.6	1.5	4.7	4.5	5	1.2
Estes	97.3	8.1	0	8.4	9.6	10.9	9.9	2.4	4.7	13.6	12.3	13.8	3.6
Pole Hill	133.4	12	0	12	13.3	15.8	14.6	2.3	11	22.6	15.9	11.1	2.8
Flatiron 1 & 2	170.9.0	14.6	0.4	14.5	16.9	19.9	19	5.9	16.9	25.8	18.9	14.8	3.3
TOTAL	435.5	37.4	0.4	37.7	43.1	50.6	47.1	11.2	34.1	66.7	51.6	44.7	10.9
PUMP ENERGY													
Willow Creek	7	0.2	0.4	0	0	0	0	0.6	4	1.6	0.2	0	0
Granby	24.7	2.6	0.1	2.8	3	3.4	3.2	0.6	0	0.5	2.9	4.3	1.3
Flatiron 3	39	0	0	1.4	3.4	6.1	6.3	1.1	0.7	6.1	6.1	6.3	1.5
TOTAL	70.7	2.8	0.5	4.2	6.4	9.5	9.5	2.3	4.7	8.2	9.2	10.6	2.8
TOTAL GENERATION	490.9	46.1	3.5	39.8	44.6	52	48.7	13.9	38.9	73.5	58.1	54.6	17.2
TOTAL GENERATION MINUS PUMP	420.2	43.3	3	35.6	38.2	42.5	39.2	11.6	34.2	65.3	48.9	44	14.4

1 May include Windy Gap and/or carriage contract water.

B-4: C-BT Flood Damage Prevented in Water Year 2020

Table B-4: C-BT Flood Damage Prevented in Water Year 2020

	Cumulative Total Prior to WY 2020	WY 2020	Cumulative Total Current
Granby, Willow Creek, Shadow Mountain and Grand Lake	\$686,574	\$53,743	\$740,317
Green Mountain	\$322,407	\$33,210	\$355,617
Total	\$1,008,981	\$86,953	\$1,095,934

B-5: C-BT OCTOBER 2019 MOST PROBABLE PLAN FOR WATER YEAR 2020



BUREAU OF
RECLAMATION

COLORADO - BIG THOMPSON MONTHLY OPERATIONS

United States Bureau of Reclamation

Eastern Colorado Area Office

Loveland, Colorado

CBT October 2020 Most Probable_REVISION: 01-OCT-2020

HYDROLOGY OPERATIONS

Dillon Reservoir

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Dillon Inflow	kaf	8.0	6.2	5.9	5.0	4.2	4.8	8.2	50.9	67.0	29.9	13.8	9.8	213.7
DL to GM Gain	kaf	5.6	4.9	3.8	3.4	2.7	3.8	8.2	32.1	43.7	25.8	14.1	9.7	157.8

Green Mountain Reservoir

Init Cont: 95.00 kaf Maximum Cont: 154.60 kaf Minimum Cont: 8.00 kaf
 Elev: 7917.8 ft Elev: 7950.4 ft Elev: 7804.7 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Undepleted Inflow	kaf	13.5	11.1	9.7	8.4	7.0	8.6	16.5	84.0	113.7	57.4	28.2	19.9	378.0
Depletion	kaf	1.8	0.3	-0.2	-1.2	-1.3	-1.4	2.3	29.1	21.7	15.4	8.0	4.2	78.7
Depleted Inflow	kaf	11.7	10.8	10.0	9.6	8.3	9.9	14.3	54.8	91.9	41.9	20.2	15.6	299.0
Turbine Release	kaf	44.6	12.8	13.3	11.8	10.7	11.8	12.1	21.6	28.3	36.5	34.4	23.2	261.1
Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	cfs	725	216	216	192	192	192	204	351	476	594	559	390	
Min Release	cfs	60	60	60	60	60	60	60	75	75	60	60	60	
Total River Release	kaf	44.6	12.8	13.3	11.8	10.7	11.8	12.1	21.6	28.3	36.5	34.4	23.2	261.1
Evaporation	kaf	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.6	0.7	0.5	0.4	2.9
End-Month Targets	kaf	62.0	56.5	56.5	50.0	50.0	50.0	52.0	85.0	148.0	152.7	138.0	130.0	
End-Month Contents	kaf	62.0	59.9	56.6	54.3	52.0	50.0	52.0	85.0	148.0	152.7	138.0	130.0	
End-Month Elevation	ft	7892.40	7890.48	7887.30	7885.05	7882.60	7880.54	7882.65	7910.88	7947.31	7949.55	7942.38	7938.26	

Willow Creek Reservoir

Init Cont: 10.00 kaf Maximum Cont: 10.20 kaf Minimum Cont: 7.20 kaf
 Elev: 8126.5 ft Elev: 8128.8 ft Elev: 8116.9 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Native Inflow	kaf	0.9	0.9	0.8	0.7	0.6	0.9	3.2	17.1	12.7	3.9	1.7	1.2	44.6
Minimum Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
Pumped to Granby	kaf	2.6	0.0	0.0	0.0	0.0	0.0	3.6	16.5	12.3	3.4	1.2	0.7	40.3
Evaporation	kaf	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.7
End-Month Targets	kaf	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	
End-Month Contents	kaf	7.4	7.8	8.2	8.5	8.7	9.1	8.2	8.3	8.2	8.2	8.2	8.2	
End-Month Elevation	ft	8117.71	8119.78	8121.37	8122.51	8123.30	8124.99	8121.32	8121.73	8121.32	8121.32	8121.32	8121.32	



COLORADO - BIG THOMPSON MONTHLY OPERATIONS
 United States Bureau of Reclamation
 Eastern Colorado Area Office
 Loveland, Colorado

CBT October 2020 Most Probable_REVISION: 01-OC

Granby Reservoir	Init Cont:			Maximum Cont:			Minimum Cont:							
	Elev:			Elev:			Elev:							
		476.00 kaf		539.80 kaf			76.50 kaf							
		8270.9 ft		8280.0 ft			8186.9 ft							
		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Native Inflow	kaf	2.0	1.9	1.7	1.5	1.2	1.7	4.1	18.8	36.8	14.2	5.4	3.2	92.5
Release from Shadow Mtn	kaf	2.2	2.2	2.2	2.2	1.9	2.2	2.1	6.8	29.4	6.5	2.2	2.1	62.0
Pump from Windy Gap	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pump from Willow Creek	kaf	2.6	0.0	0.0	0.0	0.0	0.0	3.6	16.5	12.3	3.4	1.2	0.7	40.3
Total Inflow	kaf	6.7	4.1	3.9	3.6	3.2	3.8	9.8	42.1	78.5	24.1	8.8	5.9	194.5
Minimum River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.2	4.5	4.6	2.5	1.2	22.3
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.2	2.1	5.5
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.2	4.5	5.8	4.6	3.3	27.7
Pumped to Shadow Mtn	kaf	8.4	3.8	17.6	34.0	30.9	31.1	13.2	6.2	0.0	11.5	24.5	24.4	205.6
Evaporation	kaf	1.6	0.7	0.0	0.0	0.0	0.8	1.4	2.2	2.9	2.8	2.2	1.9	16.5
Seepage loss	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.6
End-Month Contents	kaf	470.8	468.9	453.6	421.7	392.6	363.0	356.7	388.9	459.8	463.5	440.8	416.9	
End-Month Elevation	ft	8270.22	8269.94	8267.68	8262.83	8258.23	8253.37	8252.32	8257.63	8268.61	8269.15	8265.75	8262.07	

Shadow Mountain Reservoir	Init Cont:			Maximum Cont:			Minimum Cont:							
	Elev:			Elev:			Elev:							
		17.00 kaf		18.40 kaf			16.60 kaf							
		8366.5 ft		8367.0 ft			8366.0 ft							
		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Native Inflow	kaf	2.6	2.5	2.2	2.0	1.6	2.2	5.4	24.4	48.4	20.1	7.2	4.2	122.8
Pumped from Granby	kaf	8.4	3.8	17.6	34.0	30.9	31.1	13.2	6.2	0.0	11.5	24.5	24.4	205.6
Total Inflow	kaf	11.0	6.4	19.9	36.0	32.5	33.3	18.7	30.6	48.4	31.6	31.6	28.6	328.6
Minimum River Release	kaf	2.2	2.1	2.2	2.2	1.9	2.2	2.1	2.2	2.1	2.2	2.2	2.1	25.7
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	2.2	2.2	2.2	2.2	1.9	2.2	2.1	6.8	29.4	6.5	2.2	2.1	62.0
Adams Tunnel Flow	kaf	8.2	4.0	17.6	33.8	30.5	30.9	16.1	23.1	18.2	24.4	28.9	26.0	261.7
Evaporation	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.3	0.5	0.6	0.5	0.4	0.4	3.3
End-Month Contents	kaf	16.8	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	
End-Month Elevation	ft	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	

Adams Tunnel														
		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Tunnel Capacity	kaf	9.2	18.5	22.9	33.8	30.5	33.7	16.1	23.1	25.8	29.1	28.9	26.0	297.6
Actual Diversion	kaf	8.2	4.0	17.6	33.8	30.5	30.9	16.1	23.1	18.2	24.4	28.9	26.0	261.7
% Maximum Delivery	%	90	22	77	100	100	92	100	100	70	84	100	100	



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Lake Estes

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Big Thompson Inflow	kaf	1.2	0.7	0.4	0.2	0.1	1.0	3.5	11.6	19.0	12.0	5.5	2.7	57.9
Minimum River Release	kaf	3.1	3.0	3.1	3.1	2.8	3.1	3.0	6.9	7.4	7.7	7.7	7.4	58.3
Actual River Release	kaf	2.4	0.8	0.4	0.2	0.1	1.0	2.9	6.8	7.5	7.7	5.5	2.7	38.0
Max Diversion Available	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.8	4.7	11.6	4.3	0.0	0.0	21.4
Priority Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	7.1	0.0	0.0	0.0	8.7
Skim Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.1	4.4	4.3	0.0	0.0	12.4
% Maximum Diversion	%	0	0	0	0	0	0	74	100	99	100	99	0	
Irrigation Demand	kaf	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	1.6
Irrigation Delivery	kaf	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	1.4
Total River Release	kaf	2.4	0.8	0.4	0.2	0.1	1.0	2.9	6.8	7.5	7.7	5.5	2.7	38.0

Olympus Tunnel

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Tunnel Capacity	kaf	33.8	4.4	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	369.6
Actual Delivery	kaf	7.0	3.9	17.6	33.7	30.5	30.8	16.6	27.6	29.5	28.5	28.7	25.9	280.3
% Maximum Delivery	%	21	89	52	100	100	91	51	82	90	84	85	79	
Inflow to Flatiron	kaf	7.4	6.3	18.6	33.7	30.5	30.8	16.6	27.6	29.5	28.5	28.7	25.9	284.1

Carter Lake

Init Cont: 85.00 kaf Maximum Cont: 112.20 kaf Minimum Cont: 6.00 kaf
 Elev: 5734.1 ft Elev: 5759.0 ft Elev: 5626.8 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Pumped from Flatiron	kaf	1.0	0.0	9.9	18.8	15.4	6.7	0.0	14.7	0.0	10.9	18.0	4.1	99.5
Flatiron Bifurcation	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Carter to Flatiron	kaf	0.4	2.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8
Evaporation Loss	kaf	0.2	0.1	0.0	0.0	0.0	0.2	0.3	0.4	0.5	0.4	0.3	0.3	2.7
Seepage Loss	kaf	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	2.0
End-Month Targets	kaf	112.0	112.0	112.0	112.0	112.0	10.0	10.0	112.0	44.0	112.0	112.0	112.0	
End-Month Contents	kaf	77.3	71.7	77.2	93.0	105.3	108.4	102.8	110.1	100.8	93.6	90.0	78.3	
End-Month Elevation	ft	5726.53	5720.94	5726.51	5741.12	5752.38	5755.60	5750.66	5756.70	5748.84	5741.67	5738.28	5727.57	
Priority Water Diverted to Carter	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation Demand	kaf	7.6	2.3	2.4	2.3	2.6	2.8	4.8	6.3	7.5	16.5	20.2	14.6	89.9
Metered Demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Windy Gap demand	kaf	0.4	0.6	0.7	0.6	0.4	0.5	0.3	0.5	1.2	1.0	0.9	0.8	7.9
Total Demand	kaf	8.0	2.9	3.2	2.9	3.0	3.3	5.1	6.8	8.6	17.5	21.1	15.3	97.7
Total Delivery	kaf	8.0	2.9	3.2	2.9	3.0	3.3	5.1	6.8	8.6	17.5	21.1	15.3	97.7
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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Hansen Canal 930

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Minimum Flow	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Flow	kaf	57.2	55.3	57.2	57.2	51.6	57.2	55.3	57.2	55.3	57.2	57.2	55.3	673.2
Actual Flow	kaf	6.4	6.3	8.7	14.9	15.0	24.1	16.6	13.0	29.5	17.6	10.8	21.8	184.7

Dille Tunnel

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Big Thompson River Below Lake Estes	kaf	2.4	0.8	0.4	0.2	0.1	1.0	2.9	6.8	7.5	7.7	5.5	2.7	38.0
North Fork Big Thompson River at Drake	kaf	0.6	0.4	0.4	0.3	0.2	0.2	0.4	1.8	2.7	1.6	1.0	0.6	10.2
Dille Skim Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.1	7.8	6.8	4.0	0.9	25.6
Dille Priority Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
water available	kaf	2.9	1.2	0.8	0.5	0.4	1.3	3.3	8.6	10.2	9.3	6.5	3.3	48.3
water diverted	kaf	1.2	0.1	0.0	0.0	0.0	0.0	0.0	6.1	7.8	6.8	4.0	0.9	26.9
% Diverted	%	22	2	0	0	0	0	0	113	144	126	75	16	
Big T @ Canyon Mouth	kaf	1.7	1.1	0.8	0.5	0.4	1.3	3.3	2.5	2.4	2.5	2.5	2.4	21.4

Trifurcation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Release from Flatiron	kaf	6.4	6.3	8.7	14.9	15.0	24.1	16.6	13.0	29.5	17.6	10.8	21.8	184.7
Release to 550 Canal	kaf	4.3	6.1	8.4	14.6	14.8	23.8	15.7	9.3	24.7	11.4	6.3	14.5	153.9
Dille Tunnel	kaf	1.2	0.1	0.0	0.0	0.0	0.0	0.0	6.1	7.8	6.8	4.0	0.9	26.9
Total release to river	kaf	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.6	6.4	14.8
Irrigation demand	kaf	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.6	6.3	15.1
Windy Gap demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total requirement	kaf	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.6	6.4	15.2
Total delivery	kaf	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.6	6.4	14.8
% Required Delivery	%	91	0	100	0	0	0	100	100	100	100	100	100	
Shortage	kaf	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4



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Hansen Canal 550

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Inflow from Flatiron	kaf	4.3	6.1	8.4	14.6	14.8	23.8	15.7	9.3	24.7	11.4	6.3	14.5	153.9
Maximum flow	kaf	24.7	29.1	29.0	30.1	27.2	28.7	28.1	30.1	29.1	30.1	30.1	29.1	345.4
Irrigation demand	kaf	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.4	0.9	0.9	0.9	6.2
Irrigation delivery	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.6	0.4	0.9	0.9	0.9	5.8
Minimum flow	kaf	4.7	2.7	1.3	0.0	0.0	4.6	4.5	3.1	9.4	3.1	3.1	3.0	39.5
Rel's to Horsetooth	kaf	4.3	6.1	8.4	14.6	14.8	23.8	15.7	9.3	24.7	11.4	6.3	14.5	153.9

Horsetooth Reservoir

Init Cont: 76.00 kaf
Elev: 5382.6 ft
Maximum Cont: 157.00 kaf
Elev: 5430.0 ft
Minimum Cont: 13.00 kaf
Elev: 5316.8 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Inflow	kaf	4.3	6.1	8.4	14.6	14.8	23.8	15.7	9.3	24.7	11.4	6.3	14.5	153.9
Total irrigation delivery	kaf	13.9	1.9	2.0	2.1	1.9	2.1	3.2	5.3	6.1	28.7	32.6	14.9	114.7
Evaporation loss	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.4	0.7	0.9	0.8	0.6	0.5	4.5
Seepage loss	kaf	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.2
End-Month Targets	kaf	85.0	66.0	156.0	156.0	156.0	156.0	155.0	155.0	156.0	156.0	156.0	156.0	
End-Month Content	kaf	65.5	69.5	75.8	88.2	100.9	122.1	134.0	137.2	154.7	136.4	109.3	108.3	
End-Month Elevation	ft	5375.17	5378.19	5382.77	5391.24	5399.35	5411.86	5418.37	5420.04	5429.02	5419.64	5404.47	5403.86	
Priority water diverted to Horsetooth	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	6.8	0.0	0.0	0.0	8.3
Irrigation demand	kaf	11.4	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.8	20.7	25.4	10.0	69.2
Metered Demand	kaf	2.1	1.5	1.6	1.8	1.7	1.8	2.4	4.2	4.5	7.2	6.1	4.0	38.9
Windy Gap demand	kaf	0.5	0.4	0.4	0.4	0.3	0.4	0.5	0.6	0.8	0.8	1.1	0.9	7.1
Total demand	kaf	13.9	1.9	2.0	2.1	1.9	2.1	3.2	5.3	6.1	28.7	32.6	14.9	114.7
Total irrigation	kaf	13.9	1.9	2.0	2.1	1.9	2.1	3.2	5.3	6.1	28.7	32.6	14.9	114.7
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CBT Project Summary

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Total CBT Delivery	kaf	25.2	4.0	4.4	4.4	4.6	5.0	7.9	11.9	13.3	46.6	56.3	35.9	219.5



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Windy Gap

Table with 14 columns: Category, Unit, Oct-20, Nov-20, Dec-20, Jan-21, Feb-21, Mar-21, Apr-21, May-21, Jun-21, Jul-21, Aug-21, Sep-21, Total. Rows include Pumping, Losses, Spill, Total Delivery, and Account Balance.



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PUMPING AND GENERATION OPERATIONS

Green Mountain Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Generation	gwh	18.600	18.000	18.600	18.600	16.800	18.600	18.000	18.600	18.000	18.600	18.600	18.000	219.000
Generation	gwh	7.600	2.000	2.100	1.800	1.600	1.800	1.800	3.500	5.500	7.700	7.200	4.700	47.300
% Maximum Generation	%	41	11	11	10	10	10	10	19	31	42	39	26	
Average	kwh/af	171	159	157	155	153	152	151	161	196	212	209	204	

Willow Creek Pumping

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Pumping	kaf	24.6	11.9	0.0	0.0	0.0	0.0	23.8	24.6	23.8	24.6	24.6	23.8	181.7
Actual Pumping	kaf	2.6	0.0	0.0	0.0	0.0	0.0	3.6	16.5	12.3	3.4	1.2	0.7	40.3
Pump Energy	gwh	0.600	0.000	0.000	0.000	0.000	0.000	0.800	3.500	2.600	0.700	0.300	0.200	8.700
% Maximum Pumping	%	11	0	0	0	0	0	15	67	52	14	5	3	167
Average	kwh/af	213	0	0	0	0	0	213	213	213	213	213	213	

Lake Granby Pumping

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Pumping	kaf	36.9	35.7	36.9	36.9	33.3	36.9	35.7	36.9	35.7	36.9	36.9	35.7	434.4
Actual Pumping	kaf	8.4	3.8	17.6	34.0	30.9	31.1	13.2	6.2	0.0	11.5	24.5	24.4	205.6
Pump Energy	gwh	1.200	0.500	2.500	4.900	4.500	4.600	2.000	0.900	0.000	1.700	3.500	3.500	29.800
% Maximum Pumping	%	23	11	48	92	93	84	37	17	0	31	66	68	
Average	kwh/af	143	143	144	145	147	149	150	150	0	143	144	145	



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Marys Lake Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Adams Tunnel Flow	kaf	8.2	4.0	17.6	33.8	30.5	30.9	16.1	23.1	18.2	24.4	28.9	26.0	261.7
Maximum Generation	gwh	6.400	0.200	4.300	6.400	5.800	6.400	6.200	6.400	6.200	6.400	6.400	6.200	67.300
Generation	gwh	1.200	0.200	3.200	6.400	5.800	5.800	2.800	4.200	3.200	4.300	5.300	4.800	47.200
% Maximum Generation	%	14	4	18	19	19	19	17	18	18	18	18	18	
Average	kwh/af	145	44	184	189	189	186	172	180	175	177	185	184	

Lake Estes Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Adams Tunnel Flow	kaf	8.2	4.0	17.6	33.8	30.5	30.9	16.1	23.1	18.2	24.4	28.9	26.0	261.7
Maximum Generation	gwh	16.000	15.500	16.000	16.000	14.500	16.000	15.500	16.000	15.500	16.000	16.000	15.500	188.500
Generation	gwh	3.500	1.900	8.200	16.000	14.400	14.600	7.400	10.500	8.000	11.400	13.500	12.300	121.700
% Maximum Generation	%	22	12	51	100	100	91	48	66	52	71	84	79	
Average	kwh/af	422	462	466	473	473	472	460	454	440	467	468	474	

Pole Hill Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Olympus Tunnel Flow	kaf	33.8	4.4	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	369.6
Maximum Generation	gwh	25.800	25.000	25.800	25.800	23.300	25.800	25.000	25.800	25.000	25.800	25.800	25.000	303.900
Generation	gwh	4.800	3.000	13.000	25.700	23.200	23.600	11.700	20.900	22.500	21.400	21.700	19.500	211.000
% Maximum Generation	%	19	12	51	100	100	92	47	81	90	83	84	78	
Average	kwh/af	142	677	385	761	761	698	359	618	689	634	643	596	



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Flatiron Units 1 and 2 Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Inflow to Flatiron	kaf	7.4	6.3	18.6	33.7	30.5	30.8	16.6	27.6	29.5	28.5	28.7	25.9	284.1
Maximum Generation	gwh	32.200	31.200	32.200	32.200	29.100	32.200	31.200	32.200	31.200	32.200	32.200	31.200	379.300
Generation	gwh	5.800	3.400	16.400	32.100	29.000	27.900	13.200	24.300	26.500	25.700	25.400	22.600	252.300
% Maximum Generation	%	18	11	51	100	99	87	42	75	85	80	79	73	
Average	kwh/af	778	543	881	951	951	907	794	879	899	902	882	874	

Flatiron Unit 3 Pump/Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Pumping	kaf	1.9	0.0	9.9	18.8	15.4	16.0	15.8	16.3	15.8	17.6	18.0	4.1	149.6
Pump from Flatiron	kaf	1.0	0.0	9.9	18.8	15.4	6.7	0.0	14.7	0.0	10.9	18.0	4.1	99.5
Pump Energy	gwh	0.300	0.000	3.100	6.200	5.400	2.400	0.000	5.300	0.000	3.700	6.100	1.400	33.900
% Maximum Pumping	%	55	0	100	100	100	42	0	90	0	62	100	100	
Average	kwh/af	325	0	316	331	349	361	0	358	0	341	339	337	
Maximum Turbine release	kaf	0.4	10.2	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.8
Carter to Flatiron	kaf	0.4	2.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8
Maximum Generation	gwh	0.100	2.100	1.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.500
Actual Generation	gwh	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.100
% Maximum Generation	%	100	0	0	0	0	0	0	0	0	0	0	0	
Average	kwh/af	209	0	0	0	0	0	0	0	0	0	0	0	

Big Thompson Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Total release	kaf	2.9	0.0	0.0	0.0	0.0	0.0	0.6	9.3	12.2	12.2	7.7	7.3	52.2
Turbine release	kaf	2.9	0.0	0.0	0.0	0.0	0.0	0.0	9.3	12.2	12.2	7.7	7.3	51.6
Wasteway release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.6
Maximum Generation	gwh	3.800	2.200	0.000	0.000	0.000	0.000	0.000	3.800	3.700	3.800	3.800	3.700	24.800
Generation	gwh	0.100	0.000	0.000	0.000	0.000	0.000	0.000	1.200	1.800	1.800	0.900	0.900	6.700
% Maximum Generation	%	3	0	0	0	0	0	0	32	49	46	24	24	
Average	kwh/af	45	0	0	0	0	0	0	133	148	146	122	120	



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Project Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Total Generation	gwh	23.100	10.900	43.100	82.000	74.100	73.700	37.000	64.600	67.600	72.400	74.000	64.800	687.300
Total Max Generation	gwh	103.000	94.200	98.300	99.100	89.500	99.100	95.900	102.900	99.600	102.900	102.900	99.600	1187.000

Project Pump Energy

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Granby	gwh	1.200	0.500	2.500	4.900	4.500	4.600	2.000	0.900	0.000	1.700	3.500	3.500	29.800
Willow Creek	gwh	0.600	0.000	0.000	0.000	0.000	0.000	0.800	3.500	2.600	0.700	0.300	0.200	8.700
Flatiron Unit 3	gwh	0.300	0.000	3.100	6.200	5.400	2.400	0.000	5.300	0.000	3.700	6.100	1.400	33.900
Total Pump Energy	gwh	2.100	0.500	5.700	11.200	9.900	7.100	2.800	9.700	2.600	6.100	9.900	5.100	72.700

B-6: C-BT OCTOBER 2019 MINIMUM REASONABLE PLAN FOR WATER YEAR 2020



— BUREAU OF —
RECLAMATION

COLORADO - BIG THOMPSON MONTHLY OPERATIONS
United States Bureau of Reclamation
Eastern Colorado Area Office
Loveland, Colorado

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HYDROLOGY OPERATIONS

Dillon Reservoir

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Dillon Inflow	kaf	8.0	6.2	5.9	5.0	4.2	4.8	8.2	50.9	67.0	29.9	13.8	9.8	213.7
DL to GM Gain	kaf	5.6	4.9	3.8	3.4	2.7	3.8	8.2	32.1	43.7	25.8	14.1	9.7	157.8

Green Mountain Reservoir

Init Cont: 95.00 kaf **Maximum Cont:** 154.60 kaf **Minimum Cont:** 8.00 kaf
Elev: 7917.8 ft **Elev:** 7950.4 ft **Elev:** 7804.7 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Undepleted Inflow	kaf	13.5	11.1	9.7	8.4	7.0	8.6	16.5	84.0	113.7	57.4	28.2	19.9	378.0
Depletion	kaf	1.8	0.3	-0.2	-1.2	-1.3	-1.4	2.3	29.1	21.7	15.4	8.0	4.2	78.7
Depleted Inflow	kaf	11.7	10.8	10.0	9.6	8.3	9.9	14.3	54.8	91.9	41.9	20.2	15.6	299.0
Turbine Release	kaf	44.6	12.8	13.3	11.8	10.7	11.8	12.1	21.6	28.3	36.5	34.4	23.2	261.1
Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	cfs	725	216	216	192	192	192	204	351	476	594	559	390	
Min Release	cfs	60	60	60	60	60	60	60	75	75	60	60	60	
Total River Release	kaf	44.6	12.8	13.3	11.8	10.7	11.8	12.1	21.6	28.3	36.5	34.4	23.2	261.1
Evaporation	kaf	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.6	0.7	0.5	0.4	2.9
End-Month Targets	kaf	62.0	56.5	56.5	50.0	50.0	50.0	52.0	85.0	148.0	152.7	138.0	130.0	
End-Month Contents	kaf	62.0	59.9	56.6	54.3	52.0	50.0	52.0	85.0	148.0	152.7	138.0	130.0	
End-Month Elevation	ft	7892.40	7890.48	7887.30	7885.05	7882.60	7880.54	7882.65	7910.88	7947.31	7949.55	7942.38	7938.26	

Willow Creek Reservoir

Init Cont: 10.00 kaf **Maximum Cont:** 10.20 kaf **Minimum Cont:** 7.20 kaf
Elev: 8126.5 ft **Elev:** 8128.8 ft **Elev:** 8116.9 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Native Inflow	kaf	0.9	0.8	0.8	0.7	0.6	0.6	1.4	4.4	2.7	1.3	0.9	0.7	15.8
Minimum Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
Pumped to Granby	kaf	2.6	0.0	0.0	0.0	0.0	0.0	1.6	3.7	2.2	0.8	0.4	0.2	11.5
Evaporation	kaf	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.7
End-Month Targets	kaf	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	
End-Month Contents	kaf	7.4	7.7	8.1	8.3	8.5	8.7	8.0	8.2	8.2	8.2	8.2	8.2	
End-Month Elevation	ft	8117.65	8119.34	8120.78	8121.89	8122.66	8123.33	8120.68	8121.32	8121.32	8121.32	8121.32	8121.32	



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Granby Reservoir		Init Cont: 476.00 kaf Elev: 8270.9 ft			Maximum Cont: 539.80 kaf Elev: 8280.0 ft			Minimum Cont: 76.50 kaf Elev: 8186.9 ft						
		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Native Inflow	kaf	1.9	1.7	1.6	1.5	1.2	1.3	2.0	8.3	17.7	6.9	3.1	2.2	49.4
Release from Shadow Mtn	kaf	2.2	2.1	2.2	2.2	1.9	2.2	2.1	2.3	11.9	2.2	2.2	2.1	35.6
Pump from Windy Gap	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pump from Willow Creek	kaf	2.6	0.0	0.0	0.0	0.0	0.0	1.6	3.7	2.2	0.8	0.4	0.2	11.5
Total Inflow	kaf	6.7	3.8	3.8	3.6	3.1	3.4	5.7	14.4	31.9	9.8	5.6	4.5	96.3
Minimum River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.2	4.5	4.6	2.5	1.2	22.3
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.2	2.1	5.5
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.2	4.5	5.8	4.6	3.3	27.7
Pumped to Shadow Mtn	kaf	8.7	4.0	17.7	34.0	30.9	31.8	14.6	11.4	0.0	20.7	24.5	27.1	225.4
Evaporation	kaf	1.6	0.7	0.0	0.0	0.0	0.8	1.4	2.1	2.7	2.4	1.9	1.6	15.2
Seepage loss	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.6
End-Month Contents	kaf	470.4	468.0	452.5	420.6	391.5	360.8	349.1	348.5	373.0	353.6	328.0	300.2	
End-Month Elevation	ft	8270.16	8269.81	8267.53	8262.66	8258.04	8253.00	8251.02	8250.91	8255.03	8251.79	8247.37	8242.39	

Shadow Mountain Reservoir		Init Cont: 17.00 kaf Elev: 8366.5 ft			Maximum Cont: 18.40 kaf Elev: 8367.0 ft			Minimum Cont: 16.60 kaf Elev: 8366.0 ft						
		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Native Inflow	kaf	2.5	2.2	2.1	1.9	1.6	1.7	2.7	11.0	23.8	9.2	4.1	2.9	65.7
Pumped from Granby	kaf	8.7	4.0	17.7	34.0	30.9	31.8	14.6	11.4	0.0	20.7	24.5	27.1	225.4
Total Inflow	kaf	11.3	6.3	19.8	36.0	32.5	33.5	17.2	22.4	23.8	29.9	28.6	30.0	291.3
Minimum River Release	kaf	2.2	2.1	2.2	2.2	1.9	2.2	2.1	2.2	2.1	2.2	2.2	2.1	25.7
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	2.2	2.1	2.2	2.2	1.9	2.2	2.1	2.3	11.9	2.2	2.2	2.1	35.6
Adams Tunnel Flow	kaf	8.5	4.0	17.6	33.8	30.5	31.1	14.7	19.4	11.0	27.0	25.9	27.4	250.9
Evaporation	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.3	0.5	0.6	0.5	0.4	0.4	3.3
End-Month Contents	kaf	16.8	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	
End-Month Elevation	ft	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	

Adams Tunnel		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Tunnel Capacity	kaf	9.2	18.5	22.9	33.8	30.5	33.8	14.7	28.2	29.5	27.0	25.9	27.4	301.4
Actual Diversion	kaf	8.5	4.0	17.6	33.8	30.5	31.1	14.7	19.4	11.0	27.0	25.9	27.4	250.9
% Maximum Delivery	%	93	22	77	100	100	92	100	69	37	100	100	100	



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Lake Estes

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Big Thompson Inflow	kaf	1.1	0.6	0.3	0.2	0.1	0.2	1.6	5.8	10.0	6.0	2.8	1.4	30.1
Minimum River Release	kaf	3.1	3.0	3.1	3.1	2.8	3.1	3.0	6.9	7.4	7.7	7.7	7.4	58.3
Actual River Release	kaf	2.3	0.7	0.4	0.2	0.1	0.2	1.6	5.3	7.4	5.9	2.8	1.4	28.3
Max Diversion Available	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.6	0.1	0.0	0.0	3.2
Priority Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Skim Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.6	0.1	0.0	0.0	3.2
% Maximum Diversion	%	0	0	0	0	0	0	78	100	100	103	0	0	
Irrigation Demand	kaf	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	1.6
Irrigation Delivery	kaf	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	1.4
Total River Release	kaf	2.3	0.7	0.4	0.2	0.1	0.2	1.6	5.3	7.4	5.9	2.8	1.4	28.3

Olympus Tunnel

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Tunnel Capacity	kaf	33.8	4.4	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	369.6
Actual Delivery	kaf	7.2	3.9	17.6	33.7	30.5	31.0	14.6	19.7	13.4	26.8	25.7	27.3	251.4
% Maximum Delivery	%	21	89	52	100	100	92	45	58	41	79	76	83	
Inflow to Flatiron	kaf	7.7	6.3	18.6	33.7	30.5	31.0	14.6	19.7	13.4	26.8	25.7	27.3	255.3

Carter Lake

Init Cont: 85.00 kaf Maximum Cont: 112.20 kaf Minimum Cont: 6.00 kaf
 Elev: 5734.1 ft Elev: 5759.0 ft Elev: 5626.8 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Pumped from Flatiron	kaf	1.0	0.0	9.9	18.8	15.4	6.7	0.0	13.7	0.0	0.0	0.0	0.0	65.5
Flatiron Bifurcation	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Carter to Flatiron	kaf	0.4	2.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8
Evaporation Loss	kaf	0.2	0.1	0.0	0.0	0.0	0.2	0.3	0.4	0.5	0.4	0.3	0.2	2.6
Seepage Loss	kaf	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	1.9
End-Month Targets	kaf	112.0	112.0	112.0	112.0	112.0	10.0	10.0	112.0	44.0	0.1	0.1	0.1	
End-Month Contents	kaf	77.3	71.7	77.2	93.0	105.2	108.3	102.8	109.1	99.8	79.9	55.8	38.4	
End-Month Elevation	ft	5726.53	5720.92	5726.47	5741.07	5752.31	5755.52	5750.59	5755.78	5747.91	5729.17	5704.09	5683.36	
Priority Water Diverted to Carter	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation Demand	kaf	7.6	2.3	2.5	2.3	2.6	2.9	4.8	6.3	7.5	18.3	22.8	16.3	96.2
Metered Demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Windy Gap demand	kaf	0.4	0.6	0.7	0.6	0.4	0.5	0.3	0.5	1.2	1.0	0.9	0.8	7.9
Total Demand	kaf	8.0	2.9	3.2	2.9	3.1	3.4	5.1	6.8	8.6	19.3	23.7	17.1	104.1
Total Delivery	kaf	8.0	2.9	3.2	2.9	3.1	3.4	5.1	6.8	8.6	19.3	23.7	17.1	104.1
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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Hansen Canal 930

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Minimum Flow	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Flow	kaf	57.2	55.3	57.2	57.2	51.6	57.2	55.3	57.2	55.3	57.2	57.2	55.3	673.2
Actual Flow	kaf	6.6	6.3	8.7	14.9	15.0	24.3	14.6	6.0	13.4	26.8	25.7	27.3	189.6

Dille Tunnel

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Big Thompson River Below Lake Estes	kaf	2.3	0.7	0.4	0.2	0.1	0.2	1.6	5.3	7.4	5.9	2.8	1.4	28.3
North Fork Big Thompson River at Drake	kaf	0.6	0.4	0.4	0.3	0.2	0.2	0.2	0.7	1.0	0.6	0.5	0.3	5.4
Dille Skim Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	6.0	4.1	0.8	0.0	14.5
Dille Priority Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
water available	kaf	2.9	1.1	0.7	0.5	0.3	0.4	1.8	6.0	8.4	6.6	3.2	1.7	33.6
water diverted	kaf	1.2	0.1	0.0	0.0	0.0	0.0	0.0	3.6	6.0	4.1	0.8	0.0	15.8
% Diverted	%	22	2	0	0	0	0	0	66	111	76	15	0	
Big T @ Canyon Mouth	kaf	1.7	1.0	0.7	0.5	0.3	0.4	1.8	2.5	2.4	2.5	2.4	1.7	17.9

Trifurcation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Release from Flatiron	kaf	6.6	6.3	8.7	14.9	15.0	24.3	14.6	6.0	13.4	26.8	25.7	27.3	189.6
Release to 550 Canal	kaf	4.6	6.1	8.4	14.6	14.8	24.0	14.2	4.9	10.4	24.6	20.3	18.6	165.5
Dille Tunnel	kaf	1.2	0.1	0.0	0.0	0.0	0.0	0.0	3.6	6.0	4.1	0.8	0.0	15.8
Total release to river	kaf	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	4.4	7.8	17.2
Irrigation demand	kaf	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	4.4	7.7	17.5
Windy Gap demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total requirement	kaf	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	4.4	7.8	17.6
Total delivery	kaf	3.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	4.4	7.8	17.2
% Required Delivery	%	90	0	100	0	0	0	100	100	100	100	100	100	
Shortage	kaf	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4



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Hansen Canal 550

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Inflow from Flatiron	kaf	4.6	6.1	8.4	14.6	14.8	24.0	14.2	4.9	10.4	24.6	20.3	18.6	165.5
Maximum flow	kaf	24.7	29.1	29.0	30.1	27.2	29.1	28.1	30.1	29.1	30.1	30.1	29.1	345.8
Irrigation demand	kaf	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.4	1.0	1.0	0.9	6.3
Irrigation delivery	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.4	1.0	1.0	0.9	5.9
Minimum flow	kaf	1.5	2.7	1.3	0.0	0.0	4.6	4.5	3.1	6.4	3.1	3.1	3.0	33.3
Rels to Horsetooth	kaf	4.6	6.1	8.4	14.6	14.8	24.0	14.2	4.9	10.4	24.6	20.3	18.6	165.5

Horsetooth Reservoir

Init Cont: 76.00 kaf
Elev: 5382.6 ft
Maximum Cont: 157.00 kaf
Elev: 5430.0 ft
Minimum Cont: 13.00 kaf
Elev: 5316.8 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Inflow	kaf	4.6	6.1	8.4	14.6	14.8	24.0	14.2	4.9	10.4	24.6	20.3	18.6	165.5
Total irrigation delivery	kaf	13.9	1.8	1.9	2.1	1.9	2.1	3.1	5.2	6.0	33.1	38.2	17.0	126.3
Evaporation loss	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.4	0.7	0.8	0.8	0.6	0.5	4.4
Seepage loss	kaf	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.2
End-Month Targets	kaf	100.0	66.0	156.0	156.0	156.0	156.0	155.0	41.0	155.0	156.0	156.0	156.0	
End-Month Content	kaf	65.8	69.8	76.2	88.6	101.3	122.9	133.4	132.3	135.7	126.2	107.7	108.7	
End-Month Elevation	ft	5375.37	5378.42	5383.02	5391.51	5399.63	5412.27	5418.06	5417.44	5419.27	5414.16	5403.51	5404.11	
Priority water diverted to Horsetooth	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Irrigation demand	kaf	11.4	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.8	25.2	31.0	12.1	81.3
Metered Demand	kaf	2.1	1.4	1.6	1.7	1.6	1.7	2.3	4.1	4.4	7.1	6.1	4.0	38.1
Windy Gap demand	kaf	0.5	0.4	0.4	0.4	0.3	0.4	0.5	0.6	0.8	0.8	1.1	0.9	7.1
Total demand	kaf	13.9	1.8	1.9	2.1	1.9	2.1	3.1	5.2	6.0	33.1	38.2	17.0	126.3
Total irrigation	kaf	13.9	1.8	1.9	2.1	1.9	2.1	3.1	5.2	6.0	33.1	38.2	17.0	126.3
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CBT Project Summary

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Total CBT Delivery	kaf	25.2	4.0	4.4	4.4	4.6	4.9	7.8	11.8	13.3	53.0	65.4	41.1	239.9



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Windy Gap

Table with 14 columns: Category, Unit, Oct-20, Nov-20, Dec-20, Jan-21, Feb-21, Mar-21, Apr-21, May-21, Jun-21, Jul-21, Aug-21, Sep-21, Total. Rows include Pumping, Losses, Spill, Total Delivery, and Account Balance.



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PUMPING AND GENERATION OPERATIONS

Green Mountain Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Generation	gwh	18.600	18.000	18.600	18.600	16.800	18.600	18.000	18.600	18.000	18.600	18.600	18.000	219.000
Generation	gwh	7.600	2.000	2.100	1.800	1.600	1.800	1.800	3.500	5.500	7.700	7.200	4.700	47.300
% Maximum Generation	%	41	11	11	10	10	10	10	19	31	42	39	26	
Average	kwh/af	171	159	157	155	153	152	151	161	196	212	209	204	

Willow Creek Pumping

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Pumping	kaf	24.6	11.9	0.0	0.0	0.0	0.0	23.8	24.6	23.8	24.6	24.6	23.8	181.7
Actual Pumping	kaf	2.6	0.0	0.0	0.0	0.0	0.0	1.6	3.7	2.2	0.8	0.4	0.2	11.5
Pump Energy	gwh	0.600	0.000	0.000	0.000	0.000	0.000	0.300	0.800	0.500	0.200	0.100	0.000	2.500
% Maximum Pumping	%	11	0	0	0	0	0	7	15	9	3	1	1	47
Average	kwh/af	213	0	0	0	0	0	213	213	213	213	213	213	

Lake Granby Pumping

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Pumping	kaf	36.9	35.7	36.9	36.9	33.3	36.9	35.7	36.9	35.7	36.9	36.9	35.7	434.4
Actual Pumping	kaf	8.7	4.0	17.7	34.0	30.9	31.8	14.6	11.4	0.0	20.7	24.5	27.1	225.4
Pump Energy	gwh	1.200	0.600	2.500	4.900	4.500	4.700	2.200	1.700	0.000	3.100	3.700	4.200	33.300
% Maximum Pumping	%	24	11	48	92	93	86	41	31	0	56	66	76	
Average	kwh/af	143	143	144	145	147	149	150	151	0	150	152	155	



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Marys Lake Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Adams Tunnel Flow	kaf	8.5	4.0	17.6	33.8	30.5	31.1	14.7	19.4	11.0	27.0	25.9	27.4	250.9
Maximum Generation	gwh	6.400	0.800	4.300	6.400	5.800	6.400	6.200	6.400	6.200	6.400	6.400	6.200	67.900
Generation	gwh	1.200	0.700	3.200	6.400	5.800	5.800	2.500	3.400	0.900	5.000	4.700	5.100	44.700
% Maximum Generation	%	15	18	18	19	19	19	17	18	8	18	18	19	
Average	kwh/af	147	179	184	189	189	186	169	176	84	184	183	185	

Lake Estes Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Adams Tunnel Flow	kaf	8.5	4.0	17.6	33.8	30.5	31.1	14.7	19.4	11.0	27.0	25.9	27.4	250.9
Maximum Generation	gwh	16.000	15.500	16.000	16.000	14.500	16.000	15.500	16.000	15.500	16.000	16.000	15.500	188.500
Generation	gwh	3.600	1.900	8.200	16.000	14.400	14.700	6.900	8.600	4.800	12.800	12.200	13.000	117.100
% Maximum Generation	%	22	12	51	100	100	92	45	54	31	80	76	84	
Average	kwh/af	423	462	465	473	473	473	472	443	440	473	473	475	

Pole Hill Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Olympus Tunnel Flow	kaf	33.8	4.4	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	369.6
Maximum Generation	gwh	25.800	25.000	25.800	25.800	23.300	25.800	25.000	25.800	25.000	25.800	25.800	25.000	303.900
Generation	gwh	5.000	3.000	13.000	25.700	23.200	23.800	9.900	14.000	8.000	20.200	19.200	20.700	185.700
% Maximum Generation	%	19	12	51	100	100	92	40	54	32	78	75	83	
Average	kwh/af	149	677	385	761	761	704	304	413	246	597	569	632	



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Flatiron Units 1 and 2 Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Inflow to Flatiron	kaf	7.7	6.3	18.6	33.7	30.5	31.0	14.6	19.7	13.4	26.8	25.7	27.3	255.3
Maximum Generation	gwh	32.200	31.200	32.200	32.200	29.100	32.200	31.200	32.200	31.200	32.200	32.200	31.200	379.300
Generation	gwh	6.000	3.400	16.400	32.100	29.000	28.200	11.300	16.000	10.300	23.600	22.400	24.100	222.800
% Maximum Generation	%	19	11	51	99	99	88	36	50	33	73	70	77	
Average	kwh/af	783	543	881	951	951	910	773	811	769	879	873	883	

Flatiron Unit 3 Pump/Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Pumping	kaf	1.9	0.0	9.9	18.8	15.4	16.0	15.8	16.4	15.9	18.2	21.0	23.1	172.4
Pump from Flatiron	kaf	1.0	0.0	9.9	18.8	15.4	6.7	0.0	13.7	0.0	0.0	0.0	0.0	65.5
Pump Energy	gwh	0.300	0.000	3.100	6.200	5.400	2.400	0.000	4.900	0.000	0.000	0.000	0.000	22.300
% Maximum Pumping	%	55	0	100	100	100	42	0	84	0	0	0	0	
Average	kwh/af	325	0	316	331	349	360	0	357	0	0	0	0	
Maximum Turbine release	kaf	0.5	10.2	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.9
Carter to Flatiron	kaf	0.4	2.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.8
Maximum Generation	gwh	0.100	2.100	1.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.500
Actual Generation	gwh	0.100	0.500	0.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.800
% Maximum Generation	%	86	24	16	0	0	0	0	0	0	0	0	0	
Average	kwh/af	209	206	203	0	0	0	0	0	0	0	0	0	

Big Thompson Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Total release	kaf	2.9	0.0	0.0	0.0	0.0	0.0	0.0	4.1	8.6	5.4	5.2	7.8	34.0
Turbine release	kaf	2.9	0.0	0.0	0.0	0.0	0.0	0.0	4.1	8.6	5.4	5.2	7.8	34.0
Wasteway release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Generation	gwh	3.800	2.200	0.000	0.000	0.000	0.000	2.000	3.800	3.700	3.800	3.800	3.700	26.800
Generation	gwh	0.100	0.000	0.000	0.000	0.000	0.000	0.000	0.400	1.100	0.500	0.500	1.000	3.600
% Maximum Generation	%	3	0	0	0	0	0	0	10	31	13	12	26	
Average	kwh/af	45	0	0	0	0	0	0	92	131	92	91	124	



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Project Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Total Generation	gwh	23.800	11.500	43.100	82.000	74.000	74.300	32.500	45.800	30.800	69.700	66.300	68.600	622.400
Total Max Generation	gwh	103.000	94.800	98.300	99.100	89.500	99.100	97.800	102.900	99.600	102.900	102.900	99.600	1189.500

Project Pump Energy

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Granby	gwh	1.200	0.600	2.500	4.900	4.500	4.700	2.200	1.700	0.000	3.100	3.700	4.200	33.300
Willow Creek	gwh	0.600	0.000	0.000	0.000	0.000	0.000	0.300	0.800	0.500	0.200	0.100	0.000	2.500
Flatiron Unit 3	gwh	0.300	0.000	3.100	6.200	5.400	2.400	0.000	4.900	0.000	0.000	0.000	0.000	22.300
Total Pump Energy	gwh	2.100	0.600	5.700	11.200	9.900	7.200	2.500	7.400	0.500	3.300	3.800	4.300	58.500

B-7: C-BT OCTOBER 2019 MAXIMUM REASONABLE PLAN FOR WATER YEAR 2020



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HYDROLOGY OPERATIONS

Dillon Reservoir

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Dillon Inflow	kaf	8.7	7.7	5.7	4.6	3.8	6.9	19.4	83.6	144.1	100.3	41.6	19.1	445.5
DL to GM Gain	kaf	5.8	5.1	4.1	3.7	3.7	8.3	16.1	55.3	86.8	62.1	23.4	11.2	285.6

Green Mountain Reservoir

Init Cont: 95.00 kaf **Maximum Cont:** 154.60 kaf **Minimum Cont:** 8.00 kaf
Elev: 7917.8 ft **Elev:** 7950.4 ft **Elev:** 7804.7 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Undepleted Inflow	kaf	14.5	12.8	9.8	8.3	7.5	15.1	35.7	139.3	231.5	163.0	65.2	30.3	733.0
Depletion	kaf	4.3	2.5	2.4	1.3	0.8	-2.4	1.4	33.3	26.1	8.2	7.3	11.0	96.2
Depleted Inflow	kaf	10.2	10.3	7.4	6.9	6.6	17.5	34.3	106.0	205.4	154.8	57.9	19.3	636.6
Turbine Release	kaf	27.0	11.1	11.4	13.4	12.2	13.5	56.4	78.5	89.3	92.2	63.7	45.4	514.1
Spill/Waste	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	54.2	40.3	0.3	0.0	94.9
Total River Release	cfs	439	186	186	218	220	220	947	1278	2410	2154	1040	764	
Min Release	cfs	60	60	60	60	60	60	60	75	75	60	60	60	
Total River Release	kaf	27.0	11.1	11.4	13.4	12.2	13.5	56.4	78.6	143.4	132.4	64.0	45.4	608.8
Evaporation	kaf	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.5	0.7	0.6	0.4	2.9
End-Month Targets	kaf	78.0	73.0	73.0	65.0	65.0	65.0	45.0	70.0	152.7	148.0	120.0	120.0	
End-Month Contents	kaf	78.0	77.2	73.1	66.7	61.1	65.0	42.8	70.0	131.5	153.2	146.6	120.0	
End-Month Elevation	ft	7905.68	7905.05	7901.88	7896.52	7891.56	7895.07	7872.38	7899.33	7939.04	7949.80	7946.63	7932.87	

Willow Creek Reservoir

Init Cont: 10.00 kaf **Maximum Cont:** 10.20 kaf **Minimum Cont:** 7.20 kaf
Elev: 8126.5 ft **Elev:** 8128.8 ft **Elev:** 8116.9 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Native Inflow	kaf	1.1	1.1	0.9	0.8	0.7	1.9	7.2	35.0	38.5	8.5	3.4	2.1	101.2
Minimum Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.1	0.0	9.3	15.9	0.0	0.0	0.0	25.3
Total River Release	kaf	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.8
Pumped to Granby	kaf	2.7	0.0	0.0	0.0	0.0	0.0	9.1	22.7	23.8	8.8	2.9	1.6	71.6
Evaporation	kaf	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.7
End-Month Targets	kaf	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	
End-Month Contents	kaf	7.5	8.2	8.6	9.0	9.3	10.6	8.2	10.7	9.0	8.2	8.2	8.2	
End-Month Elevation	ft	8118.24	8121.20	8123.13	8124.41	8125.62	8130.10	8121.32	8130.54	8124.57	8121.32	8121.32	8121.32	



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Granby Reservoir		Init Cont: 476.00 kaf Elev: 8270.9 ft			Maximum Cont: 539.80 kaf Elev: 8280.0 ft			Minimum Cont: 76.50 kaf Elev: 8186.9 ft						
		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Native Inflow	kaf	2.3	2.4	1.8	1.6	1.4	2.9	9.7	30.9	69.3	35.5	10.5	5.4	173.7
Release from Shadow Mtn	kaf	2.2	2.3	2.3	2.2	1.9	2.2	2.1	17.2	68.1	17.6	2.2	2.1	122.4
Pump from Windy Gap	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pump from Willow Creek	kaf	2.7	0.0	0.0	0.0	0.0	0.0	9.1	22.7	23.8	8.8	2.9	1.6	71.6
Total Inflow	kaf	7.1	4.7	4.2	3.7	3.3	5.0	20.9	70.9	161.2	61.9	15.6	9.0	367.5
Minimum River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.2	4.5	4.6	2.5	1.2	22.3
5412.5 Release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.2	2.1	5.5
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.8	52.1	0.9	0.0	106.8
Total River Release	kaf	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.2	4.5	5.8	4.6	3.3	27.7
Pumped to Shadow Mtn	kaf	13.3	1.6	17.5	33.9	30.7	26.1	14.6	0.1	0.0	3.0	15.8	21.8	178.4
Evaporation	kaf	1.6	0.7	0.0	0.0	0.0	0.8	1.4	2.2	3.1	3.0	2.3	2.1	17.2
Seepage loss	kaf	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.6
End-Month Contents	kaf	466.3	467.3	452.4	420.7	391.9	368.5	372.0	439.0	538.6	536.3	528.0	509.6	
End-Month Elevation	ft	8269.56	8269.71	8267.51	8262.67	8258.12	8254.29	8254.86	8265.49	8279.84	8279.52	8278.37	8275.78	

Shadow Mountain Reservoir		Init Cont: 17.00 kaf Elev: 8366.5 ft			Maximum Cont: 18.40 kaf Elev: 8367.0 ft			Minimum Cont: 16.60 kaf Elev: 8366.0 ft						
		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Native Inflow	kaf	3.5	3.2	2.4	2.1	1.8	3.8	12.8	38.2	85.0	44.3	15.4	8.1	220.6
Pumped from Granby	kaf	13.3	1.6	17.5	33.9	30.7	26.1	14.6	0.1	0.0	3.0	15.8	21.8	178.4
Total Inflow	kaf	16.8	4.8	20.0	36.0	32.5	29.9	27.4	38.3	85.0	47.3	31.2	29.9	399.1
Minimum River Release	kaf	2.2	2.1	2.2	2.2	1.9	2.2	2.1	2.2	2.1	2.2	2.2	2.1	25.7
Spill/Bypass	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total River Release	kaf	2.2	2.3	2.3	2.2	1.9	2.2	2.1	17.2	68.1	17.6	2.2	2.1	122.4
Adams Tunnel Flow	kaf	14.1	2.3	17.6	33.8	30.5	27.5	24.9	20.4	16.1	29.0	28.5	27.3	272.0
Evaporation	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.3	0.5	0.6	0.5	0.4	0.4	3.3
End-Month Contents	kaf	16.8	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	16.9	
End-Month Elevation	ft	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	8366.62	

Adams Tunnel		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Tunnel Capacity	kaf	27.4	18.2	22.9	33.8	30.5	29.5	24.9	20.4	25.3	33.8	28.5	27.3	322.5
Actual Diversion	kaf	14.1	2.3	17.6	33.8	30.5	27.5	24.9	20.4	16.1	29.0	28.5	27.3	272.0
% Maximum Delivery	%	51	13	77	100	100	93	100	100	63	86	100	100	



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Lake Estes

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Big Thompson Inflow	kaf	1.8	1.4	1.1	0.7	0.7	3.7	9.1	22.9	42.3	28.8	13.2	5.6	131.3
Minimum River Release	kaf	3.1	3.0	3.1	3.1	2.8	3.1	3.0	6.9	7.4	7.7	7.7	7.4	58.3
Actual River Release	kaf	4.8	1.4	1.1	0.7	0.7	3.7	3.0	10.9	25.9	24.7	10.1	5.6	92.6
Max Diversion Available	kaf	0.0	0.0	0.0	0.0	0.0	1.0	6.2	16.0	34.8	21.1	5.5	0.0	84.6
Priority Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.1	12.3	0.0	0.0	29.4
Skim Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	6.2	12.1	4.1	-0.8	3.1	0.0	24.7
% Maximum Diversion	%	0	0	0	0	0	0	100	75	61	54	56	0	
Irrigation Demand	kaf	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	1.4
Irrigation Delivery	kaf	0.1	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	1.2
Total River Release	kaf	4.8	1.4	1.1	0.7	0.7	3.7	3.0	10.9	25.9	24.7	10.1	5.6	92.6

Olympus Tunnel

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Tunnel Capacity	kaf	33.8	32.7	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	397.9
Actual Delivery	kaf	11.0	2.3	17.6	33.7	30.5	27.4	31.0	32.3	32.3	32.9	31.4	27.2	309.6
% Maximum Delivery	%	32	7	52	100	100	81	95	96	99	97	93	83	
Inflow to Flatiron	kaf	11.0	3.4	18.6	33.7	30.5	27.4	31.0	32.3	32.3	32.9	31.4	27.2	311.7

Carter Lake

Init Cont: 85.00 kaf Maximum Cont: 112.20 kaf Minimum Cont: 6.00 kaf
 Elev: 5734.1 ft Elev: 5759.0 ft Elev: 5626.8 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Pumped from Flatiron	kaf	1.4	0.0	9.7	18.6	15.2	6.2	0.0	15.0	9.8	15.6	15.7	15.2	122.4
Flatiron Bifurcation	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Carter to Flatiron	kaf	0.0	1.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
Evaporation Loss	kaf	0.2	0.1	0.0	0.0	0.0	0.2	0.3	0.4	0.5	0.5	0.4	0.3	2.9
Seepage Loss	kaf	0.2	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.1
End-Month Targets	kaf	112.0	112.0	112.0	112.0	112.0	10.0	10.0	112.0	112.0	112.0	112.0	112.0	
End-Month Contents	kaf	78.1	73.9	79.4	95.0	107.1	109.7	104.4	111.8	112.0	112.0	109.5	111.2	
End-Month Elevation	ft	5727.35	5723.16	5728.63	5742.98	5754.04	5756.82	5752.05	5758.21	5758.52	5758.34	5756.14	5757.65	
Priority Water Diverted to Carter	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	8.8	0.0	0.0	18.6
Irrigation Demand	kaf	7.6	2.2	2.4	2.2	2.5	2.7	4.6	6.5	7.8	14.0	16.8	12.2	81.5
Metered Demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Windy Gap demand	kaf	0.4	0.6	0.7	0.6	0.4	0.5	0.3	0.5	1.2	1.0	0.9	0.8	7.9
Total Demand	kaf	8.0	2.8	3.1	2.8	2.9	3.2	5.0	7.0	9.0	15.0	17.7	13.0	89.5
Total Delivery	kaf	8.0	2.8	3.1	2.8	2.9	3.2	5.0	7.0	9.0	15.0	17.7	13.0	89.5
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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Hansen Canal 930

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Minimum Flow	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Flow	kaf	57.2	55.3	57.2	57.2	51.6	57.2	55.3	57.2	55.3	57.2	57.2	55.3	673.2
Actual Flow	kaf	9.5	3.4	8.8	15.2	15.3	21.3	31.0	17.3	22.4	17.3	15.7	12.0	189.2

Dille Tunnel

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Big Thompson River Below Lake Estes	kaf	4.8	1.4	1.1	0.7	0.7	3.7	3.0	10.9	25.9	24.7	10.1	5.6	92.6
North Fork Big Thompson River at Drake	kaf	0.6	0.4	0.4	0.3	0.2	0.4	1.1	4.6	6.6	5.5	3.2	1.7	25.0
Dille Skim Water Diverted	kaf	0.1	0.0	0.0	0.0	0.0	0.0	0.0	9.0	13.7	16.1	10.5	4.9	54.3
Dille Priority Water Diverted	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
water available	kaf	5.4	1.9	1.4	1.0	0.9	4.1	4.1	15.4	32.5	30.2	13.4	7.3	117.6
water diverted	kaf	3.1	0.0	0.0	0.0	0.0	0.0	0.0	9.0	18.5	23.5	10.5	4.9	69.5
% Diverted	%	58	0	0	0	0	0	0	167	341	432	193	91	
Big T @ Canyon Mouth	kaf	2.3	1.9	1.4	1.0	0.9	4.1	4.1	6.4	14.0	6.7	2.9	2.4	48.1

Trifurcation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Release from Flatiron	kaf	9.5	3.4	8.8	15.2	15.3	21.3	31.0	17.3	22.4	17.3	15.7	12.0	189.2
Release to 550 Canal	kaf	7.6	3.2	8.6	14.9	15.0	21.0	24.4	3.9	22.4	23.4	8.9	7.1	160.4
Dille Tunnel	kaf	3.1	0.0	0.0	0.0	0.0	0.0	0.0	9.0	18.5	23.5	10.5	4.9	69.5
Total release to river	kaf	4.2	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.4	1.2	2.9	4.1	13.7
Irrigation demand	kaf	4.2	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.4	1.2	2.9	4.1	13.7
Windy Gap demand	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Total requirement	kaf	4.2	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.4	1.2	2.9	4.1	13.7
Total delivery	kaf	4.2	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.4	1.2	2.9	4.1	13.7
% Required Delivery	%	100	0	100	0	0	0	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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Hansen Canal 550

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Inflow from Flatiron	kaf	7.6	3.2	8.6	14.9	15.0	21.0	24.4	3.9	22.4	23.4	8.9	7.1	160.4
Maximum flow	kaf	28.2	29.1	29.0	30.1	27.2	29.1	28.1	30.1	29.1	30.1	30.1	29.1	349.3
Irrigation demand	kaf	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.8	0.7	0.8	5.7
Irrigation delivery	kaf	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.8	0.7	0.8	5.7
Minimum flow	kaf	1.5	2.7	1.3	0.0	0.0	4.6	4.5	3.1	9.4	3.1	3.1	3.0	36.3
Rels to Horsetooth	kaf	7.6	3.2	8.6	14.9	15.0	21.0	24.4	3.9	22.4	23.4	8.9	7.1	160.4

Horsetooth Reservoir

Init Cont: 76.00 kaf
 Elev: 5382.6 ft
 Maximum Cont: 157.00 kaf
 Elev: 5430.0 ft
 Minimum Cont: 13.00 kaf
 Elev: 5316.8 ft

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Inflow	kaf	7.6	3.2	8.6	14.9	15.0	21.0	24.4	3.9	22.4	23.4	8.9	7.1	160.4
Total irrigation delivery	kaf	10.1	1.8	1.9	2.1	1.9	2.1	3.1	8.1	8.0	22.2	25.0	10.9	97.2
Evaporation loss	kaf	0.3	0.1	0.0	0.0	0.0	0.2	0.4	0.7	0.9	0.8	0.6	0.5	4.5
Seepage loss	kaf	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.2
End-Month Targets	kaf	85.0	66.0	156.0	156.0	156.0	156.0	155.0	155.0	156.0	156.0	156.0	156.0	
End-Month Content	kaf	72.6	73.7	80.2	92.9	105.9	124.4	145.1	140.1	153.5	153.7	136.8	132.4	
End-Month Elevation	ft	5380.46	5381.26	5385.85	5394.32	5402.40	5413.12	5424.17	5421.58	5428.39	5428.51	5419.86	5417.49	
Priority water diverted to Horsetooth	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	2.6	0.0	0.0	9.3
Irrigation demand	kaf	7.2	0.0	0.0	0.0	0.0	0.0	0.3	3.5	2.8	14.5	18.2	6.2	52.7
Metered Demand	kaf	2.4	1.4	1.6	1.7	1.6	1.7	2.3	4.0	4.3	6.9	5.8	3.8	37.5
Windy Gap demand	kaf	0.5	0.4	0.4	0.4	0.3	0.4	0.5	0.6	0.8	0.8	1.1	0.9	7.1
Total demand	kaf	10.1	1.8	1.9	2.1	1.9	2.1	3.1	8.1	8.0	22.2	25.0	10.9	97.2
Total irrigation	kaf	10.1	1.8	1.9	2.1	1.9	2.1	3.1	8.1	8.0	22.2	25.0	10.9	97.2
% Required Delivery	%	100	100	100	100	100	100	100	100	100	100	100	100	
Shortage	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

CBT Project Summary

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Total CBT Delivery	kaf	22.1	3.9	4.2	4.3	4.5	4.8	7.7	15.5	15.9	37.7	44.6	27.1	192.3



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Windy Gap

Table with 14 columns: Category, Unit, Oct-20, Nov-20, Dec-20, Jan-21, Feb-21, Mar-21, Apr-21, May-21, Jun-21, Jul-21, Aug-21, Sep-21, Total. Rows include Pumping, Losses, Spill, Total Delivery, and Account Balance.



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PUMPING AND GENERATION OPERATIONS

Green Mountain Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Generation	gwh	18.600	18.000	18.600	18.600	16.800	18.600	18.000	18.600	18.000	18.600	18.600	18.000	219.000
Generation	gwh	4.800	1.900	1.900	2.200	2.000	2.200	8.600	11.900	16.500	19.300	13.400	9.300	94.000
% Maximum Generation	%	26	11	10	12	12	12	48	64	91	104	72	51	
Average	kwh/af	177	171	169	165	161	160	153	152	184	210	211	204	

Willow Creek Pumping

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Pumping	kaf	24.6	11.9	0.0	0.0	0.0	0.0	23.8	24.6	23.8	24.6	24.6	23.8	181.7
Actual Pumping	kaf	2.7	0.0	0.0	0.0	0.0	0.0	9.1	22.7	23.8	8.8	2.9	1.6	71.6
Pump Energy	gwh	0.600	0.000	0.000	0.000	0.000	0.000	1.900	4.800	5.100	1.900	0.600	0.300	15.200
% Maximum Pumping	%	11	0	0	0	0	0	38	92	100	36	12	7	296
Average	kwh/af	213	0	0	0	0	0	213	213	213	213	213	213	

Lake Granby Pumping

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Pumping	kaf	36.9	35.7	36.9	36.9	33.3	36.9	35.7	36.9	35.7	36.9	36.9	35.7	434.4
Actual Pumping	kaf	13.3	1.6	17.5	33.9	30.7	26.1	14.6	0.1	0.0	3.0	15.8	21.8	178.4
Pump Energy	gwh	1.900	0.200	2.500	4.900	4.500	3.900	2.200	0.000	0.000	0.400	2.200	3.100	25.800
% Maximum Pumping	%	36	4	47	92	92	71	41	0	0	8	43	61	
Average	kwh/af	143	143	144	145	147	149	149	149	0	140	140	141	



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Marys Lake Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Adams Tunnel Flow	kaf	14.1	2.3	17.6	33.8	30.5	27.5	24.9	20.4	16.1	29.0	28.5	27.3	272.0
Maximum Generation	gwh	6.400	0.200	4.300	6.400	5.800	6.400	6.200	6.400	6.200	6.400	6.400	6.200	67.300
Generation	gwh	2.000	0.100	3.200	6.400	5.800	5.100	4.500	3.600	2.600	5.400	5.300	5.100	49.100
% Maximum Generation	%	14	6	18	19	19	18	18	18	16	19	19	19	
Average	kwh/af	140	55	184	189	189	184	182	178	162	186	185	185	

Lake Estes Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Adams Tunnel Flow	kaf	14.1	2.3	17.6	33.8	30.5	27.5	24.9	20.4	16.1	29.0	28.5	27.3	272.0
Maximum Generation	gwh	16.000	15.500	16.000	16.000	14.500	16.000	15.500	16.000	15.500	16.000	16.000	15.500	188.500
Generation	gwh	6.000	0.600	8.200	16.000	14.400	12.900	11.400	9.000	7.100	13.500	13.300	12.800	125.200
% Maximum Generation	%	37	4	51	100	100	81	73	56	46	84	83	83	
Average	kwh/af	425	247	466	473	473	470	456	441	443	465	466	471	

Pole Hill Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Olympus Tunnel Flow	kaf	33.8	32.7	33.8	33.8	30.5	33.8	32.7	33.8	32.7	33.8	33.8	32.7	397.9
Maximum Generation	gwh	25.800	25.000	25.800	25.800	23.300	25.800	25.000	25.800	25.000	25.800	25.800	25.000	303.900
Generation	gwh	7.900	0.500	13.000	25.700	23.200	20.700	23.600	24.600	24.600	25.100	23.900	20.600	233.400
% Maximum Generation	%	31	2	51	100	100	80	95	96	99	97	93	82	
Average	kwh/af	234	16	386	761	761	612	722	729	752	742	707	628	



COLORADO - BIG THOMPSON MONTHLY OPERATIONS
 United States Bureau of Reclamation
 Eastern Colorado Area Office
 Loveland, Colorado

CBT October 2020 Max Reasonable: 01-OCT-2020

Flatiron Units 1 and 2 Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Inflow to Flatiron	kaf	11.0	3.4	18.6	33.7	30.5	27.4	31.0	32.3	32.3	32.9	31.4	27.2	311.7
Maximum Generation	gwh	32.200	31.200	32.200	32.200	29.100	32.200	31.200	32.200	31.200	32.200	32.200	31.200	379.300
Generation	gwh	9.000	1.300	16.400	32.100	29.000	24.500	28.500	30.100	30.500	31.000	28.800	23.900	285.100
% Maximum Generation	%	28	4	51	100	100	76	91	93	98	96	89	77	
Average	kwh/af	821	383	882	951	951	892	920	931	945	941	918	878	

Flatiron Unit 3 Pump/Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Maximum Pumping	kaf	1.9	0.0	9.7	18.6	15.2	15.8	15.6	16.1	15.3	15.6	15.7	15.3	154.8
Pump from Flatiron	kaf	1.4	0.0	9.7	18.6	15.2	6.2	0.0	15.0	9.8	15.6	15.7	15.2	122.4
Pump Energy	gwh	0.500	0.000	3.100	6.200	5.400	2.200	0.000	5.400	3.600	5.700	5.700	5.500	43.300
% Maximum Pumping	%	77	0	100	100	100	39	0	93	64	100	100	99	
Average	kwh/af	325	0	319	334	351	363	0	361	364	366	364	364	
Maximum Turbine release	kaf	0.0	4.7	6.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.0
Carter to Flatiron	kaf	0.0	1.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
Maximum Generation	gwh	0.000	1.000	1.300	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	2.300
Actual Generation	gwh	0.000	0.200	0.200	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.400
% Maximum Generation	%	0	25	16	0	0	0	0	0	0	0	0	0	
Average	kwh/af	0	207	205	0	0	0	0	0	0	0	0	0	

Big Thompson Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Total release	kaf	4.3	0.0	0.0	0.0	0.0	0.0	6.2	21.9	18.2	16.5	16.5	9.1	92.7
Turbine release	kaf	4.3	0.0	0.0	0.0	0.0	0.0	6.2	21.9	18.2	16.5	16.5	9.1	92.7
Wasteway release	kaf	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Generation	gwh	3.800	2.200	0.000	0.000	0.000	0.000	3.700	3.800	3.700	3.800	3.800	3.700	28.500
Generation	gwh	0.300	0.000	0.000	0.000	0.000	0.000	0.700	3.400	2.800	2.500	2.500	1.200	13.400
% Maximum Generation	%	8	0	0	0	0	0	19	90	75	65	67	33	
Average	kwh/af	70	0	0	0	0	0	112	157	154	152	155	134	



COLORADO - BIG THOMPSON MONTHLY OPERATIONS
 United States Bureau of Reclamation
 Eastern Colorado Area Office
 Loveland, Colorado

CBT October 2020 Max Reasonable: 01-OCT-2020

Project Generation

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Total Generation	gwh	29.900	4.700	43.000	82.400	74.400	65.300	77.300	82.700	84.100	96.800	87.200	72.800	800.600
Total Max Generation	gwh	102.900	93.100	98.300	99.100	89.500	99.100	99.500	102.900	99.600	102.900	102.900	99.600	1189.400

Project Pump Energy

		Oct-20	Nov-20	Dec-20	Jan-21	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Jul-21	Aug-21	Sep-21	Total
Granby	gwh	1.900	0.200	2.500	4.900	4.500	3.900	2.200	0.000	0.000	0.400	2.200	3.100	25.800
Willow Creek	gwh	0.600	0.000	0.000	0.000	0.000	0.000	1.900	4.800	5.100	1.900	0.600	0.300	15.200
Flatiron Unit 3	gwh	0.500	0.000	3.100	6.200	5.400	2.200	0.000	5.400	3.600	5.700	5.700	5.500	43.300
Total Pump Energy	gwh	2.900	0.200	5.600	11.100	9.900	6.100	4.100	10.300	8.600	8.000	8.600	8.900	84.300

B-8: Water Year 2021 Plan Summary Charts

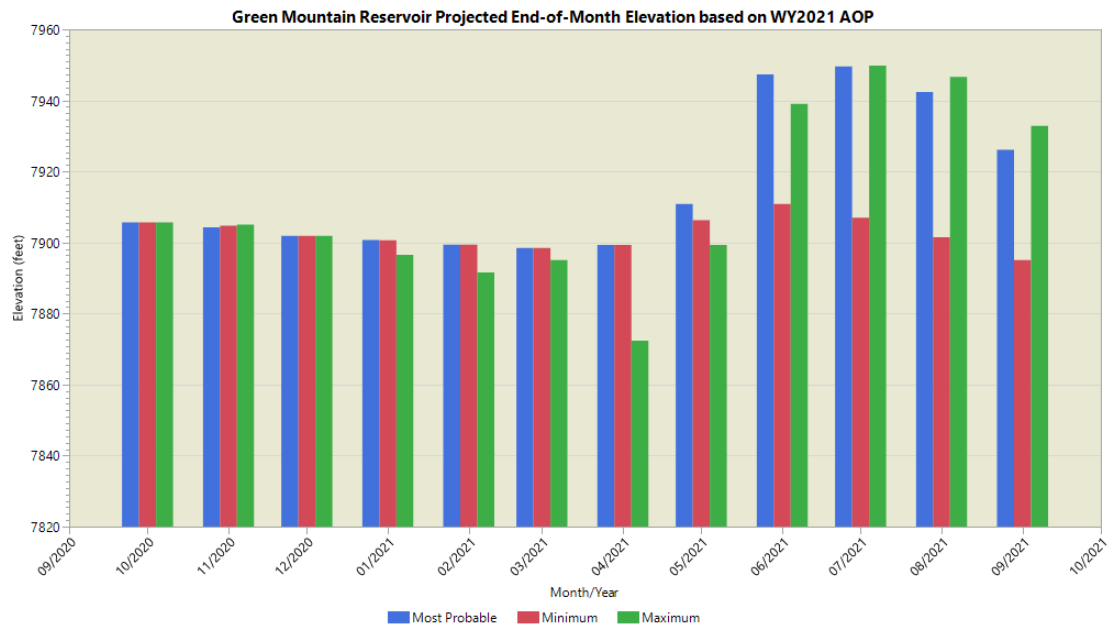


Figure B-8A: Water Year 2021 Operation Plan, Green Mountain Reservoir Elevations

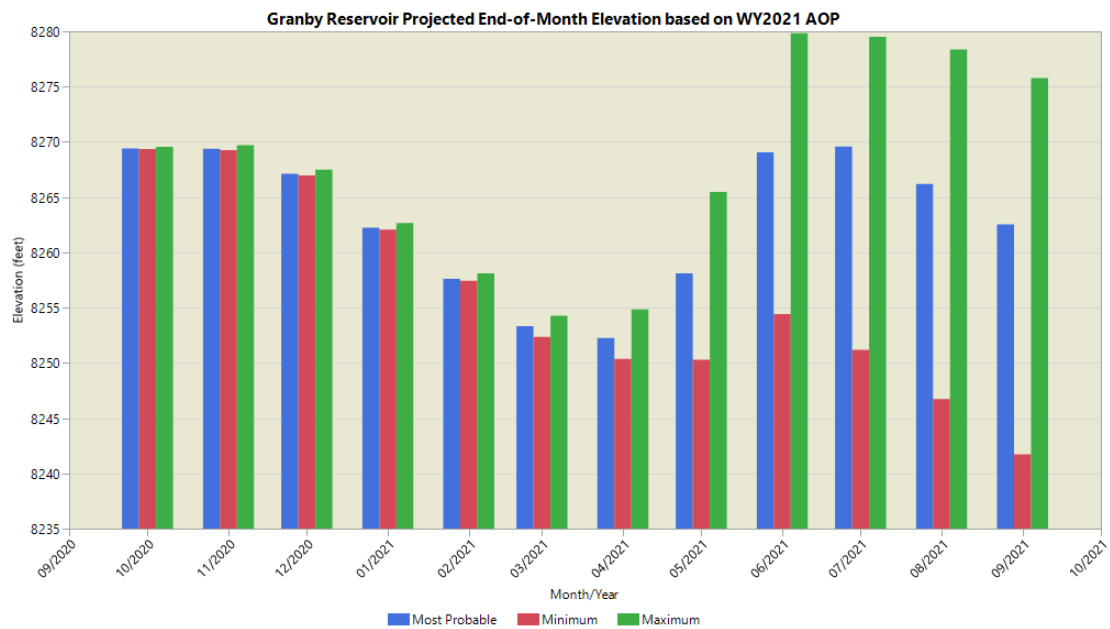


Figure B-8B: Water Year 2021 Operation Plan, Granby Reservoir Elevations

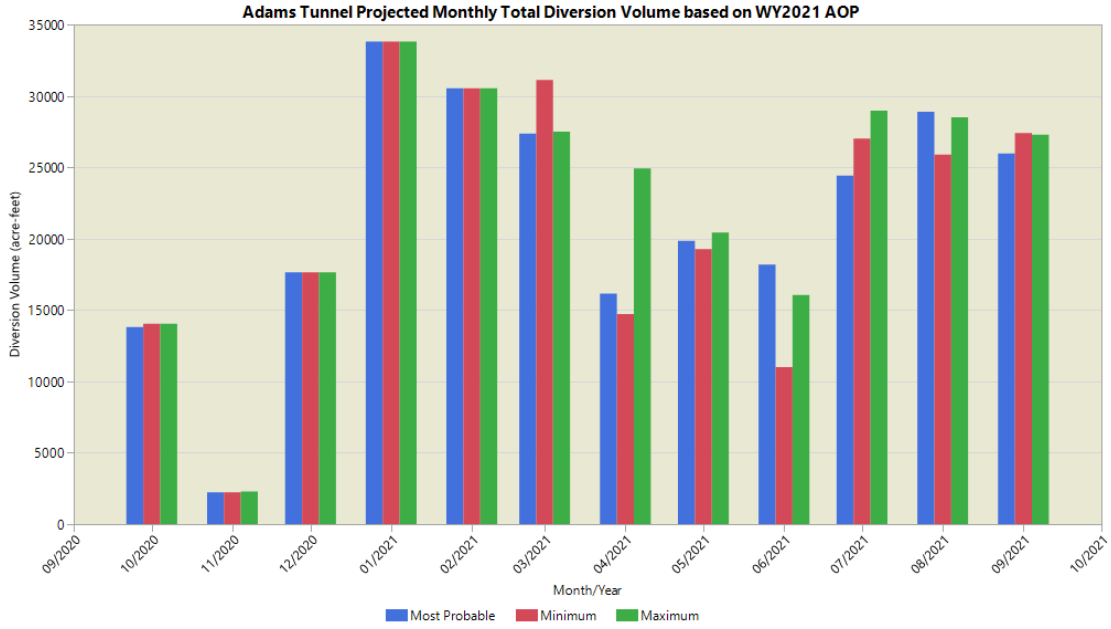


Figure B-8C: Water Year 2021 Operation Plan, Adams Tunnel Diversions

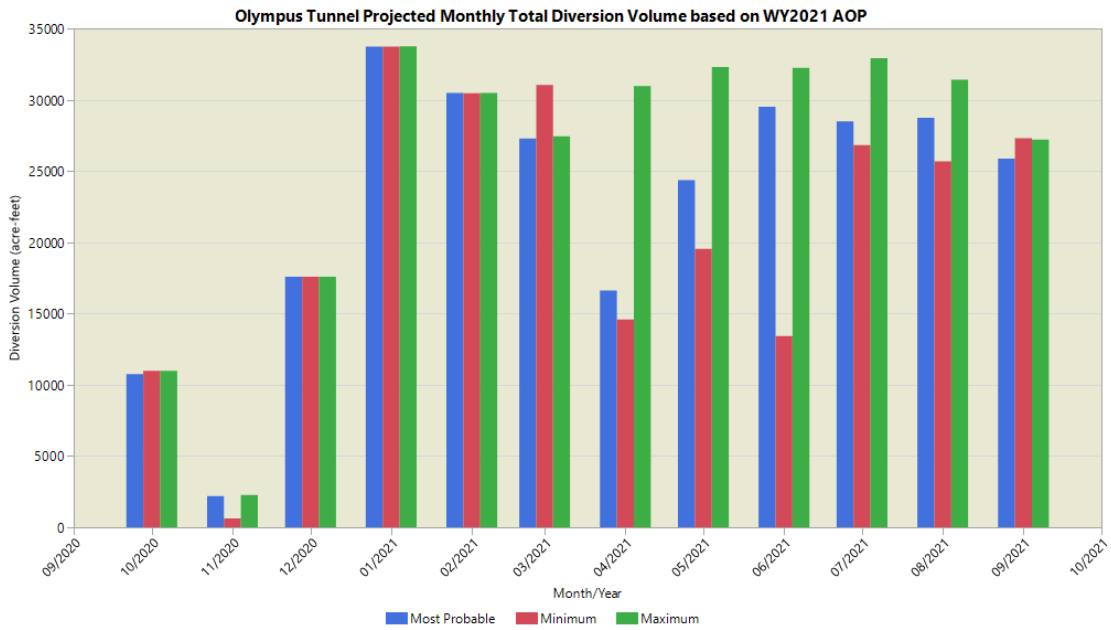


Figure B-8D: Water Year 2021 Operation Plan, Olympus Tunnel Diversions

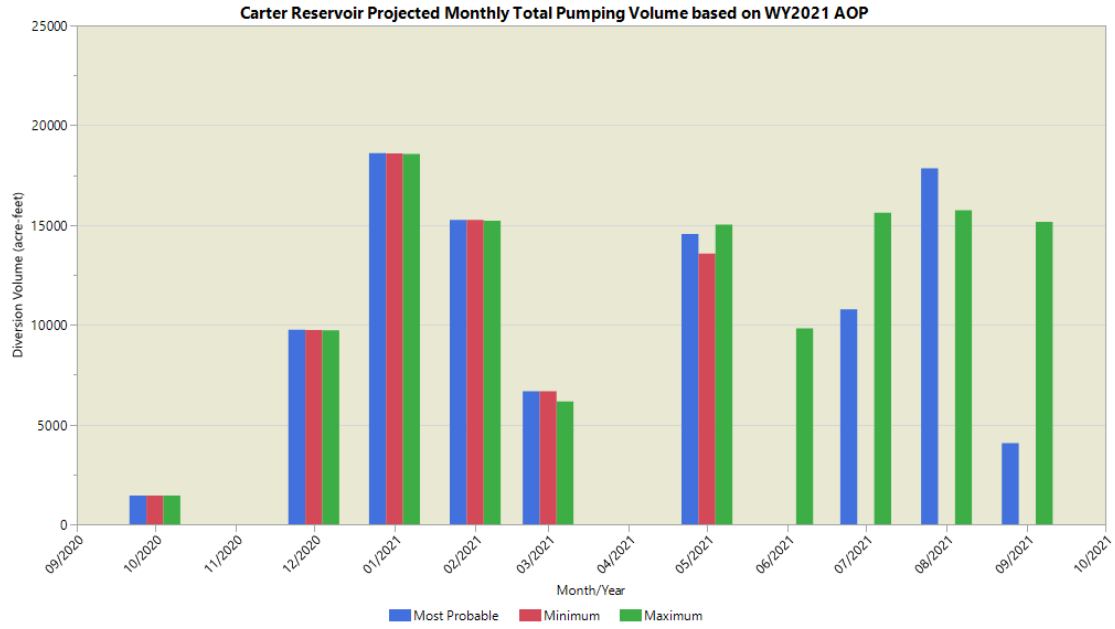


Figure B-8E: Water Year 2021 Operation Plan, Flatiron Unit #3 Pump Volume to Carter Lake Reservoir.

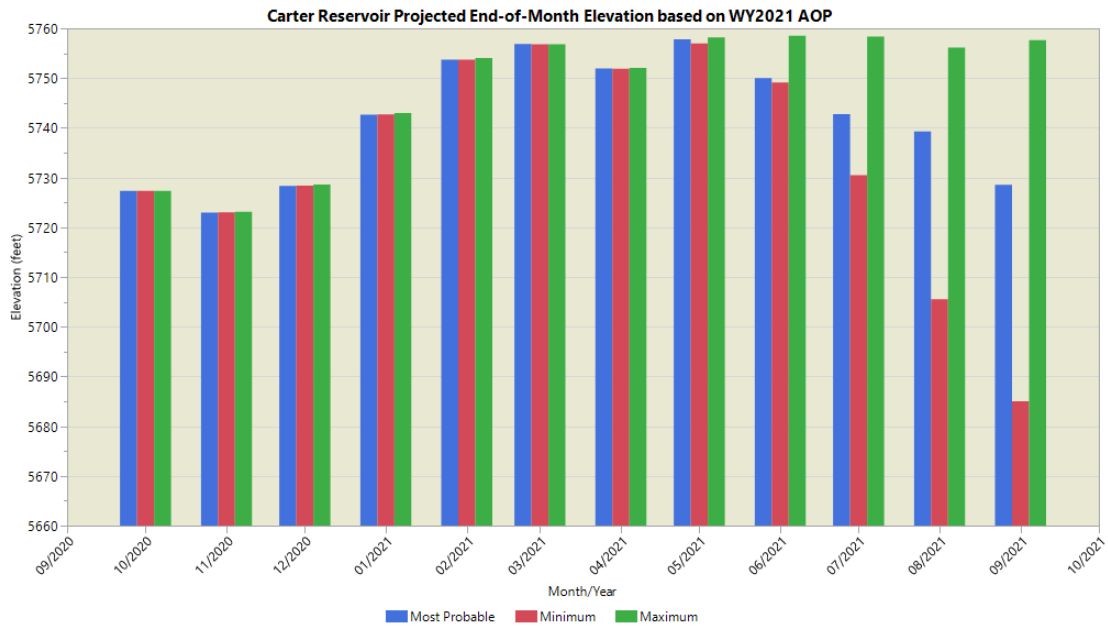


Figure B-8F: Water Year 2021 Operation Plan, Carter Lake Reservoir Elevations

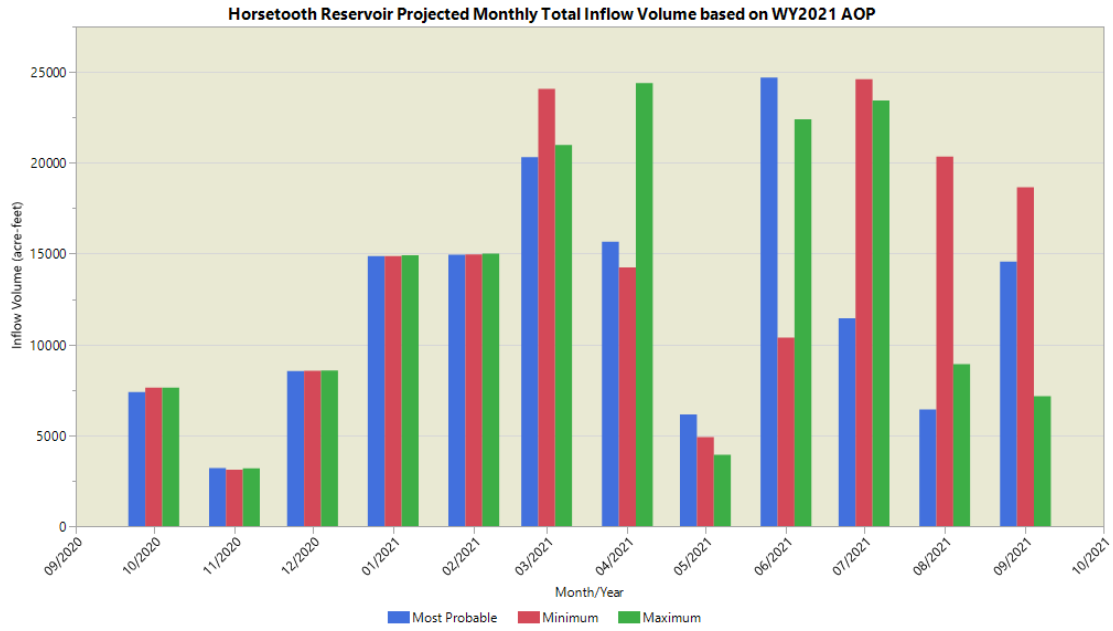


Figure B-8G: Water Year 2021 Operation Plan, Hansen Feeder Canal Inflow to Horsetooth Reservoir.

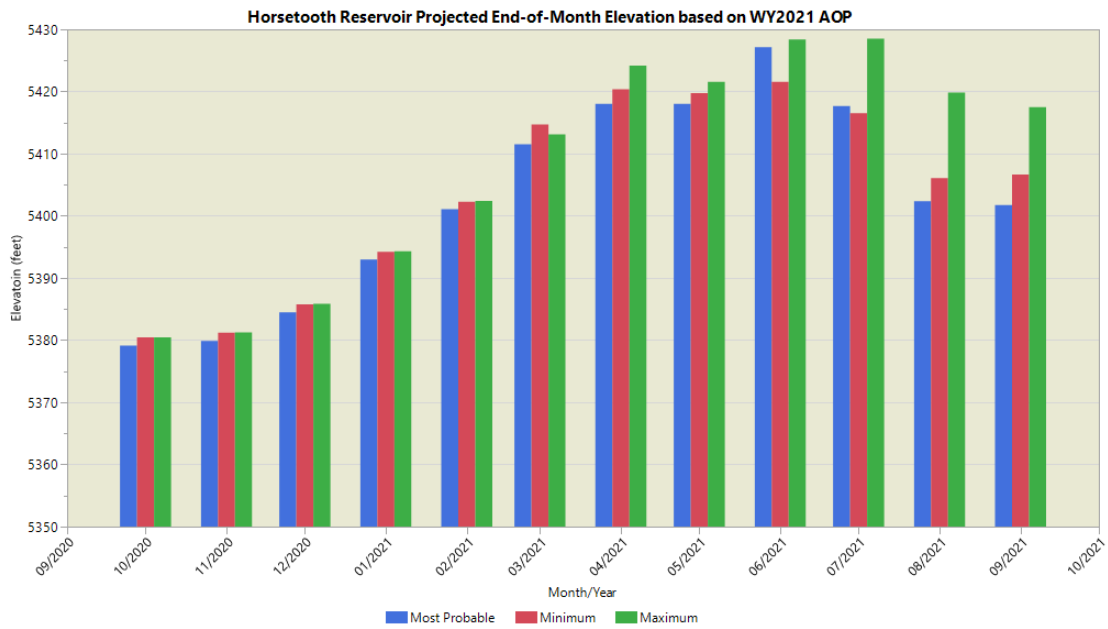


Figure B-8H: Water Year 2021 Operation Plan, Horsetooth Reservoir Elevations.

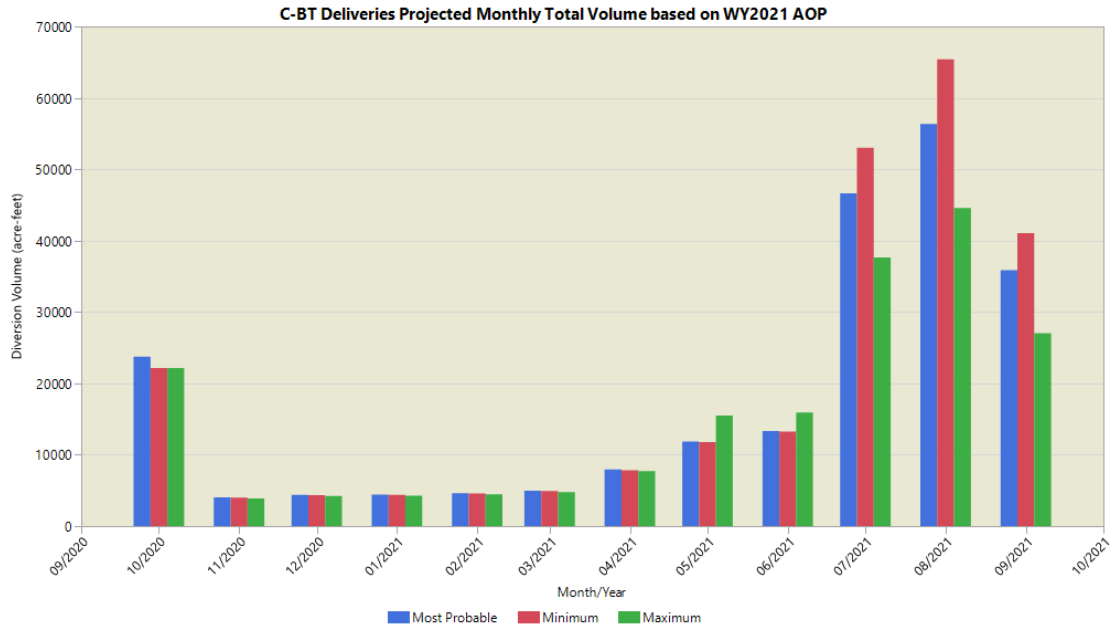


Figure B-8I: Water Year 2021 Operation Plan, C-BT Monthly Delivery Volumes.

Appendix C Operations Exhibits

C-1: Publicity Map, Extents, Facts, and Connectivity Schematic of the Colorado-Big Thompson Project

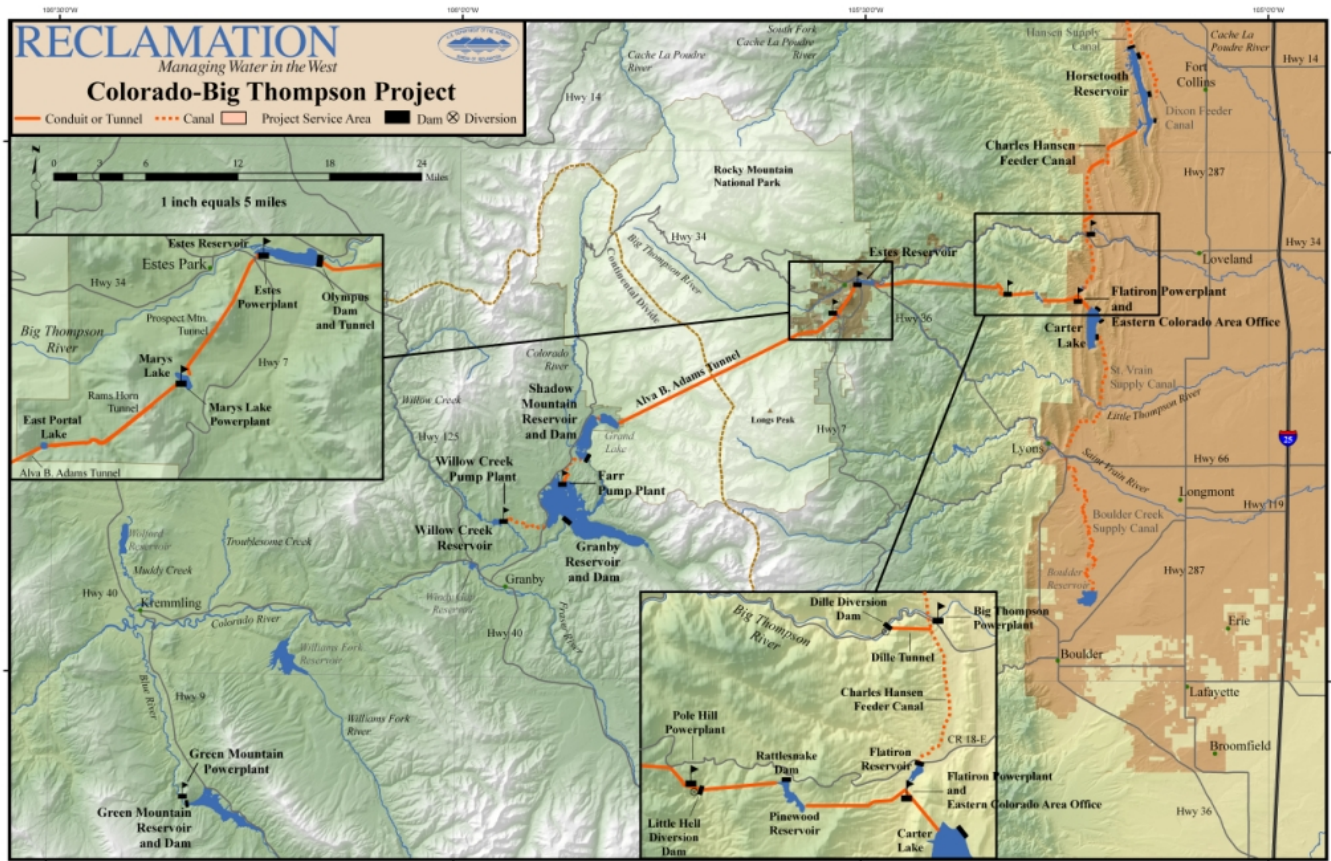
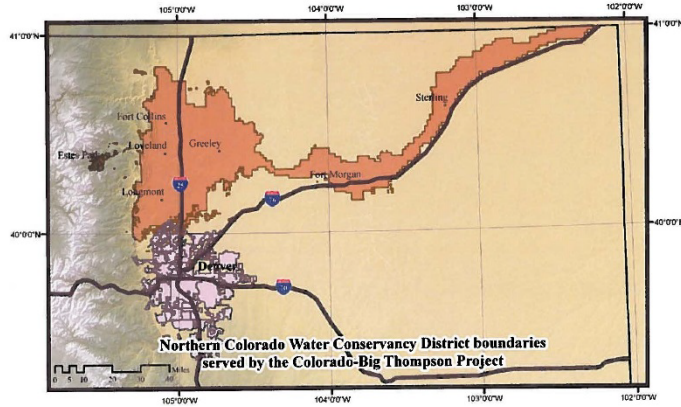


Figure C-1A: Map showing overview of the C-BT Project.

The narrative overview of the C-BT project begins on page 1 of this report.



Colorado-Big Thompson Facts

- A trans-mountain, trans-basin water diversion, storage, and delivery project
- Signed into law by President Roosevelt in 1937
- Construction period: 1938-1952
- Ten major reservoirs (Green Mountain, Willow Creek, Granby, Shadow Mountain, Marys Lake, Estes, Pinewood, Carter, Flatiron and Horsetooth)
- Twenty major dams and dikes
- Twenty-two tunnels, canals and other conduits covering about 130 miles
- Six hydroelectric powerplants (Green Mountain, Marys, Estes, Pole Hill, Flatiron, Big Thompson)
- Water right allows for diversion of up to 310,000 acre-feet of water a year
- Average annual diversion over life of project is 260,000 acre-feet
- Water falls over 2000 feet from Continental Divide to Colorado's eastern Plains, providing for hydroelectric power generation.
- Together, all six powerplants generate approximately 759 million kilo-Watt hours of electricity a year—enough to power 58,300 American homes for a year.
- The C-BT provides water to 29 cities and towns, including 620,000 irrigated acres and a population of 725,000 people

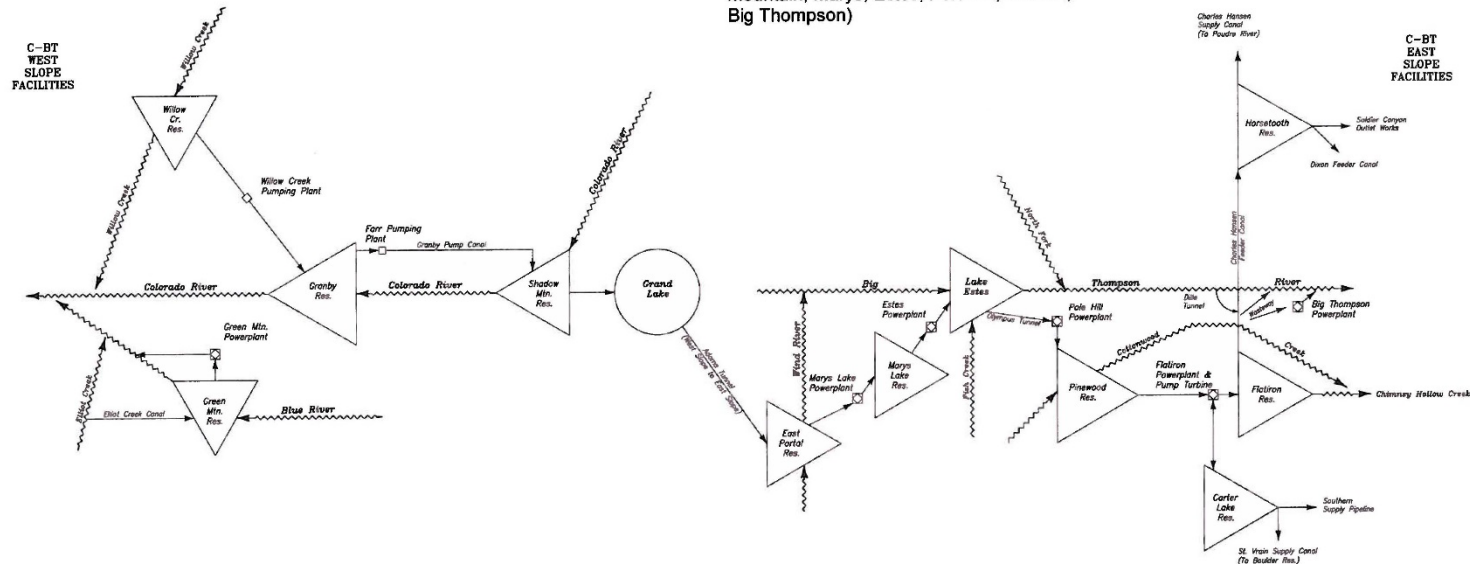


Figure C-1B: Connectivity schematic and facts about the C-BT Project.

C-2: Profile Drawing of the Colorado-Big Thompson Project

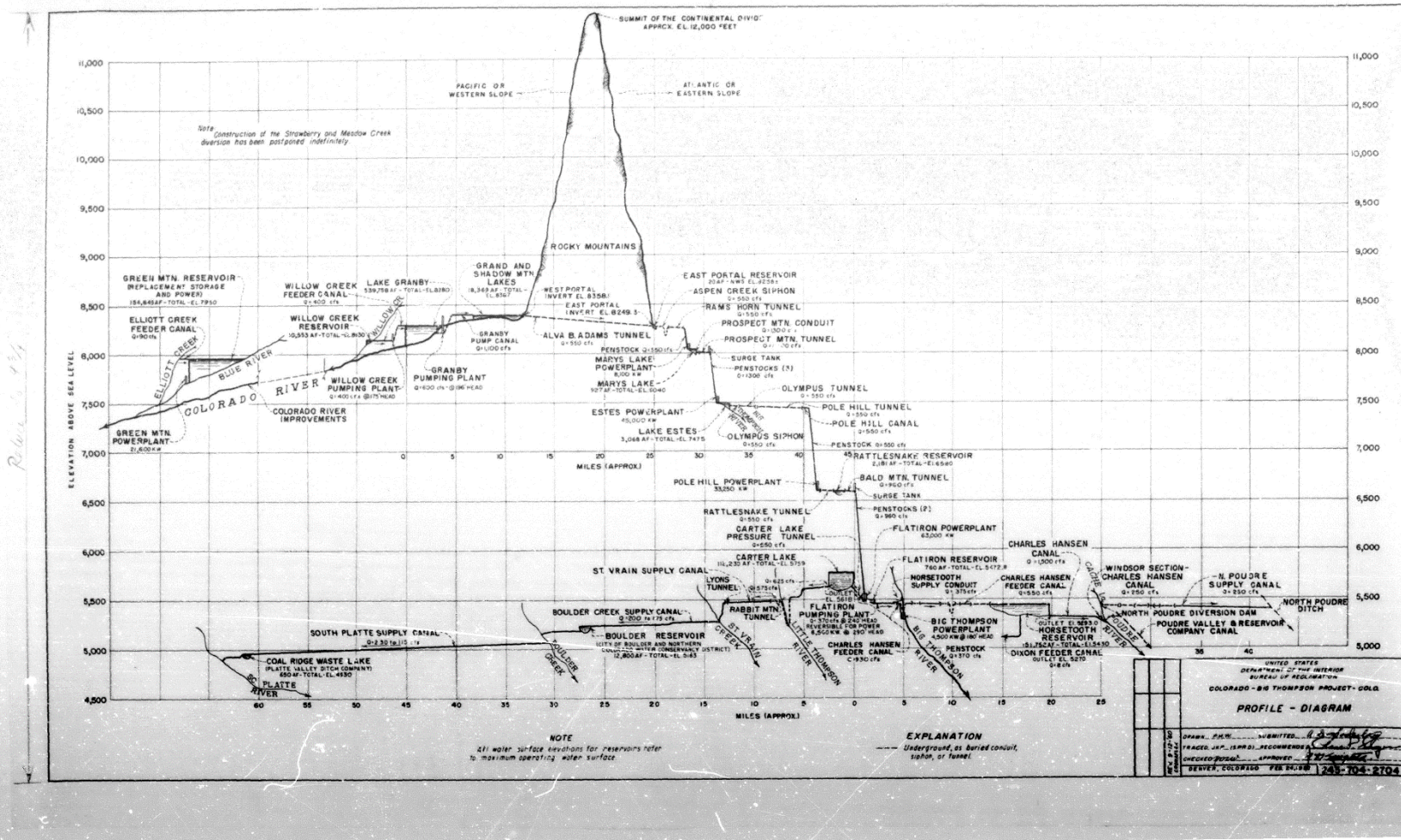


Figure C-2: Profile drawing of the C-BT Project.

C-3: Skim Right Decree

(Note: The following document has been electronically re-produced for this report from the original PDF document)

DISTRICT COURT, WATER DIVISION 1, COLORADO Weld County Courthouse 901 9th Ave. P.O. Box 2038 Greeley, CO 80632	DATE FILED: January 22, 2020 8:48 AM CASE NUMBER: 2016CW3193
IN THE MATTER OF THE APPLICATION FOR WATER RIGHTS OF THE UNITED STATES OF AMERICA IN THE BIG THOMPSON RIVER OR ITS TRIBUTARIES IN LARIMER COUNTY	<p style="text-align: center;">▲ COURT USE ONLY ▲</p>
	Case No.: 2016CW3193 Water Court
FINDINGS OF FACT, CONCLUSIONS OF LAW AND DECREE	

This Matter comes before the Court on the application for confirmation of absolute water rights of the United States of America (“United States”). The Court, having considered the pleadings, the evidence presented, the stipulations of the parties, the comments of the Division Engineer, and otherwise being fully advised in this matter, hereby makes the following findings of fact and conclusions of law and enters this judgment and Decree.

FINDINGS OF FACT

1. A properly verified Application was filed in this matter by the United States on December 29, 2016. Timely and adequate notice of the Application was given in the manner provided by statute.

2. Name, address, telephone number(s) (residence and business of applicant(s)):

United States of America
 % Bureau of Reclamation
 Eastern Colorado Area Office
 11056 West County Road 18E
 Loveland, CO 80537-9711
 (970) 461-5410

3. The time for filing Statements of Opposition has expired. The Court has jurisdiction over the subject matter of this proceeding and over all persons and owners of property affected hereby, irrespective of whether or not those persons and owners of property have appeared. See Colo. Rev. Stat. § 37-92-203 (2018).

4. Statements of Opposition were timely filed in this matter by The Northern Colorado Water Conservancy District, Mid-West Electric Consumers Association, the City of Loveland, the Town of Erie, the Thompson Water Users Association, the Colorado Water Conservation Board, and the Tri-State Generation and Transmission Association, Inc. No other Statements of Opposition were filed.

5. Stipulations were entered into between Applicant and the following Opposers:

- 5.1. Town of Erie.
- 5.2. Tri-State Generation and Transmission Association, Inc.
- 5.3. Mid-West Electric Consumers Association.
- 5.4. Thompson Water Users Association.
- 5.5. City of Loveland.
- 5.6. Northern Colorado Water Conservancy District.
- 5.7. Colorado Water Conservation Board.

6. The Division Engineer issued his Summary of Consultation dated March 31, 2017. The Court has given the Summary of Consultation due consideration.

7. Neither the land nor the water which is the subject of this Application is located within the boundaries of any designated ground water basin.

8. The Application in this matter requests approval of absolute water rights for power generation at three power generation facilities located on the Wind River and Big Thompson River, tributary to the South Platte River. The Application seeks only confirmation of direct flow water rights for the diversion and use of the natural flows of the Wind River and Big Thompson River for power generation. These three power generation facilities also utilize water diverted from the Colorado River as part of the Colorado-Big Thompson Project. These water rights are separately decreed in cases including, but not limited to, the “Blue River Decree” in Consolidated Cases No. 2782, 5016, and 5017 United States District Court, District of Colorado. The Olympus and Dille Tunnels also divert water rights decreed for the Colorado-Big Thompson Project, Carter Lake and Horsetooth Reservoirs in CA 10077, Boulder County District Court, November 14, 1939. Nothing in the Application or Decree herein affects, modifies or changes these prior decrees for the diversions of water under the Colorado-Big Thompson Project.

9. Name(s) of Structure(s):

- 9.1. Aspen Creek Siphon Inlet (siphon).

- 9.2. Olympus Tunnel (tunnel).
- 9.3. Dille Tunnel (tunnel).

10. Legal description of each point of diversion:

10.1. Aspen Creek Siphon Inlet:

Required Description: County: Larimer	SW 1/4 of the	NW 1/4 of	Section 9	Township 4N	Range 73W	Principal Meridian 6th P.M.
Source of PLSS information: AquaMap						

10.2. Olympus Tunnel:

Required Description: County: Larimer	SE 1/4 of the	NW 1/4 of	Section 29	Township 5N	Range 72W	Principal Meridian 6th P.M.
Source of PLSS information: AquaMap						

10.3. Dille Tunnel:

Required Description: County: Larimer	NE 1/4 of the	NW 1/4 of	Section 9	Township 5N	Range 70W	Principal Meridian 6th P.M.
Source of PLSS information: AquaMap						

11. Source(s):

- 11.1. Aspen Creek Siphon Inlet: Wind River, tributary to Big Thompson River, tributary to South Platte River.
- 11.2. Olympus Tunnel: Big Thompson River, tributary to South Platte River.
- 11.3. Dille Tunnel: Big Thompson River, tributary to South Platte River.

12. Date(s) of Appropriation:

- 12.1. Aspen Creek Siphon Inlet: June 24, 1965 and September 12, 2013.
- 12.2. Olympus Tunnel: June 6, 1956.
- 12.3. Dille Tunnel: May 14, 1959 and June 13, 1996.

13. How Appropriation(s) was/were Initiated:

- 13.1. Aspen Creek Siphon Inlet: Diversion and beneficial use.
- 13.2. Olympus Tunnel: Diversion and beneficial use.

- 13.3. Dille Tunnel: Diversion and beneficial use.
14. Date(s) Water Applied to Beneficial Use:
- 14.1. Aspen Creek Siphon Inlet: 28 cfs: June 24, 1965. 88.63 cfs: September 12, 2013.
- 14.2. Olympus Tunnel: 566 cfs: June 6, 1956.
- 14.3. Dille Tunnel: 146 cfs: May 14, 1959. 254 cfs: June 13, 1996.
15. Amount(s) claimed in cubic feet per second (cfs):
- 15.1. East Portal Dam, Aspen Creek Siphon Inlet: 28 cfs Absolute with a June 24, 1965 diversion date and an additional 88.63 cfs Absolute with a September 12, 2013 diversion date, for a total of 116.63 cfs.
- 15.2. Olympus Tunnel: 566 cfs Absolute.
- 15.3. Dille Tunnel: 146 cfs Absolute with a May 14, 1959 diversion date and an additional 254 cfs Absolute with a June 13, 1996 diversion date, for a total of 400 cfs.
The dates of use reflect the dates on which the stated flow rates were diverted and placed to beneficial use for power generation. With the oversight of the Colorado Division of Water Resources, hydropower operations and use of the claimed sources have been ongoing since approximately the completion of the Colorado-Big Thompson Project.
16. Purpose of use for all structures: Hydroelectric Power.
17. Diversion Structures:
- 17.1. Aspen Creek Siphon Inlet (Figures 1 and 2): Diverts water from the Wind River to the Marys Lake Power Plant (Figure 3) and Estes Park Power Plant (Figure 4) for hydroelectric power generation. All Wind River water shall be returned without depletion to the Big Thompson River below Estes Park Power Plant at the NW 1/4 of the NW 1/4 of Section 30, Township 5 North, Range 72 West of the 6th P.M., Larimer County (Figure 5).
- 17.2. Olympus Tunnel (Figure 6): Diverts water from the Big Thompson River to Pole Hill Power Plant (Figure 7), Flatiron Power Plant (Figure 8), and/or the Big Thompson Power Plant (Figure 9) for hydroelectric power generation. All Big Thompson River water shall be returned without depletion to the Big Thompson River at the mouth of the Big Thompson Canyon via either the Big Thompson Power Plant at the NE 1/4 of the NW 1/4 of Section 10, Township 5 North, Range 70 West of the 6th P.M., Larimer County, or the Charles Hansen Feeder Canal Trifurcation Wasteway at the SE 1/4 of the SW 1/4 of Section 3, Township 5 North, Range 70 West of the 6th P.M., Larimer County. If the water is returned via the Charles Hansen Feeder Canal Trifurcation Wasteway, it enters the Big Thompson River immediately upstream of the Handy Ditch Diversion in the NE 1/4 of the NW 1/4 of Section 10, Township 5 North, Range 70 West of the 6th P.M., Larimer County (Figure 10). If the water is returned via the Big Thompson Power Plant, it enters the Big Thompson River immediately below the Big Thompson Power

Plant in the NE 1/4 of the NW 1/4 of Section 10, Township 5 North, Range 70 West of the 6th P.M., Larimer County (Figure 11).

17.3. Dille Tunnel (Figure 12): Diverts water from the Big Thompson River to the Big Thompson Power Plant (Figure 9) for hydroelectric power generation. All Big Thompson River water shall be returned without depletion to the Big Thompson River at the mouth of the Big Thompson Canyon immediately below the Big Thompson Power Plant in the NE 1/4 of the NW 1/4 of Section 10, Township 5 North, Range 70 West of the 6th P.M., Larimer County (Figure 11).

18. Terms and Conditions. The water rights decreed herein shall be operated pursuant to the following terms and conditions:

18.1. The Applicant shall not use the water rights decreed herein in a manner that injures, interferes with, or otherwise adversely impacts the water rights decreed to the Colorado-Big Thompson Project in Consolidated Cases No. 5016 and 5017 and the Findings of Fact and Conclusions of Law and Final Decree in Consolidated Cases Nos. 2782, 5016, and 5017 (“Consolidated Cases”), United States District Court for the District of Colorado (“Federal Court”), dated October 12, 1955 (“Blue River Decree”), and the water rights originally decreed for Horsetooth and Carter Lake Reservoirs from the Big Thompson River in CA 10077, Boulder County District Court, November 14, 1939.

18.2. This decree is for non-consumptive water rights. To ensure that water is not consumed, Applicant shall demonstrate, through its accounting, that an amount of water equal to the amount diverted is returned to the river on a daily basis in a manner approved by the Division Engineer. The Applicant shall curtail any out-of-priority depletions resulting from the use of water pursuant to this decree, unless such depletions are augmented or replaced pursuant to a subsequent augmentation plan decreed by the Water Court or substitute water supply plan approved by the State Engineer pursuant to C.R.S. 37-92-308 or successor statutes.

18.3. The water rights decreed herein are junior and will be administered as junior in priority in relation to the instream flow water rights decreed to the Colorado Water Conservation Board in Case Nos. 89CW200, 89CW205 and 89CW206, each of which is located between Olympus Dam and the Dille Diversion Dam. Section 37-92-102(3)(b), C.R.S. is not applicable for the water rights decreed herein, and no such allowance is decreed herein.

19. The United States owns all land upon which the existing diversion and use structures are located.

CONCLUSIONS OF LAW

20. The Water Court for Water Division 1 has jurisdiction over the subject matter of these proceedings and over all persons and owners of property who may be affected thereby, whether or not they have chosen to appear. The Application in this matter and the résumé publication

thereof was in all respects adequate to place such persons on inquiry notice of the relief granted herein. Colo. Rev. Stat. §§ 37-92-203 and 37-92-302 (2018).

21. The Application herein was filed with the Water Clerk in accordance with the provisions of Colo. Rev. Stat. § 37-92-302(1)(a) (2018), and referred to the Water Referee in accordance with the provisions of Colo. Rev. Stat. § 37-92-203(7) (2018).

22. Timely and adequate notice of the filing and of the contents of the Application herein was given in the manner provided by law, and this Court has jurisdiction over all persons or entities affected hereby, whether they have appeared or not. Colo. Rev. Stat. § 37-92-302 (2018).

23. The terms and conditions as set forth in this Decree are adequate to prevent injury to the owners of, or persons entitled to use, water under a vested water right or a decreed conditional water right. See Colo. Rev. Stat. §37-92-305(3) (2018).

24. This Decree is administrable by the water officials of the State of Colorado.

RULING OF THE COURT

Based on the foregoing Findings of Fact and Conclusions of Law, it is hereby adjudged, ordered and decreed that:

25. The foregoing Findings are incorporated in this Ruling by this reference and are to be considered a part of the decretal portion of this Decree as though set forth in full, and the Application is hereby granted, subject to the terms and conditions set forth in this Ruling.

26. Stipulations. The Stipulations entered into between the Applicants and the objectors are approved by the court.

27. The United States' water rights as described herein, are hereby confirmed, approved and decreed ABSOLUTE, subject to the terms and conditions set forth in this Decree.

28. Pursuant to Colo. Rev. Stat. § 37-92-305(8) (2018), the state engineer shall curtail all out-of-priority diversions, the depletions from which are not replaced so as to prevent injury to vested water rights.

29. The Applicant shall comply with the orders of the State Engineer or Division Engineer to install necessary measuring devices. The United States shall measure and account on a daily basis and report the accounting on no less than a monthly basis, or more frequently if required by the Division Engineer. The currently accepted accounting forms are attached as Appendix A to this Decree. These forms are subject to modification at the request of, or in consultation with the Division Engineer, without amendment to this Decree.

30. The Application for water rights herein was filed in the Water Court in the year of 2016 and the water rights herein awarded shall be administered as having been filed in that year; and shall be junior to all water rights for which applications were filed in previous years. As between all water rights, the applications for which were filed in the same calendar year, priority shall be determined by historical date of appropriation and not affected by date of the entry of ruling.

31. A copy of this Decree shall be filed with the appropriate Division Engineer and with the State Engineer.

DATED this 22nd day of January, 2020.

A handwritten signature in black ink that reads "James Hartmann". The signature is written in a cursive style and is positioned above a horizontal line.

James F. Hartmann
Water Judge
Water Division No. 1
State of Colorado

Decree

Page 7

Case No. 2016CW3193

Appendix D Power Tables

D-1: Western Division System Generation for Water Year 2020

Table D-1: Western Division System Generation for WY 2020.

Powerplant	Accum. Gross Generation		
	WY 2020 (GWH)	Avg ¹ (GWH)	Percent of Avg
Green Mtn.	49.6	51.9	95
Marys Lake	33.6	37.2	90
Estes	96.1	100.3	96
Pole Hill	131.7	172.3	76
Flatiron 1&2	169.5	226.9	75
Big Thompson	5.1	10.9	47
Seminole	134.7	132.5	102
Kortes	156.4	140.4	111
Freemont C.	253.7	239.6	106
Alcova	130.5	118	111
Glendo	107.6	80.1	134
Guernsey	21	19.4	108
Boysen	71.5	69.3	103
Heart Mtn. ²	21.6	15.8	137
Buffalo Bill ²	87.7	68.3	128
Shoshone ²	21.3	20.2	105
Spirit Mtn. ²	16.3	14.7	111
Mt. Elbert ³	260.3	169	154
Yellowtail ⁴	864.6	959	90
Total	2200.4	2166.3	102

1 1976-2005 average unless noted otherwise

2 Average gross generation for 1995-2012

3 Gross pump/storage generation reported. Average is for 1990-1999

4 Half of average gross generation of 1971-1990. In general, half of Yellowtail energy is dedicated the Western Division System through marketing arrangement; the other half is marketed in Eastern Division System.

D-2: Pump Energy Used during Water Year 2020

Table D-2: Pump energy used during water year 2020

Pumping Plant	October 2019-September 2020 Pump Energy		
	WY2020 (GWH)	Avg ¹ (GWH)	Percent of Avg
Willow Cr	7.0	5.8	121
Farr	24.3	30.7	79
Flatiron Unit #3	38.4	26.7	144
Mt. Elbert ²	309.0	182.1	170
Total	378.7	245.3	154

1 1976 – 2005 average unless otherwise noted

2 Average pump energy for 1990-1999

D-3: Gross Generation Less Pumping for Water Year 2020

Table D-3: Gross generation less pumping for water year 2020 (Units: Gigawatt Hours)

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Mt. Elbert ¹	0	0	7.5	7.1	6.6	1.1	2	7.6	4.4	2.5	3.6	3.7	46.1
Green Mtn.	8.7	2.8	2	1.5	1.4	1.6	2.7	3.7	4.8	5.4	9	6.2	49.8
Willow Cr. pump	0.2	0.4	0	0	0	0	0.6	4	1.6	0.2	0	0	7
Farr pump	2.6	0.1	2.8	3	3.4	3.2	0.6	0	0.5	2.9	4.3	1.3	24.7
Marys Lake	2.7	0	2.8	3.3	4	3.6	0.6	1.5	4.7	4.5	5	1.2	33.9
Estes	8.1	0	8.4	9.6	10.9	9.9	2.4	4.7	13.6	12.3	13.8	3.6	97.3
Pole Hill	12	0	12	13.3	15.8	14.6	2.3	11	22.6	15.9	11.1	2.8	133.4
Flatiron 1&2	14.6	0.4	14.5	16.9	19.9	19	5.9	16.9	25.8	18.9	14.8	3.3	170.9
Flatiron 3	0	0.3	0.1	0	0	0	0	0	0	0	0	0	0.4
Flatiron 3 pump	0	0	1.4	3.4	6.1	6.3	1.1	0.7	6.1	6.1	6.3	1.5	39
Big Thompson	0	0	0	0	0	0	0	1.1	2	1.1	0.9	0.1	5.2
Seminole	4.5	4.3	4.4	4.5	4.2	16.4	21	20.3	21.6	19.5	10.2	4.3	135.2
Kortes	5.3	5	5.1	5.2	5	17.6	28.2	23.7	23.2	21.3	11.9	5.5	157
Fremont Canyon	1.1	7.7	8.2	3.5	2.2	9.5	33.7	44.6	45	48.2	38.1	12.5	254.3
Alcova	3.1	2.9	3.1	3.1	2.9	4.1	12.1	22.2	28.2	28.8	15.5	4.6	130.6
Glendo	0.1	0	0	0	0	0	17.1	22	19.5	22.8	21.1	4.9	107.5
Guernsey	0.1	0	0	0	0	0	3.3	4.4	4.2	1.6	4.3	3.1	21
Pilot Butte ²	0	0	0	0	0	0	0	0	0	0	0	0	0
Boysen	2.6	5.4	5.1	5.3	5	6.7	9.5	7.2	6.9	7.5	6.4	4.4	72
Shoshone	1.8	1.8	1.8	1.8	1.7	1.8	1.7	1.7	1.8	1.9	1.9	1.7	21.4
Buffalo Bill	5.3	7.5	1.3	1.4	1.2	3.8	12.6	12.9	13.4	13.6	9.2	5.7	87.9
Spirit Mtn.	1.3	0	0	0	0	0	0.8	2	2.9	3.2	3.1	2.9	16.2
Diamond Cr. pump	0	0	0	0	0	0	0	0	0	0	0	0	0
Heart Mtn.	1.9	0	0	0	0	0	2.7	3.9	3.6	3.2	3.1	3.1	21.5
Yellowtail ³	74.1	75.5	75.2	72	68	97.3	107.1	60.8	54	79.3	58.4	50.1	871.8
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Fry-Ark	0	0	7.5	7.1	6.6	1.1	2	7.6	4.4	2.5	3.6	3.7	46.1
CBT	43.3	3	35.6	38.2	42.5	39.2	11.6	34.2	65.3	48.9	44	14.4	420.2
North Platte	14.2	19.9	20.8	16.3	14.3	47.6	115.4	137.2	141.7	142.2	101.1	34.9	805.6
Bighorn	50	52.5	45.8	44.5	41.9	61	80.9	58.1	55.6	69.1	52.9	42.9	654.9
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
TOTAL GEN	107.5	75.4	109.7	106.1	105.3	148.9	209.9	237.1	267	262.7	201.6	95.9	1926.8
TOTAL LOAD	162.4	162.2	177	172.8	137	149.7	176.1	184.5	211.2	262.5	211.6	156.8	2163.8
SURPLUS/DEFICIT	-55	-86.9	-67.3	-66.7	-31.7	-0.8	33.8	52.6	55.8	0.1	-10	-61	-237

1 Flow through energy reported, not pump/storage energy as reported in Table A-1

2 Marketed energy

3 Total Yellowtail reported in row but only half of total generation of Yellowtail used for Bighorn and Total Gen row of Western Division Power Generation Calculations. In general, half of Yellowtail energy is dedicated to the Western Division System through marketing arrangement. The other half is marketed in Eastern Division System.

D-4: Most Probable Inflow Projected Gross Generation and Pumping for Water Year 2021

Table D-4: Most probable inflow projected gross generation and pumping for WY 2021 (Units: Gigawatt Hours).

	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL
Mt. Elbert ¹	1.3	2.4	2.4	2.5	3.1	2.5	3.5	3.9	4.7	4.4	2.0	1.0	33.7
Green Mtn.	7.6	2.0	2.1	1.8	1.6	1.8	1.8	3.5	5.5	7.7	7.2	4.7	28.3
Willow Cr. pump	0.6	0.0	0.0	0.0	0.0	0.0	0.8	3.5	2.6	0.7	0.3	0.2	7.5
Farr pump	3.0	0.3	2.5	5.0	4.6	4.0	1.5	0.6	0.0	1.7	3.5	3.5	29.6
Marys Lake	3.3	0.2	3.2	6.4	5.8	4.9	2.2	3.5	3.2	4.3	5.3	4.8	45.9
Estes	9.4	0.7	8.2	16.0	14.4	12.4	6.0	8.8	8.0	11.4	13.5	12.3	119.5
Pole Hill	13.3	0.7	13.0	25.7	23.2	20.0	9.1	18.1	22.5	21.4	21.7	19.5	201.7
Flatiron 1&2	16.6	1.6	16.4	32.1	29.0	23.4	10.3	20.8	26.5	25.7	25.4	22.6	252.9
Flatiron 3	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Flatiron 3 pump	0.0	0.0	3.1	6.2	5.4	2.6	0.0	5.2	0.0	3.7	6.1	1.4	37.1
Big Thompson	0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.8	1.8	0.9	0.9	8.8
Seminole	5.4	5.2	9.9	5.3	4.8	17.1	19.1	23.1	26.1	0.0	0.0	0.0	164
Kortes	5.6	5.4	10.3	5.6	5.1	18.2	20.7	24.5	26.6	25.4	5.9	5.4	166.7
Fremont Canyon	0.0	0.0	0.0	7.1	6.5	7.3	15.2	28.6	45.7	47.2	30.7	14.7	218.9
Alcova	11.3	3.3	3.5	4.2	3.8	4.2	4.8	13.5	22.7	25.3	13.8	6.7	123
Glendo	0.0	0.0	0.0	0.0	0.0	0.0	1.2	18.0	19.2	25.3	20.7	9.0	88.1
Guernsey	0.0	0.0	0.0	0.0	0.0	0.0	0.6	3.8	3.7	3.8	3.8	3.4	19.1
Pilot Butte ²	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Boysen	3.8	3.1	3.2	3.2	2.9	3.2	7.5	11.5	11.5	10.7	8.9	7.2	86.7
Shoshone	1.1	1.1	1.1	1.1	1.0	1.1	1.1	2.2	2.2	2.2	2.2	1.1	12.5
Buffalo Bill	4.2	1.6	1.7	1.7	1.5	1.7	5.1	13.4	13.0	13.4	13.4	12.6	97.3
Spirit Mtn.	2.1	0.0	0.0	0.0	0.0	0.0	1.6	2.7	2.9	3.3	3.2	2.9	17.3
Diamond Cr. pump	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Heart Mtn.	3.0	0.0	0.0	0.0	0.0	0.0	2.1	4.5	4.3	4.5	4.5	4.2	13.6
Yellowtail ³	27.2	24.1	24.7	24.5	21.9	28.8	35.2	53.2	55.1	39.2	43.8	40.7	418.2
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Fry-Ark	1.3	2.4	2.4	2.5	3.1	2.5	3.5	3.9	4.7	4.4	2.0	1.0	33.7
CBT	46.9	4.9	37.3	70.8	64.0	55.9	27.1	46.6	64.9	66.2	64.1	59.7	582.9
North Platte	22.3	13.9	23.6	22.3	20.1	46.7	61.5	111.6	144.0	127.0	74.9	39.2	779.8
Bighorn	41.4	29.8	30.7	30.4	27.2	34.7	52.5	87.5	88.9	73.2	76.0	68.7	641.0
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TOTAL GEN	111.9	51.0	94.0	126.0	114.4	139.9	144.6	249.5	302.5	270.8	217.0	168.7	2037.4
TOTAL LOAD	156.6	162.4	162.2	177.1	172.6	137.0	149.3	176.4	184.7	211.0	262.0	211.2	2162.5
SURPLUS/DEFICIT	-44.7	-111.4	-68.2	-51.1	-58.2	2.9	-4.7	73.1	117.8	59.8	-45.0	-42.5	-125.1

1 Project values are historic average flow through energy.

2 Projected values are marketed energy

3 Half of total Yellowtail generation reported in row. In general, half of Yellowtail energy is dedicated to the Western Division System through marketing arrangement. The other half is marketed in Eastern Division System.

D-5: Estimated Maintenance Schedule for Water Year 2021 – Colorado-Big Thompson and Fryingpan-Arkansas Projects

Table D-5: Colorado-Big Thompson and Fryingpan-Arkansas Projects estimated maintenance schedule for water year 2021.

Feature	Task Name	Start	Finish
Big T Unit 1	2021 Annual Maintenance	Mon 1/4/21	Thu 2/4/21
Big T XFMR KW1A	2021 Annual Maintenance	Mon 1/11/21	Thu 1/28/21
Adams Tunnel	2020 Annual Inspection	Thu 11/19/20	Thu 12/10/20
Marys Powerplant	2020 Annual Maintenance	Thu 11/5/20	Thu 12/10/20
Estes Blackstart	2021 Capability Test	TBD	TBD
Estes Unit 1	2021 Annual Maintenance	Mon 1/4/21	Fri 2/5/21
Estes Unit 2	2021 Annual Maintenance	Tue 2/16/21	Fri 3/19/21
Estes Unit 3	KY3A XFMR Re-Gasket Work	Tue 2/16/21	Thu 2/25/21
Estes Unit 3	2021 Annual Maintenance	Mon 3/29/21	Thu 4/29/21
Flatiron Unit 1	2021 Annual Maintenance	Tue 2/16/21	Thu 3/25/21
Flatiron XMFR KW1A	2021 Annual Maintenance	Mon 2/22/21	Thu 3/11/21
Flatiron Unit 2	2021 Annual Maintenance	Mon 4/12/21	Thu 5/20/21
Flatiron XMFR KW2A	2021 Annual Maintenance	Mon 4/19/21	Thu 5/6/21
Flatiron Unit 3	2020 Annual Maintenance	Tues 9/7/20	Fri 10/16/20
Flatiron Unit 3	2021 Annual Maintenance	Tues 9/7/21	Thu 10/14/21
Green Mtn. Unit 1	2021 Annual Maintenance	Mon 1/11/21	Thu 2/18/21
Green Mtn. SWYD KZ1A	2021 Annual Maintenance	Mon 2/1/21	Fri 2/5/21
Green Mtn. Unit 2	2021 Annual Maintenance	Mon 3/1/21	Thu 4/8/21
Green Mtn. SWYD KZ2A	2021 Annual Maintenance	Mon 3/22/21	Fri 3/26/21
Pole Hill Unit G1	2020 Unit Annual Maintenance	Thu 11/5/20	Thu 12/10/20
Pole Hill XFMR K1A	2020 Annual Maintenance	Mon 11/30/20	Thu 12/3/20
Pole Hill Unit G1	2021 Unit Annual Maintenance	Mon 11/1/21	Tue 12/9/21
Pole Hill XFMR K1A	2021 Annual Maintenance	Mon 11/8/21	Tue 12/2/21
Mt Elbert Unit 1	2020 Annual Maintenance	Mon 9/14/20	Unavailable until further notice
Mt Elbert Unit 2	2021 Annual Maintenance	Mon 2/22/21	Wed 3/10/21
CHFC 930 Section	2020 Cottonwood Siphon Repair	Wed 7/15/20	Mon 10/19/20
Pinewood Reservoir	2020 Northern Water Inspection Bald Mtn Tunnel	Mon 11/30/20	Wed 12/2/20
Farr Pumping Plant P1, P2, P3	2020 PLC Replacement & P2 Disch. Valve Seal Repair	Thu 11/19/20	Thu 12/10/20

Note: Maintenance schedule information accurate as of January 29, 2021.

D-6: Power Plant Data

Table D-6: Western Division Pick-Sloan Missouri Basin Program Powerplant Data

Facility	No. Units	Capacity Each Unit(kWh)	Total Installed Capacity(kWh)	Normal Operating Head (ft)	Output at Rated Head (cfs)
Green Mountain	2	13,000	26,000	192-262	1,660
Marys Lake	1	8,100	8,100	202-217	550
Estes	3	16,500	49,500	551-571	1,300
Pole Hill	1	33,250	33,250	830-838	550
Flatiron units 1 & 2	2	43,000	86,000	1,096 - 1,118	1,070
Flatiron unit 3 ¹	1	8,500	8,500	158-287	440
Big Thompson	1	5,300	5,300	183- 184	350
Seminole	3	15,000	45,000	97-227	2,850
Kortes	3	12,000	36,000	192-204	2,700
Fremont Canyon	2	33,000	66,000	247-363	2,200
Alcova	2	18,000	36,000	153-165	2,200
Glendo	2	19,000	38,000	73-156	2,800
Guernsey	2	2,400	4,800	89-91	820
Pilot Butte	2	800	1,600	-- --	---
Boysen	2	7,500	15,000	72-112	2,415
Shoshone	1	3,000	3,000	-- --	---
Buffalo Bill	3	6,000	18,000	-- --	---
Heart Mountain	1	5,000	5,000	265-275	355
Mt. Elbert	2	103,000	206,000	447-477	6,400
Yellowtail	4	72,000	288,000	327-440	8,500
TOTAL	34	-----	979,050	-----	-----

1 Pumping plant which may be operated in reverse to generate energy

D-7: Pumping Plant Data

Table D-7: Western Division Pick-Sloan Missouri Basin Program – Pumping Plant Data

Facilities	Number	Capacity (cfs)	Normal Operating Head (ft)	Installed (Hp)	Kwh to Pump 1 acre-feet at Maximum Head
Granby	3	600	92-186	18,000	227
Willow Creek	2	400	167-169	18,000	227
Flatiron unit 3 ¹	1	440	173-287	13,000	391
Mt. Elbert	2	5,690	447-477	340,000	620

1 Pumping plant which may be operated in reverse to generate energy

Appendix E Power Exhibits

E-1: Western Division Water Resource Map

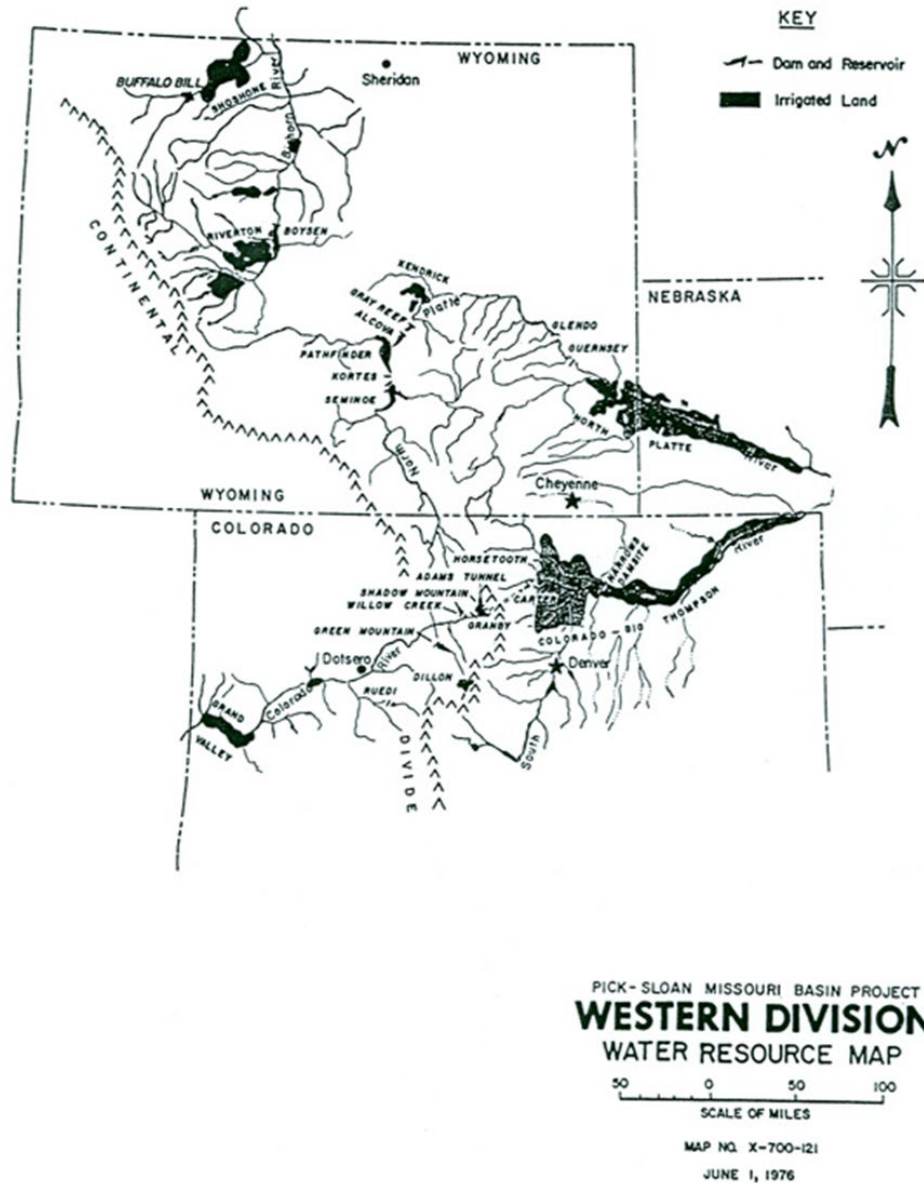


Figure E-1: Water Resource Map of Irrigated Land and Dam/Reservoirs of the Western Division.

E-2: Lap Gross Generation Less Pumping for Water Year 2020

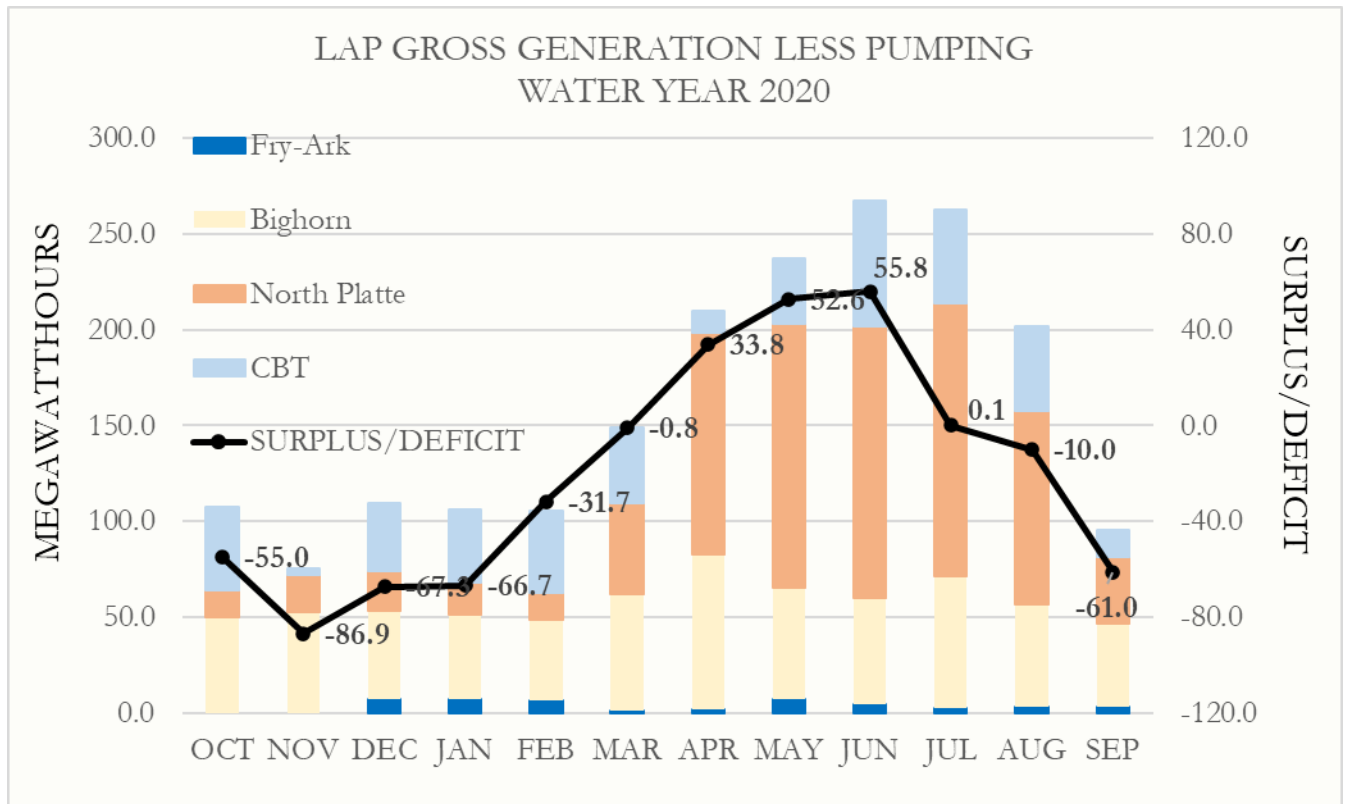


Figure E-2: Monthly Loveland Area Power Generation Less Pumping for WY 2020 by Reclamation projects in Western Division System. Monthly surplus and deficits are shown as overlay.

E-3: Most Probable Inflow Projected Lap Gross Generation Less Pumping for Water Year 2021

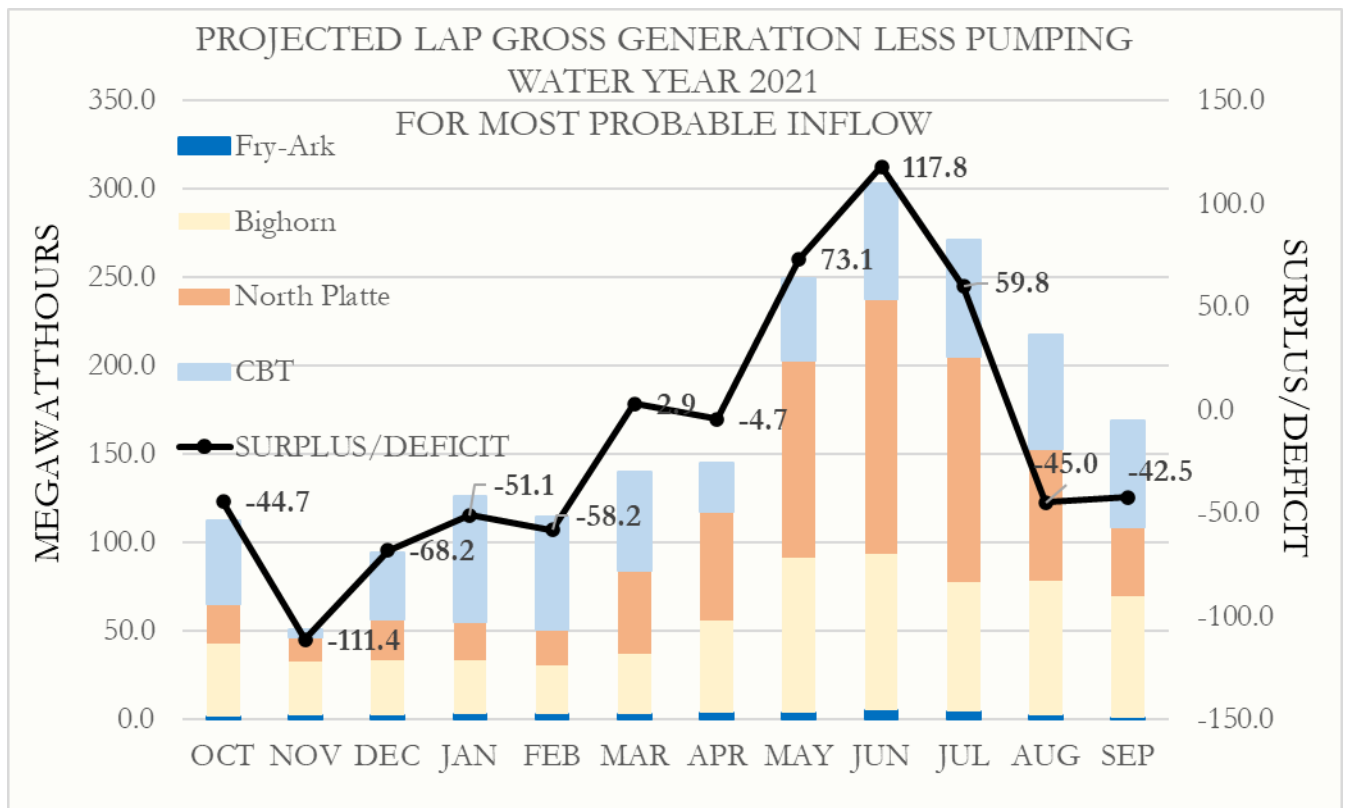


Figure E-3: Monthly Loveland Area Power Generation Less Pumping for WY 2021 from October 2020 AOP Most Probable Scenerio by Reclamation projects in Western Division System. Monthly surplus and deficits are shown as overlay.